1.2 ECONOMIC SETTING

1.2.1 General

The foundation of the Egyptian economy has always been agriculture developed along the Nile Valley and its delta. Most of the existing arable land was opened before the 1970s, and no remarkable areal expansion has taken place in the past seven years. The agricultural land productivity has also stagnated, although the yields of major crops in Egypt are considerably higher than the levels attained in other developing countries. Due to this stagnation of agricultural production in the last decade, Egypt has turned into a deficit country in agricultural products trade since 1974.

Subsequent to the disengagement of hostilities with Israel, the year 1974 was the country's economic turning point. The economy started its drastic expansion and emerged from the stagnation, led by the remarkable growth of petroleum/mining/manufacturing investment and output. Together with the large increase in GDP, balance of payments deficits and domestic prices also started to increase dramatically. Through the rapid growth of the industrial sector, Egypt is now undergoing transformation as envisaged in the Open Door Policy and the current Five-Year Development Plan (1978-82).

The economy in 1974 and the following years was largely effected by three main pressures from the external sector; (i) rapid increases in the prices of imports, especially foodstuffs, (ii) a drop in the demand for the country's major exports, together with a reduction of the domestic export capacity, especially raw cotton, and (iii) slower disbursements of concessional assistance and private foreign capital than had been envisaged.

The rise in the prices of foodstuff imports resulted in a large increase in the net budgetary subsidies for the items of mass consumption like wheat in order to maintain the stable domestic price of imported foodstuffs. The heavy subsidization along with the slow growth of tax revenues reduced public sector savings and increased the government's borrowings from the international and domestic banking system. Consequently, total domestic savings were greatly reduced to expand the country's resource gap. In addition, the continuous deficit financing has aggravated inflation and worsened the country's balance of payments position.

1.2.2 National Account

Table 1-2-1 indicates national account figures (at current prices) of Egypt in recent years. During the period from 1966 through 1973, the annual growth of GNP averaged 3.2% in real terms. Given the annual increase of population at 2.3%, per capita GNP grew at the rate of only 0.9% per annum over the period. During 1973-1977, GNP growth rose to 8.1% per annum in real terms, and with the population increasing at 2.8%, real per capita GNP grew at the annual rate of 5.3%, a

Table 1-2-1 National Accounts (1966, 1971-1976)

	(£E million at current prices)							Real Annual Average Growth(%)		
	1966	1971	1972	1973	1974	1975	1976	1966/73	1973/74	1974/76
(1) GNP (market prices)	2,455.5	3,180.4	3,380.1	3,625.5	4,085.0	4,713.0	5,674.0	3.2	6.7	8.7
(2) Net Factor Income from Abroad	-18.3	-60.7	-9.8	-19.1	-112.0	-148.0	-154.0	1.8	-292.1	-29.0
(3) GDP (market prices) [(1)-(2)]	2,473.8	3,241.1	3,389.9	3,644.6	4.197.0	4,861.0	5,828.0	3.2	8.2	9.2
(4) Commodity and Non-factor Service Import	492.2	612.3	648.6	714.7	1,395.0	1,920.4	1,880.0	5.1	42.6	8.8
(5) Commodity and Non-factor Service Export	419.3	447.0	452.5	519.2	890.0	947.4	1,143.0	-0.7	69.4	5.9
(6) Total Resources [(3)+(4)-(5)]	2,546.7	3,406.4	3,586.0	3,840.1	4,702.0	5,834.0	6,565.0	4.1	8.5	9.7
(7) Private Consumption	1,653.5	2,139.0	2,258.7	2,371.3	2,871.0	3,293.0	3,799.0	3.9	1.5	7.6
(8) Public Consumption	477.3	838.7	909.0	1,022.5	1,101.0	1,213.0	1,361.0	8.2	1.2	3.9
(9) Total Consumption [(7)+(8)]	2,130.8	2,977.7	3,167.7	3,393.8	3,972.0	4,506.0	5,160.0	5.0	1.4	6.5
(10) Gross Domestic Investment	415.9	428.7	418.3	446.3	730.0	1,328.7	1,405.0	-4.2	65.6	24.5
(11) Total Expenditure [(9)+(10)]	2,546.7	3,406.4	3,586.0	3,840.1	4,702.0	5,834.0	6,565.0	4.1	8.5	9.7

Sources: Ministry of Planning.
IBRD, Arab Republic of Egypt: Economic Management in a Period of Transition, Vol. VI, Statistical Appendix, May 8, 1978.

significant improvement over the previous performance. Per capita GNP in 1977 is estimated to have reached £E 175 at current prices. As shown in the table, 1974 was a turning point in the Egyptian economy, and the rapid economic expansion continued at a higher speed in the subsequent years.

While real GNP increased by 26% during the period during 1973 - 1976, total domestic expenditure increased by 30.5% in real terms. Consequently, the country's resource gap, i.e., a negative balance of GNP minus total expenditure which coincides with an investment-saving gap and with a goods and services trade deficit, as shown in Table 1-2-1, quadrupled in real terms during the period. As shown in Table 1-2-2, high investment demand and low saving propensity created a large resource gap every year, especially after 1973. The gap reached £E 891 million, or 15.7% of GNP, in 1976. The gap for 1977 is estimated to have been reduced to approximately £E 820 million, about 12% of GNP, due to a large increase in domestic savings, especially in the public sector.

Because investment is expected to grow probably just as rapidly without appreciable improvement in saving propensity in short and medium terms, the large resource gap, in other words dependency on foreign capital, will persist for several years to come. This implies a growing deficit in goods and services trade. In order to reduce a resource gap and at the same time to achieve a rapid economic growth through increased domestic investment, it is requisite to reduce domestic consumption, or increase domestic savings in other words, and to expand commodity and service exports. The major sources of domestic savings in Egypt have been surplus of insurance funds, surplus transferred to the government and other surpluses in the public economic sector. Because neither sizable decreases in the deficit of the government service sector nor large increases in household savings are expected in the near future, increases in domestic savings will have to be generated in these sources and also in private business sector savings.

Table 1-2-2 Ratios of Investment, Saving and Resource Gap to GNP (1966-1976)

	1966	1971	1972	1973	1974	1975	1976
I/GNP	.169	.135	.124	.123	.179	.282	.248
S/GNP	.132	.064	.063	.064	.028	.044	.091
(I-S)/GNP	.037	.071	.061	.059	.151	.238	.157

Source: IBRD, op. cit.

The sizable resource gap is implied in the percentages of exports and imports of goods and non-factor services in GNP (at market prices) over the last decade, as shown in Table 1-2-3. The export propensity, i.e., the percentage of exports of goods and non-factor services in GNP, dropped after 1966, coinciding with the active hostilities with Israel, and remained at the lower level through 1973. Increases of international tourists and petroleum exports and the reopening of the Suez Canal substantially raised the propensity in 1974, but their boost did not accelerate in the subsequent years. On the other hand, the import dependency of the economy as expressed in the percentage of goods and non-factor services imports in GNP kept the level of mid-1960s through 1973, and jumped after that year. Although the percentage figures show a declining tendency after 1975, this does not imply the drop in the economy's import requirements but the import restrictions necessitated by the inability to finance the trade deficits which would have increased, when the imports were allowed to expand as demanded by the economy.

Table 1-2-3 Percentage of Exports and Imports of Goods and Non-factor Services in GNP at Market Prices (1966-1977)

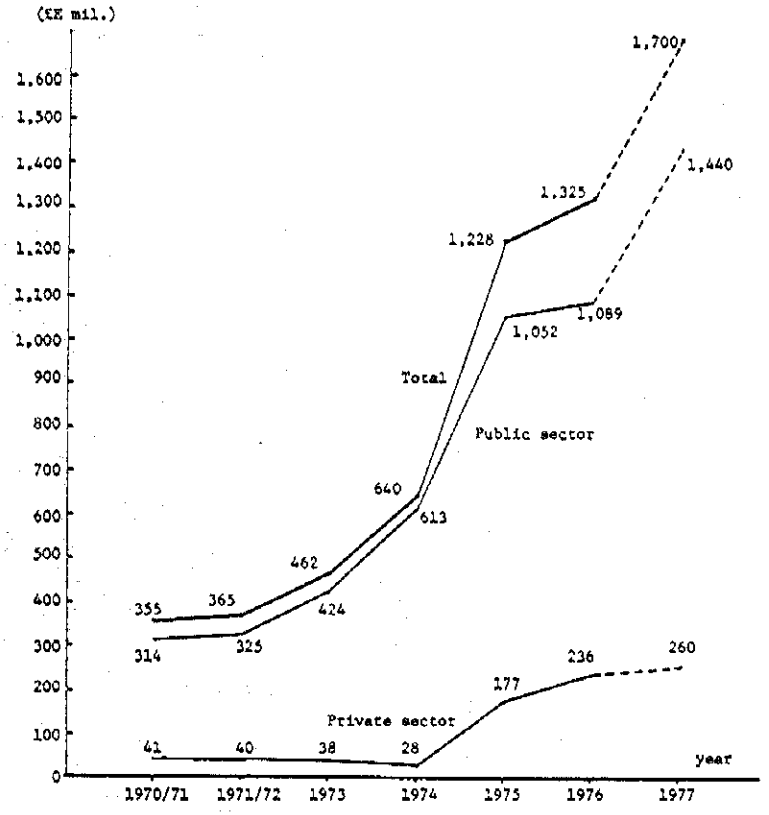
(Unit: %)

	1966	1971	1972	1973	1974	1975	1976	1977 est.
Export of Goods and n.f.s.	17.1	14.1	13.4	14.3	21.8	20.1	20.1	20.1
Imports of Goods and n.f.s.	20.0	19.3	19.2	19.7	34.1	40.7	33.1	29.6
Deficit of Goods and n.f.s. Trade	2.9	5.2	5.8	5.4	12.3	20.6	13.0	9.5

Source: IBRD, op. cit.

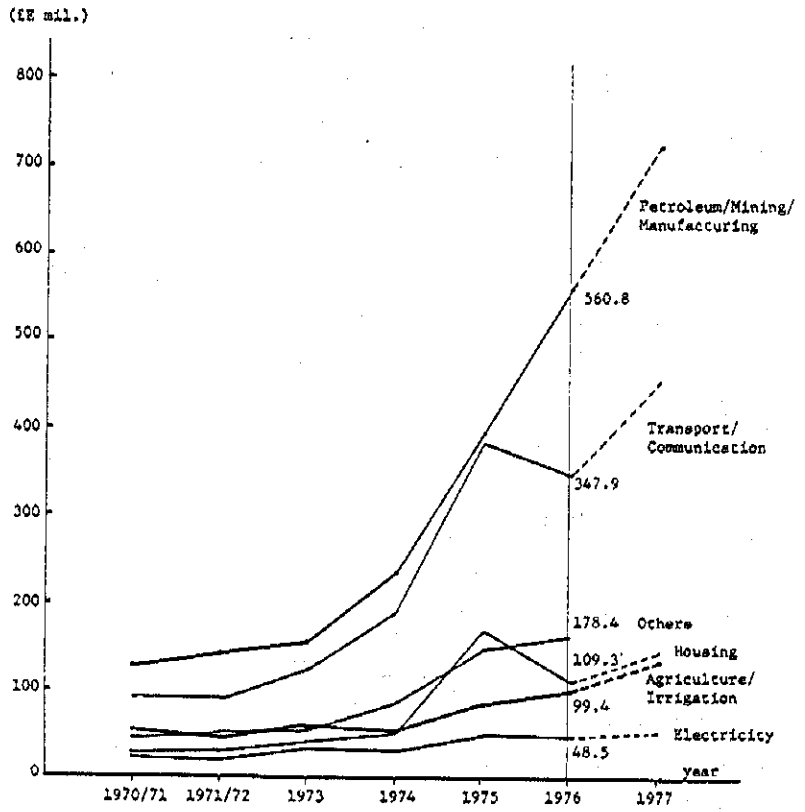
The trend of gross domestic investment and its sectoral breakdowns are shown in Figures 1-2-1 and 1-2-2. As evident from Figure 1-2-1, the private sector plays a minor role in domestic capital formation in Egypt, amounting to 1.5 to 0.7% of GDP at factor cost during 1970/71-1974. Largely due to the disengagement of the war with Israel and the national drive to implement the "Open Door Policy," private investment suddenly picked up in 1975, more than a six-fold increase over the previous year, and is estimated to have made up 15% of the total investment in 1977. Public investment also showed an impressive expansion in 1975, accounting for three-fourths of the increase in total investment over the previous year.

Figure 1-2-1 Gross Domestic Fixed Investment
(current prices)



Note: Figures for 1977 are provisional estimates.
Source: CAPMAS.

Figure 1-2-2 Gross Domestic Fixed Investment by Economic Sector
(current prices)



Note: Figures for 1977 are provisional estimates.
Source: CAPMAS.

As shown in Figure 1-2-2, the sudden large increase in gross fixed investment in 1975 mostly accrued from the petroleum/mining/manufacturing, transportation/communication and housing sectors, although investment in the latter two sectors was substantially reduced the following year. This rapid expansion of investment was partly reflected in the sudden increase of the economy's import dependency after 1974 in Table 1-1-3. In contrast, the investment in the other sectors grew only slowly during the period of 1970/71-1976. The growth of agricultural investment (including irrigation investment), for instance, was only 13.3% per annum at current prices, compared to 34.9% of the petroleum/mining/manufacturing sector.

Lesser investment performance of the agricultural/irrigation sector partly accounted for the stagnant export propensity and the increasing import dependency of the national economy in the form of sluggish agricultural exports and increased food imports. In order to increase farm production for the purposes of feeding the growing population, narrowing the agricultural products trade deficit and improving its contribution to the development of non-agricultural productive sectors, agricultural investment will have to be stepped up drastically in the future. Supposing that gross agricultural output be increased by 4% per annum in real terms over the coming decade, investment will have to increase by more than 22% per annum in nominal terms.

1.2.3 Sectoral GDP and Employment

(1) GDP

As can be seen in Table 1-2-4, the relative importance of the agricultural sector in Gross Domestic Product remained practically unchanged during 1966 - 1976. The real growth of the sector was kept at less than 2% per annum through 1974, and even during the period of 1974-1976 when GDP attained an unprecedented rapid growth of 8.9% per annum, the rate was the second lowest at 3.2% among the sectors shown in the table. Reflecting the large increase in investment, the petroleum/mining/manufacturing, transportation/communication, housing and construction sectors recorded high annual growth rates in real terms after 1974.

Table 1-2-4 Structure of GDP and Sectoral Growth

	£E million (current prices)		% share			Annual Average Growth Rate in Real Terms (%)			
	1976	1977	1966	1976	1977	1966 /71	1971 /74	1974 /76	1976 /77
Agriculture	1,553.0	1,787	28.5	28.5	27.6	1.6	1.8	3.2	-0.1
Mining/Manuf.	} 1,302.6	1,138	} 23.8	21.6	17.5	} 4.7	1.6	15.8	9.0
Petroleum		443			6.8				42.3
Electricity	77.5	83	1.4	1.1	1.3	15.3	14.8	11.6	10.3
Construction	249.0	285	4.6	4.4	4.4	3.0	-12.6	27.0	12.3
Transp./Comm.	355.3	479	6.5	9.2	7.4	-6.0	7.9	15.2	15.3
Trade/Finance	680.0	795	12.5	8.5	12.3	3.4	8.5	5.9	5.9
Housing	136.3	144	2.5	5.1	2.2	2.1	1.9	11.9	5.9
Pub. Utilities	21.7	22	0.4	0.4	0.3	6.4	9.9	1.6	-
Other Services	1,079.7	1,307	19.8	21.2	20.2	5.6	7.6	6.3	9.5
GDP at Factor Cost	5,455.1	6,483	100.0	100.0	100.0	2.9	4.0	8.9	8.3

Source: IBRD, op. cit.

The GDP growth in 1977 is provisionally estimated to be 8.3% in real terms. The continued expansion of GDP was primarily led by the petroleum and mining/manufacturing sectors, respectively growing at 42.3% and 9.0% in real terms. The rapid growth of these sectors was achieved by increased inflow of foreign capital and improved utilization of the existing production capacities. The industries which showed especially remarkable performance in the mining/manufacturing sector were textile, food processing and metallurgical industries. The transportation/communication and construction sectors continued considerable expansion. In addition, a substantial growth was shown by "other services," to which the tourism sector greatly contributed, growing by over 45%. In contrast, the agricultural sector registered a minus growth rate of 0.1% over the previous year.

(2) Employment

As shown in Table 1-2-5, the relative share of agriculture in total employment continued to decline during the period of 1960-1977. The absolute number of agricultural employment is the same in 1960 and 1977, although it indicated a declining tendency during

Table 1-2-5 Changes in Labor Participation Rates and Employment Structure in Egypt (1960-1976)

	1960		1966		1971		1976		1977[3]	
	1,000 persons	%	1,000 persons	%	1,000 persons	%	1,000 persons	%	1,000 persons	%
Economically Active[1] Population (000 persons)	7,851		8,335				11,543			
Gross Labor Participation (%)		30.1		27.7				31.5		
Male		55.1		50.8	n.a.	n.a.		52.9		
Female		4.8		4.2				9.2		
Employment	7,727	100.0	8,334	100.0	8,506[2]	100.0	9,628[2]	100.0	10,433	100.0
Agriculture	4,406	57.0	4,447	53.4	4,057	47.7	4,224	43.9	4,486	43.0
Mining/Manuf.	734	9.5	1,087	13.1	1,053	12.4	1,210	12.6	1,320	12.7
Electricity	37	0.5	51	0.6	30	3.6	47	0.5	50	0.5
Construction	159	2.0	206	2.5	366	4.3	434	4.5	508	4.9
Transp./Comm.	260	3.4	340	4.1	374	4.4	422	4.4	447	4.3
Trade/Finance	641	8.3	599	7.2	816	9.6	1,016	10.6	1,265	12.1
Other Services	1,489	19.3	1,602	19.2	1,810	21.3	2,269	23.6	2,359	22.6

Notes: 1/ Ages of 6 and over.
2/ Exclude military population.
3/ Preliminary estimates.

Sources: CAPMAS, Statistical Yearbook, 1978 and Preliminary Results of 1976 Census.
MOP, Five-Year Plan 1978-82, Vol. II.

1966 and 1976. In contrast, employment in the service sector, especially in the trade/finance and other services sectors, continued to expand substantially over the entire period. It can be conjectured that a large number of the surplus labor force in rural areas was absorbed into the service sector in urban areas over the last decade.

Because there is as yet no comprehensive employment survey conducted in Egypt, the exact information on unemployment is not available. The current Five-Year Plan (1978-82) estimates the unemployment rate of 13.0% for 1976, while a labor force sample survey conducted by CAPMAS gave a very low rate of 1.4% for 1972. Assuming that persons engaged in military services numbered approximately 750,000 in 1976, the total employment in that year would rise to a little over 10 million according to Table 1-2-5. This indicates that the unemployment rate would have been in about 10% in mid-1970s, considering the economically active population of 11.5 million given in the 1976 census.

Supposing the unemployment rate at around 13% and given the high proportion of young age-groups in the current population, employment opportunities will have to be increased at an annual rate of 4-5% in order to absorb the growing labor force and to reduce unemployment to a minimum by the turn of the next century. Considering the average annual growth rate of employment at only 1.5% during the period from 1966 to 1976, the creation of employment at this annual rate will not be easily achievable. Agricultural employment is unlikely to increase in the coming decades despite the planned horizontal expansion of some 2 million feddans by the end of this century, because the expansion of arable land will be absorbed by the increased landholding per agricultural worker as is envisaged in the current Five-Year Plan. Labor force absorption in the future, therefore, will have to be sought in the expansion of the secondary and tertiary sectors of the economy.

Table 1-2-6 shows the annual growth rates of employment and labor productivity by sector in real terms during the period from 1971 to 1976. What is notable is the low growth of labor productivity in those sectors which play or should play vital roles in the development of the national economy. Agriculture, which accounts for a little over 40% of total employment, nearly 30% of GDP and about 70% of commodity exports including cotton yarn and textile, had one of the lowest rates of labor productivity growth, reflecting the past relative neglect in investment and lack of price incentives to the farmers. In the mining/manufacturing and construction sectors, which should normally spearhead economic development, growth of labor productivity was far from encouraging.

Table 1-2-6 Sectoral Growth of Employment and Labor Productivity (1971-1976)

	Annual Growth Rates (%)	
	Employment	Labor Productivity
Agriculture	0.8	1.6
Mining/Manufacturing	2.8	4.2
Electricity	9.4	3.7
Construction	3.5	-0.9
Transport/Communications	2.4	8.1
Trade/Finance	4.5	2.8
Other Services	4.6	2.2
Overall Average	2.5	3.4

Sources: CAPMAS, Statistical Yearbook, 1978.
IBRD, op. cit.

The slower-than-desirable growth in non-agricultural sectors is closely related with the extensive role in the economy of the public sector, which owns most modern industries, financial institutions, modern transport, and construction firms and tourism agencies and accounted for nearly 50% of GDP in mid-1970s. One of the major factors which has contributed to the lower productivity improvement is the strongly welfare-oriented employment policy pursued in the all-pervading public sector since the early 1960s. The resultant overmanning in the economy functioned, coupled with slow technological innovations, or shortage of funds to introduce innovations, to depress growth of labor productivity.

1.2.4 Prices and Wages

Cost of living for urban population annually increased by 9.4% during the three years from the end of 1970 to the end of 1973. During the following three years, it increased by 33.1% per annum. Table 1-2-7 compares price increases of three basic items for living between the two three-year periods. The acceleration of inflation during 1973-1976 was partly caused by the world-wide sharp rises in import prices and by the subsequent transfer of their impact on domestic prices. The rapid inflation was also due to the Government's worsened financial position in which large annual deficits were covered by repeatedly increased money supply, as will be mentioned later in this section.

Table 1-2-7 Consumer Price Index for Urban Population

(1966/67 = 100)

	Index 1970	Annual Rise (1970-73)	Index 1973	Annual Rise (1973-76)	Index 1976
Foods & Beverages	115.7	(13.1)	130.8	(50.5)	196.8
Housing	108.5	(-2.6)	105.8	(3.8)	109.8
Clothing	101.7	(11.4)	113.3	(28.2)	145.3
General Index for Cost of Living	112.8	(9.4)	123.4	(33.1)	164.2

Source: CAPMAS, Statistical Yearbook, 1978.

It must be emphasized, in addition, that rapid rises in consumer prices were actually smaller than would have been if the impact of the increased import prices was wholly transferred to the domestic prices. As will be explained later in this section, the Egyptian Government has continued and will continue to regard as one of its overriding administrative requirements the maintenance of stable prices of essential consumer goods and services: notably food items such as wheat and flour, edible oils and fats, meat and sugar, and public transportation and postal fares. These cost-of-living subsidies became very expensive after 1973, when the impact of the increased demand and supply gaps of major food crops and petroleum began to materialize world-wide. They accounted for a little over two-fifths of the current government expenditure on the average during 1974-1976, and thereby contributed to the worsening of the Government's financial position.

Table 1-2-8 shows average wages and salaries per worker by sector and their growth during the earlier half of the 1970s. The growth of overall average during 1970-1973 and 1973-1976 was 26% and 37%, respectively. The two figures were higher than the rise of the urban cost of living in the corresponding periods, as already shown in Table 1-2-7, although the real wage increase rate substantially dropped during 1973-1976 compared to the preceding three years. When compared with the figures shown on Table 1-2-6, increases in wages do not appear to be closely linked to sectoral labor productivity growth, but rather, tend to be awarded to keep up with the increases in cost of living, presumably reflecting the Government's employment policy orientation in the public-sector-dominated non-agricultural sectors.

Table 1-2-8 Annual Per-capita Wages and Salaries by Sector (1970/71-1976)

	Average Wages and Salaries (LE at current prices)			Growth (%)	
	1969/70	1973	1976	1970/ 1973	1973/ 1976
Commodity Sectors	87.8	115.8	167.8	31.9	44.9
Agriculture	53.9	60.5	107.0	12.2	76.9
Petroleum/Mining/ Manufacturing	191.8	287.1	321.6	49.7	12.0
Electricity	276.3	322.9	372.3	16.9	15.3
Construction	184.6	222.6	308.8	20.6	38.7
Distribution Sectors	184.5	218.5	303.4	18.4	38.9
Transport/Communications/ Storage	245.7	279.7	372.4	13.8	33.1
Trade/Finance	158.0	190.1	274.8	20.3	44.6
Service Sectors	283.1	336.1	414.6	18.7	23.4
Housing	78.5	79.0	100.0	0.6	26.6
Public Utilities	243.3	260.2	301.5	6.9	15.9
Other Services	301.6	357.6	439.4	18.6	22.9
Overall Average	142.6	179.7	246.1	26.0	37.0
Non-agricultural Sector Average	227.5	285.4	354.9	25.5	24.4

Source: CAPMAS, Statistical Yearbooks, 1977 and 1978.

The wage disparities among the respective sectors are obvious in Table 1-2-8. The average wage in the agricultural sector remained conspicuously low throughout the early 1970s, although its increase rate rose appreciably after 1973 due to increases in farmgate prices of major price-controlled crops. For example, the agricultural wage was 30% of the non-agricultural sector average and a little less than 25% of the other services sector in 1976. This enormous disparity would account for the continuous outflow of the labor force from rural to urban areas over the past decades.

1.2.5 Balance of Payments

Table 1-2-9 shows the trend of current balance of payment accounts in Egypt during 1972-1976. Along with the expansion of the domestic economy, the country's foreign trade has been expanding rapidly in the past five years. Demands for imports of intermediate and capital goods have increased in order to improve capacity utilization and meet the development needs of the economy. However, the requirement of importing a large amount of foodstuffs (wheat and wheat flour, meat, etc.) constrained the imports of these goods essential for economic development.

Table 1-2-9 Current Account Balance (1972-1976)

(Unit: US$ million)

	1972	1973	1974	1975	1976	1977 est.
Trade Balance	-473	-661	-1,801	-2,761	-2,203	-3,113
Commodity Exports (f.o.b.)	813	1,003	1,674	1,568	1,612	1,711
Commodity Imports (c.i.f.)	-1,286	-1,664	-3,475	-4,329	-3,815	-4,824
Services (net)	7	7	169	281	685	1,567
Service Receipts	309	421	710	1,082	1,980	2,890
Service Payments	-302	-414	-541	-801	-1,295	-1,323
Unrequited Transfers (net)	295	731	1,306	1,079	712	425
Private	6	6	42	91	87	50
Official Grants	289	725	1,264	988	625	375
Current Balance	-171	77	-326	-1,401	-806	-1,121

Source: Central Bank of Egypt.

The value of foodstuff imports was doubled in 1974 over the previous year and amounted to US$ 991 million (see Table 1-2-10). This 100% increase resulted mainly from sharp rises in their import prices. In the following years, the value of foodstuff imports retained the high level of 1974 despite the drop in international prices due to increases in quantity, and amounted to 23.4% of the total commodity imports in 1977. The large increase of total commodity imports after 1973 was also due to the increased imports of intermediate and capital goods, including petroleum products.

In contrast, commodity exports did not fare very well during 1973-1977. Petroleum exports alone have expanded at remarkable speed, quadrupling in three years between 1974 and 1977, while traditional exports of cotton, yarn and textile remained stagnant. Quantities of cotton and rice exports increased considerably in 1977, but this was mainly due to the release of stocks but not to the improved export capability. The consequence from all this was the widened commodity trade deficit, which reached US$ 3,113 million in 1977, nearly twice the total value of commodity exports in the same year.

Table 1-2-10 Commodity and Service Trade of Major Items (1973-1977)

(Unit: US$ million)

	1973	1974	1975	1976	1977 est.
Commodity Exports	1,003	1,674	1,568	1,612	1,711
Cotton	431	663	370	396	467
Yarn and Textiles	141	366	477	301	312
Petroleum	15	104	164	382	414
Others	416	541	557	533	518
Commodity Imports	-1,664 1/	3,475	4,329	3,815	4,824
Foodstuffs	-496	-991	-914	-1,036	-1,129
Intermediate Goods		-1,301	-1,750	-1,138	-1,583
Machinery and Equipment		-480	-728	-1,036	-1,452
Others		-703	-937	-605	-660
Major Non-factor Service Receipts					
Suez Canal	-	-	85	312	385
Travel	158	266	332	465	660
Major Factor Service Receipts					
Workers' Remittances	86	189	367	358	700
Finance for Own Exchange Imports		16	168	399	725

Note: 1/ Breakdowns are not available.

Source: CAPMAS, "Monthly Bulletin of Foreign Trade," 1978.

The directional imbalance in commodity trade has been largely offset by surpluses in services accounts, such as workers' remittances, tourist receipts, and since 1975, by proceeds from the reopened Suez Canal. During the period from 1974 to 1977, the total amount of non-factor service receipts tripled due to remarkable increases in the proceeds from the Suez Canal and international tourists. The total amount of receipts from factor service exports was estimated to be US$ 1,530 million in 1977, more than five times as much as the 1974 level, of which 46% was remittances from the Egyptian nationals working abroad.

Foreign exchange requirement (resource gap), which is the sum of the commodity and service deficit, amortization of medium- and long-term debt, reduction of short-term debt and reduction of balance on bilateral agreements, during 1973 - 1976 is as follows:

	1973	1974	1975	1976
Foreign Exchange Requirements (US$ million)	1,174	2,291	3,462	2,230

Although substantial increases in surpluses in the service balance, especially in the receipts from the Suez Canal and tourists, are expected in the future, increasing demand for commodity imports and required debt amortization will continue to create a resource gap of US$ 2 - 3 billion in the medium-term.

The bill for farm products imports in 1978 is reported to have reached US$ 2 billion, twice the average receipts derived from agricultural exports and nearly seven times the average food imports during the period of 1970-1973. However, other sectors of the economy have taken up the slack so that the foreign exchange deficit has declined from the average US$ 4 billion during 1975-1977 to about US$ 3 billion in 1978.

1.2.6 Public Finance

A substantial increase in public investment is essential for the future economic and social growth in Egypt, which in turn requires a large increase in public sector savings or reduction of the sector's large deficit. There is a wide and growing gap between government expenditure and revenue. In 1976, for example, total public sector expenditure including investment amounted to £E 2,977 million, or 54.6% of GDP at factor cost, and total revenue £E 2,311 million, or 42.4% of GDP, with a deficit of £E 666 million or 12.2% of GDP. To finance the gap, the Government resorted to external assistance and deficit financing, with the latter amounting to as much as £E 481 million, or 8.8% of GDP in 1976.

Table 1-2-11 Summary of Public Sector Budget

(Unit: £E million)

	1969/70	1970/71	1972	1973	1974	1975	1976
(1) Revenue	750	869	903	1,018	1,184	1,524	2,016
- Central Government	618	625	664	694	780	1,068	1,353
- Local Governments	56	56	58	60	66	92	89
- Public Economic Sector	76	188	181	264	338	364	574
(2) Current Expenditure	604	705	804	953	1,379	1,765	1,997
- Central Government	565	615	689	714	825	959	1,335
- Local Governments	39	46	42	51	61	91	109
- Public Economic Sector	-	44	73	188	493	715	553
(3) Social Security Surplus	159	188	214	224	245	253	295
(4) Public Sector Savings [(1)-(2)+(3)]	305	352	313	289	50	12	314
(5) Investment	352	358	414	451	574	863	980
(6) Overall Deficit [(5)-(4)]	47	6	101	162	524	851	666
(7) Emergency Fund Deficit	-	-	-	148	36	284	303
(8) Financing [(6)+(7)]	47	6	101	310	560	1,135	969
- External Borrowing (net)	-15	-	18	51	119	210	488
- Domestic Borrowing	62	6	83	259	441	925	481

Source: Ministry of Finance.

Public investment started to pick up in 1972, and accounted for 18.0% of GDP (£E 980 million) in 1976 compared with 12.7% (£E 358 million) in 1970/71. On the other hand, public savings declined from 12.5% to 5.8% of GDP during the same period mainly due to large increases in cost-of-living subsidies, which rose from 0.1% to 5.9% of GDP.

As shown in Table 1-2-11, there are four sources of funds in the public sector, i.e., (i) central government, (ii) local governments, (iii) surpluses in public sector enterprises, and (iv) social security surplus. The resource mobilized by these four sources increased by an impressive 119% between 1970/71 and 1976, while GDP grew by 93% in current prices, and accounted for 42% of GDP in 1976. The shares of resources mobilized by the central government and the local governments in total revenue were almost constant throughout the period of 1970/71 - 1976, i.e., 59% and 5% in 1970/71, and 59% and 4% in 1976, respectively. The relative importance of surpluses in public enterprises rose from 18% in 1970/71 to 25% in 1976, whereas that of social security surplus declined from 18% to 12%.

Table 1-2-12 shows the trend of public sector revenues as percentages of GDP at factor cost during the period of 1970/71 - 1976. Total public sector revenue as a percentage of GDP declined from 38% in 1970/71 to 35% in 1974, largely due to the lagging increase in the tax revenue of the central government relative to the GDP growth. In the following two years, the percentage soared to a 42%, as a result of the central government's improved tax efforts and also a substantial increase in revenues earned by public enterprises, particularly the Suez Canal Authority and the Petroleum Organization.

Table 1-2-12 Resource Mobilization as Percentage of GDP

	1970/71	1972	1973	1974	1975	1976
Central Government	22	22	20	19	22	25
Local Governments	2	2	2	2	2	2
Public Enterprises	7	6	8	8	8	10
Social Security Surplus	7	7	6	6	5	5
Total	38	37	36	35	37	42

Sources: Ministry of Finance, Ministry of Planning, IBRD, op. cit.

The central government's tax revenue increased by 83.3% during the period from 1974 to 1976. The boost came from a remarkable spurt

in tax revenue from international trade due to the easing of the country's foreign exchange situation in 1975 and the change in the foreign exchange rate in 1976. A summary of central government's revenues and their structure is shown in Table 1-2-13.

Table 1-2-13 Central Government's Revenue and its Structure

(Unit: £E million and %)

	1970/71	1974	1976
Taxes on Net Income, Profits & Property	162.7 (26.0)	197.7 (25.3)	344.5 (25.5)
Taxes on Goods & Services	166.0 (26.6)	195.3 (25.0)	283.6 (21.0)
Taxes on International Trade	196.3 (31.4)	231.4 (29.7)	537.8 (39.7)
Other Taxes & Duties	39.4 (6.3)	58.5 (7.5)	85.6 (6.3)
Non-tax Revenues	60.8 (9.7)	97.2 (12.5)	101.0 (7.5)
Total Revenue	625 (100.0)	780 (100.0)	1,353 (100.0)

Source: Ministry of Finance.

The share of taxes on goods and services in total government revenue declined from 26.6% in 1970/71 to 21.0% in 1976, whereas that of taxes on international trade increased from 31.4% to 39.7%. The elasticity of tax revenue to GDP growth during the period from 1970/71 to 1974 was 0.46, and increased to 2.55 during 1974-1976. This obviously shows the government's intensified tax efforts during the latter period.

Public sector expenditure as a percentage of GDP went up from 38% in 1970/71 to 55% in 1976 (See Table 1-2-14). The amount of public sector expenditure rose nominally by 126% during 1970/71 - 1976, while public revenue rose by 119% as mentioned above. This substantial increase in public expenditure resulted mainly from increased expenditure for subsidies, especially cost-of-living subsidies. The cost-of-living subsidies became an important item in the budget after the sharp rise in international wheat prices in 1973, and they amounted to £E 491 million, or 10.3% of GDP, in 1975 from a mere 0.3% in 1972. The share of subsidies, including cost-of-living subsidies and subsidies to cover deficits in public authorities, in total public expenditure went up from 4% in 1970/71 to 19% in 1976. The details are shown in Table 1-2-15.

Table 1-2-14 Level and Structure of Public Expenditure

(Unit: £E million and %)

	1970/71	1976
General Administration	148 (11.3)	362 (12.1)
Subsidies	51 (3.9)	553 (18.6)
Defense including Emergency Fund Deficit	483 (36.7)	756 (25.4)
Economic Services	323 (24.6)	666 (22.4)
Social Services	234 (17.8)	616 (20.7)
Others	76 (5.8)	24 (0.8)
Total Expenditure (including current and investment expenditures)	1,315 (100.0)	2,977 (100.0)

Source: IBRD, op. cit.

Table 1-2-15 Public Expenditure as Percentage of GDP

(Unit: %)

	1970/71	1972	1973	1974	1975	1976
Current Expenditure (Cost-of-Living Subsidies)	25 (0.1)	26 (0.3)	28 (2.7)	34 (8.0)	37 (10.3)	37 (5.9)
Investment	13	14	13	14	18	18
Total Expenditure	38	40	41	48	55	55

Source: IBRD, op. cit.

The expenditure on economic and social services, which directly indicates the government's development efforts, increased by 130% at current prices during 1970/71 - 1976, that is, faster than GDP which grew by 93.4% over the same period. However, the real per-capita expenditure on these services must have grown at a much slower pace, if the substantial inflation since 1974 and the rapid population increase are taken into account.

Public sector savings, i.e., total public sector revenue minus public sector total current expenditure, declined continuously from £E 352 million (12.5% of GDP) in 1970/71 to a mere £E 12 million (0.3% of GDP)

in 1975, with an acceleration in 1974 and 1975, and then recovered substantially in 1976 due to the large increase in tax revenue resulting from the exchange rate reform. The financial balance in the public economic sector also played a major role in this fluctuation. The exceptional performance of this sector in 1976 was primarily due to: (i) the increase in revenue from the Suez Canal and the petroleum development, and (ii) the reduction of expenditure on cost-of-living subsidies.

From 1962/63 through 1970/71, public investment as a percentage of GDP decreased, and as a result, the infrastructure and the production facilities became nearly obsolete. At the beginning of the 1970s, public investment began to increase at a brisk pace, especially after 1974, while public sector savings were reduced drastically as already mentioned. Consequently, an overall deficit, i.e., investment expenditure minus savings, in the public sector as a percentage of GDP began to expand drastically in 1974, and reached its peak in 1975. Table 1-2-16 shows savings, investment and overall deficit in the public sector as percentages of GDP during the period from 1970/71 through 1976.

Table 1-2-16 Public-sector Savings, Investment and Overall Deficit (as percentages of GDP)

	1970/71	1972	1973	1974	1975	1976
Savings	12.5	10.3	8.3	1.2	0.3	5.8
Investment	12.7	13.6	13.0	14.0	18.1	18.0
Overall Deficit	0.2	3.3	4.7	12.8	17.8	12.2

Source: Table 1-2-11.

The smallness of the overall deficit in the beginning of the 1970s was due to the following reasons: (i) the defense expenditure portion under the Emergency Fund did not drain the public sector savings, because it was financed mostly by grants from Arab countries; and (ii) a number of stabilization measures had been taken in order to increase resources for defense.

Particularly since 1974, a large part of public investment expenditure has been covered by deficit financing as seen in Table 1-2-11. Repeatedly increased money supply has been aggravating inflation. In 1976, due to a large increase in savings, the overall deficit declined to 12.2% of GDP from 17.8% of GDP in the previous year. As also shown in Table 1-2-11, loans from foreign countries in 1976 amounted to more than nine times the 1973 level and reached £E 488 million. The external borrowings covered more than 50% of the overall deficit in 1976, including the Emergency Fund deficit of £E 303 million.

In order to reduce the overall deficit, it is necessary to increase public sector revenues and/or decrease public sector current expenditure, i.e., to increase public sector savings and thereby to finance growing investment needs. The future increases in revenue depends heavily upon the future earnings from the Suez Canal and petroleum development, since further sizable increases in tax revenue and social security surplus will not be easy. The expected increases in petroleum and the Suez Canal revenues, however, will not warrant optimism. As for expenditure, future reduction entirely depends on how much the government will be able to curtail its current expenditure, especially for defense and cost-of-living subsidies, through higher efficiency.

The available sources for deficit financing are: (i) borrowings from private sector individuals, (ii) increases in money supply, and (iii) loans from abroad. However, (i) will trade off an increase in private investment, which is undesirable for the country's development. (ii) will raise prices, which can be construed as tax on cash assets, and hence result in unequal distribution of income and wealth. Therefore, the key point is how much foreign countries and international organizations will extend assistance to Egypt to help cover its balance of payments deficit and the public-sector financial deficit. Borrowings from international organizations as well as foreign countries, however, appear to have been tightened, due to the declining debt service capabilities of Egypt and the current external situations such as slower disbursement of concessional assistance and private foreign capital than has been expected. Therefore, it will be requisite to increase public-sector savings to effect a substantial reduction of the overall deficit.

1.2.7 Current Economic Situation in Aswan Governorate

(1) General

This section will illustrate the recent economic situation in the Governorate of Aswan, because no noteworthy economic activities other than small-scale fishing and mining activities are being carried out at this moment in the Project Area except in Aswan City and Abu Simbel. The economic activities in the Governorate are concentrated in Aswan City and its vicinity and the narrow strips along the Nile to the north of the City. The rough distribution of sectoral activities can be shown as follows.

	Estimated Population in 1978	Main Economic Activities
Lake Area	10,000	Fishery and tourism
Aswan City Area	180,000	Services including tourism, and chemical and other manufacturing industries
Northern Area	450,000	Agriculture and agro-industries (food processing industries)

The major economic activity and also the largest source of income is agriculture, although the Governorate is not self-sufficient in many agricultural products. No total regional production or income has ever been estimated for the Governorate. On the basis of what little was available, the Study Team estimates by inference that the regional gross domestic product (GRDP) was in the order of £E 90 - 100 million in 1978. The value-added in the agricultural and mining/manufacturing sectors make up about 35 - 40% and 13 - 17%, respectively. The regional income was inferred to be in the order of £E 80 - 100 million. Consequently, the per-capita income in the Governorate was in the range of £E 125 - 155, i.e., approximately 30 - 40% less than the national per-capita income of £E 215 estimated by the Team for the same year.

(2) Employment

According to the Regional Planning of Aswan, the sectoral employment in the Governorate numbered 171,874 in 1976, and distributed between urban and rural areas and between the private and public sectors as shown in Tables 1-2-17 and 1-2-18. The total employment figure is larger than the economically active population aggregated for the Governorate (168,044 persons) in the population census of 1976, and in this sense appears to be slightly an overestimate. If the potential employment is excluded, the total number of persons at work in 1976 would be around 150,000 - 160,000, of which roughly 45,000 persons were in the Project Area by inference.

Table 1-2-17 Sectoral Employment and its Urban/Rural Distribution in Aswan Governorate (1976)

	Urban		Rural		Total	
	persons	%	persons	%	persons	%
Agriculture	9,578	13.6	78,236	77.2	87,814	51.1
Mining/Manuf.	13,785	19.6	3,768	3.7	17,553	10.2
Elec./Water	938	1.3	71	0.1	1,009	0.6
Construction	24,394	34.6	2,144	2.1	26,538	15.4
Trade/Finance	6,458	9.2	2,315	2.3	8,773	5.1
Transp./Comm.	3,549	5.0	1,692	1.7	5,241	3.0
Other Services	10,646	15.1	9,750	9.6	20,386	11.9
Others	1,219	1.7	3,341	3.3	4,560	2.7
Total	70,567	100.0	101,307	100.0	171,874	100.0

Source: The Regional Planning of Aswan.

Table 1-2-18 Public/Private Sector Distribution of Employment in Aswan Governorate (1976)

(Unit: persons)

	Public Sector	Private Sector	% of Pub. Sec.
Agriculture	217	86,897	0.2
Mining/Manuf.	13,820	3,733	78.7
Elec./Water	1,009	-	100.0
Construction	3,500	23,038	13.2
Trade/Finance	700	8,073	8.0
Transp./Comm.	4,241	1,000	80.9
Other Services	17,549	2,837	86.1
Others	500	4,060	11.0
Total	42,236	129,638	24.6

Source: The Regional Planning of Aswan.

In 1976, more than 50% of the employed persons were engaged in agriculture, whereas the industrial, construction and service sectors accounted for approximately 11%, 15% and 20%, respectively. For a comparison, the national shares of these sectors in the same year were approximately 44% for agriculture, 13% for industry, 4.5% for construction and 38.5% for services. It is said that the share of agricultural employment has declined slightly over the past decade, whereas those of the manufacturing and service sectors increased proportionately.

(3) Production

(a) Agriculture and Fishery

The regional agricultural income in 1976 is estimated to be around £E 32 million. Since the figure for 1962 is estimated to have been approximately £E 8 million at current prices, the agricultural income quadrupled in nominal terms during the 14 years. The agricultural income is said to have increased considerably in the last few years, due to large increases in vegetable and fruit production as well as favorable yields of the traditional crops such as sugarcane, wheat and maize.

Detailed information regarding fishery activities in the entire Governorate is not available. With regard to the fishery production in High Dam Lake in 1978, the value-added can be roughly estimated. Given the annual fish hauls at approximately 22,600 tons, the annual production in terms of value is estimated to have been about £E 3.2 million. Then, the annual value-added would have been around £E 2.3 million.

(b) Mining/Manufacturing

Major mineral products in the Govenorate in recent years are phosphoric-acid ore, accounting for more than 80% of the total annual domestic production, iron ore, kaolin, quartz and other non-metallic minerals. There exist in the Governorate approximately 160 quarries which mine granite, clay, marble, limestone, gravel, sandstone, etc. Major mines are five state-operated mines, which together grossed annual sales of £E 3.35 million in 1975, £E 3.45 million in 1976 and £E 4.3 million in 1977 at current prices. The inferred value-added by these mines were in the order of £E 2.8 million in 1977.

The main manufacturing industries in the Governorate are chemical products, sugar refining, pulp and paper milling, dairy products, soft drink bottling, wheat flour milling, red brick making and various food industries. Some chemical products and refined sugar are not only sold in the domestic market but also exported abroad. Table 1-2-19 shows the annual sales and value-added in 1973 of mining and manufacturing establishments employing more than 10 employees in the Governorate. The Study Team estimated by inference that the value-added in the mining/manufacturing sector was in the order of £E 13 - 18 million in 1978.

Table 1-2-19 Annual Sales, Value-added and Employment in the Mining/Manufacturing Sector of Aswan Governorate (1973)

	Sales (£E thousand)	Value-added (£E thousand)	Employment (no.of persons)
Mining/Quarry			
Metallic Minerals	2,552	1,770	1,245
Others	1,288	749	1,733
Total	3,840	2,519	2,978
Manufacturing			
Foods	11,703	1,605	5,236
Beverages	114	38	32
Wooden Products except Furniture	556	197	169
Pulp and Paper	904	-18	578
Chemical Products	6,461	1,959	2,363
Non-metallic Mineral Products	47	12	33
Non-electric Machinery	11	4	13
Total	19,796	3,797	8,424

Source: CAPMAS, Regional Census 1976 (Sohag, Qena, Aswan and Red Sea South), 1979.

(c) Consumer Prices in Aswan City

The average consumer price in Aswan City was doubled during the period of 1967 and 1978, or at an rate of 6.7% per annum, which is slightly lower than the national rate during the same period. Increases in consumer price indices of several items are shown in Table 1-2-20. The items which showed rapid price increases over the period were foods and beverages (146% increase) and clothing (124% increase), while price increases were less for housing (10.6% increase) and cigarettes and tobacco (47% increase). Among foods and beverages, prices of pulses, dairy products, fresh and canned vegetables, and fresh and dried fruits rose to more than three-fold, whereas increases in prices of cereals, oils and fats, sugar and sweets, and beverages were smaller and ranged between 28% and 63%.

Table 1-2-20 Consumer Price Index in Aswan City (1966/67 and Oct. 1978)

	1966/67	Oct.1978	Annual Average Increase Rate
All Items	100.0	205.2	6.7%
Foods & Beverages	100.0	245.8	8.5%
Housing	100.0	110.6	0.9%
Furniture & Durables	100.0	166.2	4.7%
Clothing	100.0	224.0	7.6%
Services	100.0	177.2	5.4%
Cigarettes & Tobacco	100.0	147.1	3.6%
Personal Care	100.0	201.9	6.6%

Source: CAPMAS "Monthly Bulletin of Consumer Price Index," Oct. 1978.

1.3 INFRASTRUCTURE

1.3.1 Transportation

Egypt has generally flat topographic formations which are favorable to the development of the transportation sector. Practically all of the nation's population and economic activities have concentrated in the delta and the narrow belts along the Nile. This concentration is reflected on the existing extension of the country's transportation network which connects major population centers in the delta and from Cairo to as far south as Aswan covering over 900 km. Transportation facilities such as road, railway, waterway and aviation in Egypt are of relatively high standards compared with equivalents in other developing nations and will not seriously hamper future development of the Egyptian economy.

Of various modes of transportation, that which plays the most important role is road, accounting for an estimated 75% each of the total passenger and cargo traffic. In Aswan Governorate, almost all of the passengers and goods are also carried by road. In addition, long-distance inter-regional cargo transportation is performed by railway and Nile River waterway chiefly for bulk goods such as petroleum products, cement, fertilizer, and phosphate rocks, respectively accounting for 13% and 10% of the total cargo traffic. Railway also services long-distance passenger travel, representing 25% of the total traffic. Air transportation connects Aswan with Cairo, Luxor, and other major cities to the north and with Abu Simbel. Regular boat services connect Aswan with Abu Simbel and with Wadi Halfa just across the Sudan border.

(1) Roads

(a) Network Extension

The extension of paved roads in the entire country currently totals approximately 12,000 km, and unpaved roads about 14,000 km. Aswan Governorate is one of the lowest road density areas in Egypt. An extension of paved roads is approximately 400 km, most of which is the section of the inter-regional trunk road (Route 2). Unpaved roads are largely community dirt roads, and there is practically no development of intra-regional trunk roads, especially in the southern portion of the Governorate.

A section of several kilometers lying between Kom Ombo and Edfu has recently been paved to complete the entire extension of Route 2, which runs from Cairo to Aswan along the Nile. The pavement of the route of about 350 km from Edfu to Marsa Aram on the Red Sea is poorly maintained and repair or re-pavement is needed in many sections.

Motorable roads in the Project Area are extremely limited except in the vicinity of Aswan City; the total extension of paved roads is only about 170 km covering city center - Sahara City - Aswan Airport (about 25 km), Aswan Airport - Kurkur (about 50 km), Abu Simbel - Tushka

(about 30 km), and Aswan - the iron ore mine to the east of the City (about 65 km), the rest being so-called caravan paths which are motorable only by four-wheel drive vehicles.

The western shore of High Dam Lake has a generally flat topography, while a series of 100- to 200-m rocky hills extend on the eastern shore. Several wadis are cut on the eastern shore and their beds are generally flat with a breadth of several hundred meters to several kilometers. In other words, road construction is believed to be generally easy in the Project Area. The construction of Aswan Airport - Kurkur road (paved, 7-m wide driveway, 3-m shoulders) costed approximately £E 560,000 per kilometer.

(b) Traffic Volume and Commodity Flow

Exact information on traffic volume and commodity flow is not available in Aswan Governorate, where no comprehensive traffic survey or traffic counting has ever been attempted. Despite the claim that traffic has rapidly increased on Route 2 in recent years, the average daily traffic (ADT) was observed during the field survey to be from 300 to 500 vehicles at the most, indicating that this road still has an extra capacity. No serious traffic congestion can be observed in Aswan City and its vicinity. Narrow streets around the city's market, however, are congested with mixed traffic of pedestrians, horse carriages, and motor vehicles and it will be necessary to shut out motorized traffic during rush hours.

The number of motor vehicles (all categories) registered in the Governorate has increased in recent years at an annual rate of about 20% (see Table 1-3-1). Particularly, lorries have increased by over 40% in 1979. The number of registered motor vehicles, however, is still less than 4,000, and the diffusion ratio is about six motor vehicles per thousand of population, which is about one-half of the national average.

Table 1-3-1 Registered Motor Vehicles in Aswan Governorate

	1976	1977	1978	1979 (as of May)
Private car	754	857	921	1,022
Taxi	655	833	945	1,115
Truck	354	469	624	874
Public Bus	40	49	62	62
Private Bus	58	69	75	81
Tourist Bus	16	17	19	23
Motorcycle	465	550	640	743
Total	2,342	2,844	3,286	3,920

Source: Traffic Police Station of Aswan.

Table 1-3-2 presents inter-regional commodity flow vis-a-vis Aswan Governorate according to the highway origin-destination survey conducted by the Transport Planning Authority, the Ministry of Transport. The Authority is currently working on a Master Plan for National Transportation Development as a part of the National Transport Study initiated for the purpose of obtaining basic information for the formulation of the 1976-1978 program. As indicated in the table, a yearly total of 787,000 tons of goods were carried out of Aswan Governorate, and 1,034,000 tons into the Governorate, by road in 1976. Farm products accounted for 66% of these goods in either direction.

(c) Passenger Traffic

Approximately 75% of inter-city bus passengers are being transported by four public bus companies, which divide their operation routes by region. Aswan Governorate is serviced by the General Nile Bus Company for Upper Egypt, which had a fleet of 716 buses in 1975. An urban or suburban bus system found in large cities in the delta is non-existent in Aswan City, and taxi cabs play the major role in intra-city public transportation. Traditional one-horse carriages are more casual means of public conveyance.

Bus companies are required by law to operate for fares lower than costs; against the average fare of approximately 3 milliemes per passenger-kilometer, the average operation cost, including interest and depreciation, is about 3.5 milliemes per passenger-kilometer according to the 1976 National Transport Survey. Taxi fares are not regulated and are left to negotiation between the cab driver and the passenger. The said survey estimated the cab operation cost to average 7.1 milliemes per passenger-kilometer.

(d) Cargo Traffic

Highway freight is handled by five public companies and private-sector operators, each employing approximately the same number of lorries and trailers. The public companies were reorganized from several regional companies which had originally been established to service large state-owned manufacturing and trading enterprises. They are General Nile Company for Overland Transport, General Nile Company for Goods Transport, General Nile Company for Transport Works, General Nile Company for Direct Transport and General Nile Company for Heavy Transport.

Truck cooperatives, which have been organized on a governorate level with the government guidance, play vital roles in the private sector. The cooperative for Aswan Governorate, called the Goods Transport Society of Aswan, has a membership of about 100 operators, some of which are unions of private truck owners. The Society provides necessary administrative and marketing overhead services, leaving the operation of lorries, totalling about 130 vehicles, to individual truck owners. The Society arranges contracts with customers, and the members are paid according to the contract.

Table 1-3-2 Inter-regional Commodity Flow by Road (1976)

A. From Aswan Governorate

Origin \ Commodity Group	All Commodities	Corn, Wheat and Maize	Other Farm Products	Live-stock	Steel	Other Con-struction Materials	Manu-factured Fertilizer	Other Manu-factured Products	Other, Non-identified
1. Greater Cairo	326		196	5		64	8	15	38
2. Qalyubia except G. Cairo	7			7					
3. Western part of Sharkiya									
4. Port Said									
5. Dakahlia	9		4	5					
6. Part of Gharbiya	1		1						
7. North-eastern Gharbiya	6		6						
8. Western part of Beheira									
9. Alexandria	10		10						
10. Fayoum	18		18						
11. Beni Suef	129		129						
12. Minya	140		73				55	12	
13. Assuit	21		11	4				6	
14. Sohag	58		55		2			1	
15. Qena	46		6				25	9	6
16. Red Sea	16	11						1	4
Total	787	11	509	21	2	64	88	44	48

(continued on the next page)

Table 1-3-2 (continued)

B. To Aswan Governorate

Origin \ Commodity Group	All Commodities	Corn, Wheat and Maize	Other Farm Products	Petroleum and Related Products	Steel	Lumber and Timber	Other Construction Products	Other Manufactured Products	Other, Non-identified
1. Greater Cairo	185		15	20	5	6	37	68	34
2. Qalyubia except G. Cairo									
3. Western part of Sharkiya	3	3							
4. Port Said	137	137							
5. Dakahlia									
6. Part of Gharbiya	196		90	7					99
7. North-eastern Gharbiya	64	11	53						
8. Western part of Beheira	13		13						
9. Alexandria	311	43	211			48			9
10. Fayoum									
11. Beni Suef									
12. Minya	11		11						
13. Assuit	1							1	
14. Sohag	3					3			
15. Qena	22	8	1					3	10
16. Red Sea	88	47	41						
Total	1,034	249	435	27	5	57	37	72	152

Source: Arab Republic of Egypt, Ministry of Transport, Transport Planning Authority, Egypt National Transport Study: Interim Report, 1977, by Louis Berger International, Inc./Dorsch Consult Ingenieurgesellschaft mbH.

A majority of the Society members own and operate one lorry; a few own more than one lorry, while some group together to own a single truck. Members pay 5% to 10% of the proceeds to the Society. The size of lorries ranges from 8 to 15 tons, and most of the lorries are from 5 to 10 years old.

The freight rate depends on the kind and volume of goods and distance to destination, but averages about 15 milliemes per ton-kilometer. The most typical examples are £E 12 for Aswan - Cairo (900 km) and £E 15 for Aswan - Alexandria (1,220 km).

(2) Railway

(a) Railway Network

Railway lines owned by the Egyptian Railway Authority (ER, a semi-independent organization under the Ministry of Transport) extend 3,950 km, or, including side lines, 7,094 km. All tracks are of the standard gauge (1,435 mm) and 951 km are double-track. Major railway routes are: Aswan High Dam - Cairo - Alexandria (1,107 km), Banha - Ismailia (113 km), Suez - Port Said (173 km), and Alexandria - Libyan boarder (561 km). In addition to the state railways, a narrow-gauge railway with a total extension of about 200 km is operated locally in Upper Egypt, with technical assistance from the Authority, exclusively to convey sugarcane.

Most of ER's major routes were constructed prior to World War II, and track maintenance has been inadequate. Efficient operation is hindered by antiquated rails, replacement of which is long overdue, the obsolescence and shortage of locomotives and cars, and the lack of spare parts. ER's investment has been concentrated on passenger facilities rather than on goods conveyance facilities. As a result, while the number of railway passengers has increased, goods transport has shifted from railway to road and waterway. Railway freight decreased from 10.4 million tons in 1970 to 8.3 million tons in 1979.

Of Cairo - Aswan line (900 km), the portion which is under the jurisdiction of Aswan Operation Office is from Naga Hamady, some 353 km north of Aswan City, to the terminal near the High Dam. The Aswan - High Dam section extends about 20 km, and has three stations in between, i.e., Shick Haron, Kima, and El Sadaka.

(b) Goods Traffic

Transportation of sugarcanes and molasses partially having shifted from railway to road, railway goods traffic has continued to fall since 1970, as indicated in Table 1-3-3. In Egypt, a few commodities make up most of the railway goods traffic; sugarcanes and cereals are the most important, followed by iron ores on the new Bahariya Oasis line. These three commodities accounted for 50% of total tonnage and 52% of total ton-kilometers in 1975. Major commodities shipped from Aswan to the delta area are fertilizer from the Kima Factory (800 tons/day),

phosphorite from Sebaiya (300 tons/day), sugar from Kom Ombo and Edfu (300 - 500 tons/day) and fish from High Dam Lake (70 - 80 tons/day in winter, 30 - 40 tons/day in summer).

Table 1-3-3 Egyptian Railway Goods Traffic (1970-1977)

Year	Tons (mil.)	Ton/km (mil.)	Average Haul (km)
1970/71	10.43	3,196	306
1971/72	9.35	2,838	303
1973	8.38	2,461	294
1974	8.40	2,363	281
1975	7.80	2,190	281
1976	7.20	n.a.	n.a.
1977	8.30	n.a.	n.a.

Sources: Ministry of Transport, ibid, and CAPMAS, Statistical Handbook, 1978.

(c) Passenger Traffic

Passenger traffic has grown rapidly, with the number of trips increased at an average annual rate of 7.4% during 1970/71 to 1975. Figures in Table 1-3-4 include trips by season and reduced rate tickets, which accounted for 21% of the main and branch line trips and 39% of the suburban trips in 1974. The main and branch lines made up 43% of the total trips and 81% of the total passenger-kilometers in the same years, and the average distance per trip was 56 km on main and branch lines and 10 km on suburban lines.

Table 1-3-4 Egyptian Railway Passenger Traffic (1970-1975)

	Main/Branch (million trips)	Suburban	Total	Pass. km (million)	Aver. Trip (km)
1970/71	91.0	130.2	221.2	6,772	30.6
1972	105.2	142.4	247.5	7,216	29.2
1973	117.5	164.8	282.2	8,528	29.3
1974	125.8	167.2	293.5	8,671	29.5
1975	129.2	176.0	305.3	8,831	28.9

Source: Ministry of Transport, op. cit.

The Cairo - Aswan line is served by six passenger trains daily, three of which are express (traveling in about 16 hours). The number of passengers originating from Aswan was 438,000, including short-trip passengers, during the month of January, 1979. Between Aswan and the High Dam Terminal, ten commuter trains are operated daily to carry workers from Aswan to the Kima Factory or to the High Dam area and back.

(d) Tariff System

The ER tariff system currently in force is shown in Table 1-3-5. The freight tariff, which is under the national government control, had remained unchanged from 1957 until July of 1976. Under the long-frozen tariff, the railway operation cost had come to exceed the revenue by such a large margin that the ER incurred a net loss of £E 22 million in 1977. The 1976 tariff revision raised the rates for commodity classes 3 to 6 by 70% and those for classes 7 through 13 by 100%. The tariff system applies retrogressive rates whereby the charge is reduced by 50% for the portion of hauls exceeding 250 kg and by 75% for the portion exceeding 500 kg.

The passenger tariff was increased by about 25% in August of 1967. Fares are based on distance, with the rate per kilometer reduced at 300 km for first class, at 40 km and 300 km for second class, and at 40 km, 100 km and 300 km for third class. The rate for second class (un-airconditioned) is about twice the third class rate, and the rate for first class (air-conditioned) about four times the third class rate. Aswan - Cairo fares are shown at the bottom of Table 1-3-5B. An additional fare for sleeping car is £E 6.05 for first class (single compartment) and £E 4.05 for second class (twin compartment).

(3) Inland Waterway

(a) River and Canal Transportation

The total extension of navigable inland waterways in Egypt is about 3,100 km, one-half of which is the Nile River and the remaining one-half is canals. About 50% of the total load capacity of vessels now in service belongs to a government-operated company, and the remainder is operated by private companies. More than 90% of privately operated vessels are traditional sail boats. The volume of cargo moved yearly over inland waterways is estimated to have been about 3 million tons in the early 1970s. The construction of the High Dam lowered the level of the Nile water, and the resultant limitation on the loaded draft impedes an expansion of surface water traffic.

Barges are engaged in conveyance between Aswan and downstream areas. Upstream cargo is cement, iron and steel products and rice, and down-stream cargo comprises such mineral resources as quartz, kaolin and marble, and livestock products imported from the Sudan. Barges make the round trip between Aswan and Cairo in about two weeks.

Table 1-3-5 Egyptian Railway Tariff System (1978)

A. Freight Tariffs (milliemes per ton km)

Distance (km)	Tariff Class					
	3	4	5	6	7	8
Less than 251	25.50	21.25	17.00	13.60	12.00	10.00
251 - 500	12.75	10.63	8.50	6.80	6.00	5.00
501 and over	6.38	5.32	4.25	3.40	3.00	2.50

	Tariff Class				
	9	10	11	12	13
Less than 251	8.00	6.00	5.00	4.00	3.00
251 - 500	4.00	3.00	2.50	2.00	1.50
501 and over	2.00	1.50	1.25	1.00	0.75

B. Passenger Tariffs (milliemes per pass. km)

Distance (km)	First Class		Second Class		Third Class
	A/C	not A/C	A/C	not A/C	
0 - 40	12.00	10.75	7.25	6.00	3.00
41 - 100	12.00	10.75	6.96	5.76	2.88
101 - 300	12.00	10.75	6.96	5.76	2.76
301 and over	8.40	7.53	4.87	4.03	1.93
Aswan - Cairo (879 km)	£E 10.250	-	£E 5.430	£E 3.730	£E 1.795

Notes: 1. Examples of commodities are:
- Class 3: military equipment, explosives, tobacco and cigarettes, medicines, cars, furniture and perfumes
- Class 4: chemical products
- Class 5: machinery, trucks and silk
- Class 6: cotton textile and shoes
- Class 7: benzine, timber, claytile, glass sheets, iron and steel
- Class 8: eggs and bamboos
- Class 9: cotton, fresh fruit, leather and glass
- Class 10: fresh meat, poultry and fresh fish
- Class 11: groceries, confectioneries, lumber, solar and diesel
- Class 12: cokes for cooking, refined sugar
- Class 13: iron ores, coals, phosphates, fertilizers, bitumen, sand, gravels, cement, stones, gypsum, building materials, unrefined sugar, molasses, onions and cotton seeds

2. Additional charges are collected for:
   a) administration 2 milliemes/10 kgs.
   b) loading 2.5 "
   c) unloading 2.5 "

Source: Cairo Central Station.

There is no formally regulated or fixed tariff for inland waterway transport. Each contract is negotiated with the consigner in advance. The price charged depends mainly on the value, lot size and kind of goods to be carried and on the distance of haul. The minimum requirement is 220 tons. The average charges from Aswan to Cairo and to Alexandria are £E 4.00 and £E 6.50, respectively.

"Floating hotels" for tourists are also in service between Aswan and Luxor. The Isis and the Osiris are the largest of the vessels which can pass the lock gate at Esna. They cruise from Luxor to Aswan in 5 days, stopping for sightseeing on the way and can accommodate 127 passengers each and charge £E 350 per person per trip.

(b) Lake Transportation

Over High Dam Lake, the regular shuttle service is provided between Aswan and Wadi Halfa in the Sudan by the Nile Valley River Transport Corporation, which was established in January 1978 as an equal-share joint venture by Egypt and the Sudan with a capital of £E 5 million. Eight passenger ships (including four engined ships) and seven freighters (including two pushers) owned by this company are all re-built from outworn vessels and are inadequate in capacity and performance. The company is currently negotiating a purchase of new vessels. In 1978, approximately 103,000 passengers and 15,000 tons of cargo were transported, grossing £E 83,000. Three hydrofoil boats were operated between Aswan and Abu Simbel during the first half of the 1970s but have remained inactive due to mechanical failure.

Table 1-3-6 Major Commodities of Lake Transportation (1978)

A.	From Aswan to Wadi Halfa	
	a. Plastic Products	1,911 tons
	b. Glass Products	741 tons
	c. Aluminum Products	688 tons
	d. Cement	2,000 tons
	e. Cotton Clothes	4,022 tons
	f. Cars	274 vehicles
	g. Miscellaneous	5,600 tons
B.	From Wadi Halfa to Aswan	
	a. Dates	240 tons
	b. Live Animals	8,300 heads

Source: Nile River Transport Corporation.

(4) Civil Aviation

Egyptair is the national airline and operates under the supervision of the Ministry of Aviation and Tourism. In 1975, aircraft movements numbered 43,300 at Cairo Airport and 51,200 in the entire country. There were 2.7 million passenger movements at Cairo Airport and 2.9 million in the whole country. Egypt has the Cairo International Airport and nine domestic airports, only four of which (Cairo, Luxor, Aswan and Abu Simbel) are served by regular flights of Egyptair. Inventory data of two airports in the Project Area is shown in Table 1-3-7.

Table 1-3-7 Inventory Data of Aswan and Abu Simbel Airports (1976)

		Aswan Airport	Abu Simbel Airport
Runway	Direction	17/35	15/33
	Length (m)	3,000	2,500
	Surface	C	C
	Strength (kg)		
	AUW_1	45,351	38,000
	AUW_2	81,632	55,000
	AUW_4	158,730	90,000
	Width (m)	45	45
Taxiway	Surface	concrete	concrete
	Strength	LR	LR
	Width (m)	45	30
Apron	Dimension (m)	300 x 100	160 x 1,000
	Surface	concrete	concrete
Passenger Terminal Capacity		100 PAX at one time	100 PAX at one time
Power Supply		220 volts, 50 hertz	220 volts, 50 hertz
Water Supply		municipality	municipality
Fuel Supply		available hydrant	none
Navaid		NDB	NDB
Permanent Staff at the Airport		117	15

Source: Ministry of Transport, op. cit.

(a) Aswan Airport

The airport is located approximately 19 km southeast of Aswan City. Access to the airport, which is under military control, is limited to buses run by Egyptair on aircraft arrival or departure, and taxi cabs and private cars are not allowed to approach the airport without permission.

The runway of the airport is adequate for Model B737, but is marginal for B707 service. The taxiway is the same length and width as the runway and runs parallel to it at a distance of 150 m. The passenger terminal building is a simple two-story building with the tower on top. The ground floor can accommodate about 100 passengers at a time. There are no appropriate check-in counter, baggage delivery belts, immigration, health or customs facilities. Aswan Airport is located in undulating desert, causing no environmental hazard. Aircraft movements and number of passengers at Aswan Airport are shown in Table 1-3-8.

Table 1-3-8 Aircraft and Passenger Traffic at Aswan Airport

	Aircraft	Passenger (000)
1971	616	34
1972	1,150	88
1973	1,488	84
1974	1,916	121
1975	1,762	163
1976	1,872	209
1977	3,306	221

Note: Figures are totals of departures and arrivals.

Source: CAPMAS, op. cit.

(b) Abu Simbel Airport

The airport was completed in 1971. The passenger terminal consists of a passenger area and a control tower. The ground floor passenger hall can accommodate about 100 passengers at one time. The first floor provides room for offices and telecommunications; the top floor composes the tower. Except for the necessity of repairing the joint sealant on the runway, apron and taxiway, this airport functions well for its major purpose, i.e., tourist traffic to the Abu Simbel temple. Abu Simbel is located in the middle of the desert, causing no environmental hazard. Aircraft movements and passenger traffic at Abu Simbel Airport are shown in Table 1-3-9.

Table 1-3-9 Aircraft and Passenger Traffic at Abu Simbel Airport

	Aircraft	Passenger (000)
1971	148	2
1972	273	3
1973	618	32
1974	335	7
1975	418	9
1976	542	15
1977	956	21

Note: Figures are totals of departures and arrivals.

Source: CAPMAS, op. cit.

(5) Administration and Planning

Four government ministries, i.e., the Ministry of Transport, the Ministry of Tourism and Aviation, the Ministry of Shipping, and the Ministry of Development and New Communities, as well as some thirty public agencies are involved in the planning, investment, and operation of the transportation sector. Inter-modal coordination is the responsibility of the Transport Planning Authority (TPA, a part of the Ministry of Transport). It is the Ministry of Planning that coordinates investments in the sector, and budget allocations are made by the Ministry of Finance. It has been repeatedly pointed out that the division of responsibility has reduced administrative efficiency and hampered the consistency and coherence of transportation policies and planning.

By noting that the transportation sector received less attention than it was due during the previous development plans, the Egyptian Government has allocated to this sector a total of £E 2,782 million (in 1977 prices), or 27% of the total government development budget, in the current Five-Year Plan (1978-1982).

In 1975, TPA initiated a National Transport Survey in order to formulate, in a long-term perspective, a consistent framework for development policies and planning. The first phase of the Survey was already completed, and a voluminous interim report has recently been compiled, presenting the analysis of the problems on the basis of the gathered information. The two-year second phase survey is scheduled to start in October 1979 in order to formulate development programs for the next Five-Year Plan on the basis of the long-term prospects through the year 2000.

1.3.2 Telecommunications

(1) Telephone

One of the weakest of infrastructures in Egypt is its telephone network with the current installation of 350,000 telephones against a back log of over 200,000 applications. The back log is feared to increase to 500,000 within 5 years. The current pace of telephone installation by the Telecommunications Organization is about 10,000 per year, and not a few applicants are kept waiting for more than 8 years.

A total of about 2,660 telephones are installed in Aswan Governorate, with 2,000 in Aswan City, 300 in Kom Ombo, 300 in Edfu, and 60 in Nasser City. The demand in the Governorate far exceeds the service now offered and about 1,500 applicants are waiting for installation. In an attempt to mitigate the situation, the Telephone and Telegram Authority of Aswan installed a new automatic exchange at the Aswan City Telephone Centre in 1978, adding about 200 new lines. The Centre will install 1,000 more telephones in Aswan City and replace 300 old-fashioned magnetic telephones with 500 automatic units each in Kom Ombo and Edfu in 1979. A long-term plan envisages the expansion of Aswan City's network to 5,000 telephones and the establishment of a new 2,000-line center to serve the university to be constructed near the High Dam and to connect the center with the Aswan Centre by cable. Long distance telephone service is provided between Aswan and Cairo by coaxial cable with a 480-line capacity. Although calls to Cairo are frequently delayed, there is no plan to expand the capacity.

The telephone installation fees and call charges are shown in Table 1-3-10. As evident in the table, the charge is kept very low relative to the average installation cost in Aswan City of about £E 400 per line (£E 200 for line installation plus the cost of central exchange).

Table 1-3-10 Telephone Installation Fee and Call Charges (July 1979)

		Initial Charges		Annual Charges
		Installation	Insurance	
Home Use		£E 50	£E 10	° Minimum £E 18 (payable in 4 installments) up to 1,500 calls ° 1 Piastre per call in excess of 1,500 calls
Government		100	10	
Business Use:	Stores	100	10	
	Offices	150	10	

Source: Telecommunications Organization, Aswan.

(2) Telex

A total of 600 telex lines were in operation as of 1976, and telex services are becoming increasingly available in Egypt. Subscribers to the international exchange can contact parties in Europe, the United States, Japan, Libya, the Sudan, and Kuwait without much delay. The current Five-Year Plan anticipates an additional installation of 5,000 units in Cairo and 600 units in Alexandria within the plan period.

Only six telex units are installed in Aswan Governorate as of now, three of which (Oberoi Hotel, Cataract Hotel, and Misr Travel Office) are linked to the international exchange and the remaining three (Egyptair Office, Kima Factory, and ASU Aswan Office) can make spot-to-spot local calls. The Aswan Office of the Telephone and Telegram Authority is currently planning to install a telex unit for public use.

1.3.3 Power

(1) Current Situation

Early in 1976, the electric power sector was reorganized and four new authorities were established: the Egyptian Electric Authority (EEA) which controls power generation and transmission, the Rural Electrification Authority (REA) dealing with power distribution to consumers, the Nuclear Power Plant Authority (NPPA) in charge of a nuclear plant (600 MW) being planned at Sidi Krir, and the Qattara Depression Authority (QDA) in charge of a hydropower station (640 MW) being planned at the Qattara Depression (approximately 160 km southeast of Alexandria) to utilize water channeled from the Mediterranean. These authorities are under control of the Ministry of Power and Energy.

The installed capacity of electric generation in Egypt as of 1976 reached approximately 3.9 GW, two-thirds of which are installed at the High and Old Dams as shown in Table 1-3-11. The maximum effective capacity of the High Dam station remained at 1.3 GW relative to the design capacity of 2.1 GW, due to problems of transmission. Improvement of the transmission system is currently being planned to raise the maximum effective capacity to 1.8 GW by 1983.

Table 1-3-11 Installed Capacity

Region	Station	Capacity (MW)	Unit	Remark
Upper Egypt	High Dam	2,100	175 x 12	Hydro
Upper Egypt	Aswan Dam	345	46 x 7, 11.5 x 2	Hydro
Upper Egypt	Assiut	90	30 x 3	Thermal
Cairo	Cairo North	100	10 x 2, 20 x 1, 30 x 2	Thermal
Cairo	Cairo South	240	60 x 4	Thermal
Cairo	Cairo West	261	87 x 3	Thermal
Delta	Suez	100	25 x 4	Thermal
Delta	Talkha	127	12.5 x 3, 30 x 3	Thermal
Delta	Damanhour	225	15 x 2, 65 x 3	Thermal
Alexandria	Siouf	113	26.5 x 2, 30 x 2	Thermal
Total		3,951		

Source: Ministry of Power and Energy.

In 1976, the actual maximum peak load in Egypt was 1.8 GW, and the total electric energy production was 11,000 GWh, 64% of which was generated at the stations at two dams in Aswan. The average annual growth rate of the total power production recorded 6.6% in the past decade (1967-76), as shown in Table 1-3-12.

Table 1-3-12 Electricity Production in Egypt

(Unit: GWh)

Year	Hydro	Share %	Thermal	Share %	Total	Growth
1972	5,135	(64)	2,895	(36)	8,030	0.2
1973	5,157	(64)	2,947	(36)	8,104	0.9
1974	6,122	(68)	2,793	(32)	8,915	10.0
1975	6,798	(65)	3,588	(35)	10,386	17.1
1976	7,000	(64)	4,000	(36)	11,000	5.9

Source: Ministry of Power and Energy.

(2) National Development Projects

In recent years, a deficiency in production, transmission and distribution of electric energy has emerged as a serious concern of the Government. This is a direct consequence of underinvestment in this sector during the past decades as seen below (Table 1-3-13). As one of the solutions to cope with this situation, the discharge at the High Dam station has been increased more than necessary for irrigation downstream from September to April each year. To meet the expected rapid growth of electricity demand in the foreseeable future, the Ministry envisages the implementation of several development projects shown in Table 1-3-14.

Table 1-3-13 Investments of Electricity Sector

(Unit: £E million)

Year	1960-64	1965-69	1970-74	1978-82[1/]
Total Investment	112.6	239.1	127.8	874.7

Note: Planned figures.

Source: Five-Year Plan (1978-82).

Table 1-3-14 Development Program

Remark	Site	Capacity (MW)		Date of Operation
Under construction	Kafr El Dawar	110 x 2	Thermal	
Under construction	Cairo South	150 x 2	Thermal	
Under construction	Abu Qir	150 x 2	Thermal	
Planning	Sidi Krir	600	Nuclear	1981-82
Planning	Qattara	640~340	Hydro	After 1983
Planning	Nile barrages	600	Hydro	After 1983

Source: Ministry of Power and Energy.

(3) Availability of Power in the High Dam Lake Area

The electricity in the area around Aswan City is supplied by the Old Aswan Dam station whose installed capacity (345 MW) is enough for the future increase in demand in the area. It appears unlikely that electricity will be a major constraint for the development of the area. It is more desirable to consume energy generated at the Dams in Aswan City and its vicinity than in further north, because the transmission loss, for instance, from Aswan to Cairo is estimated to be around 6% of the produced energy. In Abu Simbel, diesel units are at present supplying approximately 300 KW of electricity for hotels and domestic purposes.

To meet the electricity demand expected from the proposed development of rural communities around the lake, small-scale diesel plants would be most appropriate, because the demands in these remote communities would be so small that economy of scale in constructing transmission lines will not be attained.

1.4 DEMOGRAPHIC AND SOCIAL SETTING

1.4.1 Population

(1) General Background

Socio-culturally, Egypt is a relatively homogeneous country. According to the preliminary results of the General Population and Housing Census conducted in November 1976, 93.7% of the population profess the faith in Islam, the state religion which has retained to this day its ramifying influences on all aspects of society. The Christians account for 6.3%, comprising the indigenous Copts, the largest religious minority, and other much smaller Eastern Orthodox, various Catholic and Protestant denominations. Practically all Egyptians are native speakers of Arabic. The only indigenous speakers of other languages are some 100,000 to 150,000 Nubians originating in the southern part of Upper Egypt and the Sudan, who, however, speak Arabic in addition to their various languages of Sudanic origin. The relative homogeneity of society and culture is largely a consequence of the historical fact that Egypt experienced centralized governments and civilizations for thousands of years, partly due to the requirements of irrigated agriculture developed along the Nile.

During the period from the late eighteenth to the early twentieth century, Egypt was made subject to the intrusion of European powers which established political and economic hegemony and plunged the country into production geared to world trade. The subsequent socio-political adaptations, sometimes violent, culminated in the revolt of the Free Officers in 1952 which brought Nasser to power. The new regime succeeded to drive out most of the old national elite and foreigners who had come to wield great power through amassed land ownership or mercantile interests. The newly emerged elite chiefly consisted of salaried public-sector functionaries, or "the state bourgeoisie," a trend further buttressed by the nationalization of banking and industry through the early 1960s. Common denominators of the contemporary upper class are modern education, especially in the technical and managerial fields rather than the literary and legal which used to define the outlook of the traditional elite, and urban orientation. The membership in this elite class is primarily secured through the acquisition of powerful jobs in the government and the public sector. The private entrepreneurs have been relegated to a relatively minor position, because their opportunities for investment and production were severely curtailed in the successive waves of nationalization and bureaucratization of the economy. The orientation and life style of the elite are shared by a larger number of similarly trained and salaried individuals in positions of lesser influence and also, though to a lesser extent, by an increasing number of graduates of secondary schools and higher education, many of whom, however, hold only low-salaried occupations near the bottom of the highly centralized public sector bureaucracy.

The modernization and development of Egypt have been based on direct and extensive government initiatives and involvement in the management of the economy, with socialist emphasis on more equitable distribution of wealth and opportunity as seen in the agrarian reform, cost and price controls, labor laws, and policies on education, health and social welfare. The gradual institutional reform of Islam is one of the important aspects of this transformation. The emergence of influential reformist leaders from within the ranks of the traditional religious authorities at Al Azhar since the late nineteenth century and increased government control over religious institutions in financial terms contributed to creating a social climate where the tenets and moral concepts of Islam were so interpreted as to come to terms with government programs and policies. Such interdependence forged between governmental and religious institutions, though not without tensions, was one of the bases on which the educated upper and middle classes emerged and increased their urban-oriented influence.

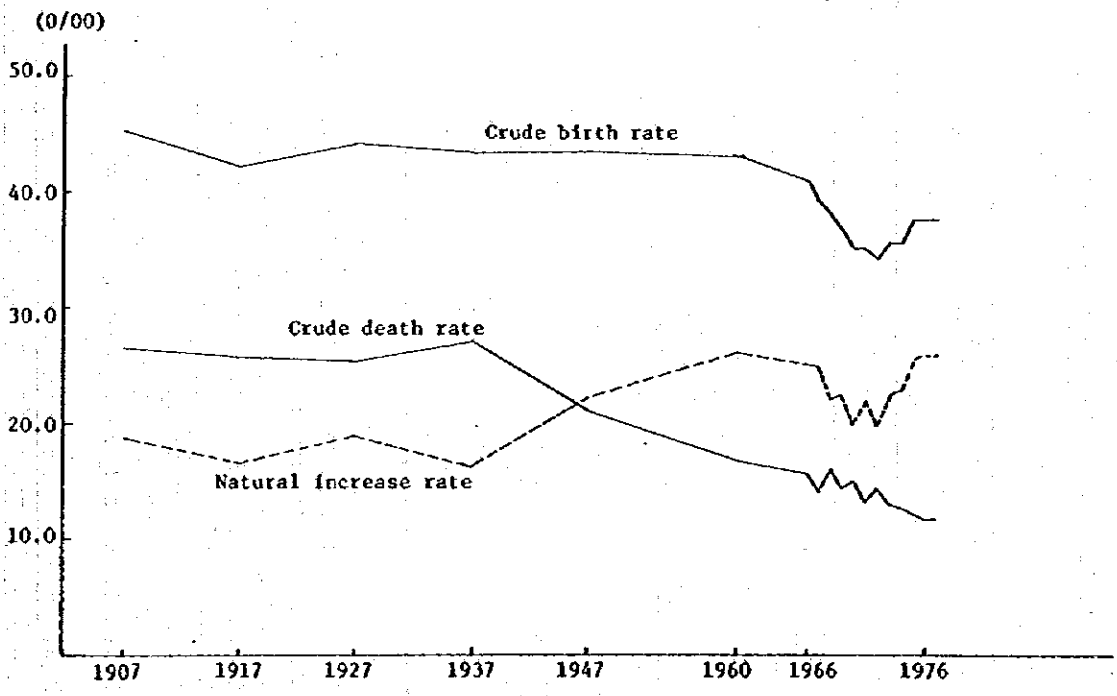
The clear distinction between villages and cities is, however, one of the persistent characteristics of Egypt despite the enormous changes that occurred in the upper echelons of the society. In contrast to urban areas, rural areas, where 56% of the country's population resided in 1976, have maintained to this day most of the traditional values and customs. The rural religion contains many beliefs and practices which diverge from orthodox Koranic Islam and thrives largely oblivious of the trends in urban areas. Improved educational opportunities and transportation means have facilitated the heavily lop-sided movement from the countryside to cities of the relatively well educated younger generation as well as the displaced in the rural economy. This has left the village ways of life largely intact. Although the rural-urban gap has been gradually diminishing due to the government efforts at better provisions of basic needs services and local agricultural and industrial development, village communities still carry on their affairs more or less isolated from the occurrences in the national centers and from one another. The school teachers, doctors and various administrative officers stationed in rural areas are yet a distinct class of outsiders in their outlook in the village setting.

One should not, of course, push the simplistic presentation of the urban-rural distinction too far. For, some of the major traits of the traditional ruralism are reportedly found in such large cities as Cairo and Alexandria as well as local cities. Especially, the unskilled and underskilled migrants from rural areas partly embrace a mental universe of the village life and try to retain personalistic face-to-face relationships in the neighborhoods and work places. Previous contacts in the villages of their origin are important in easing various difficulties involved in the migrants' transition from the rural to urban setting, although the radically different environment of cities does not allow exact replication of village life. Nevertheless, cities have been the primary crucibles of social change. Especially volatile are large cities like Cairo and Alexandria with their concentrated and stratified distribution of power, wealth and opportunity, by virtue of which they are highly attractive to certain segments of the rural population.

(2) National Growth Trends

According to the first modern census undertaken in 1897, the population of Egypt then numbered 9.67 million. The annual growth rate through 1947 averaged 1.35%, and the population slightly more than doubled to 18.97 million in 50 years. As indicated in Table 1-4-1, the growth trend accelerated after the Second World War, peaking during the period of 1960 - 1966 at 2.5% per annum. Although the average annual growth rate declined appreciably during the last decade of 1966 - 1976 to 2.3%, this time it took only 30 years for the population to double to 38.22 million. The population density is 37 persons per km^2, a misleading figure because approximately 95% of Egypt's land area is uninhabitable desert as reflected in the extremely low density in frontier governorates. When the uninhabited desert area is excluded, the figure is roughly 1,023 persons per km^2, and this high density is the striking characteristic of Egypt even in the rural areas.

Figure 1-4-1 Crude Birth and Death Rates in Egypt (1907-1976)
(per 1000 persons)



Source: Central Agency for Public Mobilization and Statistics (CAPMAS), Statistical Yearbooks, 1977 and 1978.

Table 1-4-1 Regional Growth Trends and Population Distribution in Egypt

	Average Annual Growth Rate of Population (%)				Share of Total Population (%)	Population Density[1] (persons/km^2)	
	1937-47	1947-60	1960-66	1966-76	1976	1966	1976
Whole Egypt	1.8	2.3	2.5	2.0 (2.3)[2]	100.0	30	37
Urban Egypt	5.4	3.6	3.4	3.0	43.9		
Rural Egypt	0.4	1.8	1.8	1.3	56.1		
Urban Governorates[3]	4.2	3.5	3.7	1.8	21.5	4,000	4,787
Lower Egypt[4]	1.3	2.2	2.4	2.2	43.4	591	732
Upper Egypt[5]	1.2	1.8	1.9	2.1	34.5	843	1,035
Frontier Governorates	5.8	2.8	2.0	-3.9	0.6	0.4	0.2
Aswan Governorate	-0.5	2.2	5.1	1.8	1.7	590	702
Urban Aswan[6]	1.8	3.7	10.9	2.3			
Rural Aswan	-1.0	1.7	2.7	1.4			
Aswan City	1.7	7.7	12.5	1.2			

Notes:
1/ Based on the governorate boundaries in 1966.
2/ Excludes overseas Egyptians and residents in the then occupied Sinai Peninsula. The figure in parentheses is the growth rate which includes them.
3/ Consists of Cairo, Alexandria, Port Said and Suez.
4/ Consists of Damietta, Dakahlia, Sharkia, Kalyubia, Kafr-El-Sheikh, Gharbia, Menoufia, Behera and Ismailia.
5/ Consists of Giza, Beni-Suef, Fayoum, Minya, Assiut, Sohag, Qena and Aswan.
6/ Consists of cities of Aswan, Kom Ombo, Edfu and in 1976 Nasser in addition.

Sources: CAPMAS, Preliminary Results of the General Population and Housing Census 22/23 November 1976, and Regional Census (Sohag, Qena, Aswan and Red Sea South) 1976.
Janet L. Abu-Lughod, "Urbanization in Egypt: Present State and Future Prospects," Social Research Center Reprint Series No. 5, reprinted by the American University in Cairo from Economic Development and Cultural Change, Vol. XIII, No. 3, April 1965.

As shown in Figure 1-4-1, the cause of the rapid post-World War II increase was, as commonly found in other developing countries, a gradual decrease of the death rate relative to the stable birth rate. The deceleration since the mid-1960s was largely due to the sharp drop of the birth rate lasting till 1972. It is not clear, however, whether the general growth trend will continue to decelerate in the future or not and at what rate. The period from 1966 through 1972 when the birth rate dropped rapidly, for instance, coincided with the high military mobilization due to the hostilities with Israel. Extended military engagement and consequent displacement of some segments of the population must have contributed to the sharp decline, as evidenced by the recovery of births, and consequently natural increases, in the following years when the disengagement talks were started and settled. The natural increase rates of over 2.5% in 1975 - 1977 could be overestimates, considering the general tendency to delay death registration while reporting births promptly (a birth certificate is necessary to obtain a ration card and other benefits), or else could be a temporary post-war baby boom. In any case, the inadequacy of data on the past fertility and mortality trends prevents definite conclusions on which to project the future population growth trend with reasonable accuracy.

This does not mean that the available studies conducted during the 1960s indicate no discernible trends. Abu-Lughod found, for instance, on the basis of the 1960 population census of Cairo Governorate that the educational attainment of urban women positively correlated with later marriage and that it had an inverse relationship with the number of live births borne by them and, so did the occupational status of their husbands, though to a lesser extent.[1/] Gadalla, on the other hand, found on the basis of the fertility survey conducted in three villages in Lower Egypt in 1969 that rural women had high crude fertility rates (on average ten live births throughout their average married life of 32 years) largely due to high infant and child mortality (the standardized survival ratio of 63.6%) despite their ideal of moderate-size families of three or four children.[2/] But he also pointed out that the inverse relationship between the educational level of women and the crude fertility rate was apparent among the few women with secondary or higher education. The highest educated group apparently made efforts to end child-bearing after achieving the number of children they wanted during the earlier years of their married life, while the lesser educated and illiterate women, who usually married earlier, continued child-bearing to the end of their reproductive years.

1/ Janet Abu-Lughod, "The Emergence of Differential Fertility in Urban Egypt," Social Research Center Reprint Series No. 1, Reprinted by the American University in Cairo from Milbank Memorial Fund Quarterly, April 1965, Vol. XLIII, No. 2.

2/ Saad M. Gadalla, Is There Hope?: Fertility and Family Planning in a Rural Egyptian Community, The American Univ. in Cairo Press and the Carolina Population Center (The Univ. of North Carolina), 1978.

Despite the educational policy to give equal opportunities to both sexes, however, the illiteracy among the females (10 years and over) is still high at over 70% in mid-1970s, and women with higher academic qualifications account for only 1.2% of the total female population aged 10 years and over. However significant the female educational attainment and perhaps urbanization and husbands' socio-economic status as well are in lowering fertility, their combined effects cannot be expected to materialize in the near future.

The future population trend, therefore, will have to be extrapolated largely on the basis of research findings and experiences obtained elsewhere in the world, allowing for a certain range of possible outcomes. According to the study paper prepared at the Institute of National Planning,[1/] the two trends of population growth are estimated through the year 2026, supposing high (10% p.a.) and low (5% p.a.) long-term per capita income growth rates with two separate assumptions on the fertility and mortality trends. That is, the range of the average annual growth rate of population is estimated to be from 2.33 to 2.57% during 1976 - 1986, 1.62 to 2.26% during 1986 - 2001 and 0.99 to 1.58% during 2001 - 2026. These growth rates imply an annual population increment from about 0.9 to a little over 1.2 million through the end of the present century, when the total population is projected to reach between 61 and 69 million depending on policy orientation. This indicates Egypt's dire need to start and continue rapid employment creation and provisions of food, shelter and various social services, including the revamping of the family planning program which has rather disappointing performance records since its introduction in the mid-1960s.

Table 1-4-1 shows the regional differences of population growth in Egypt. Although vital statistics do not clearly indicate the regional differences in the rate of natural increase, the table shows the differential trends of population dynamics inclusive of geographical mobility. As is usually the case with other developing countries, rapid urbanization has been a dominant demographic characteristic in Egypt since the turn of the present century, with 56% of the total population increment during 1947 - 1976 occurring in urban areas (towns and cities with a population of 20,000 and over). The percentage of urban population increased from 32.6 to 43.9% in 30 years. The growth has been especially prominent in Cairo and Alexandria which together made up three-fourths of the total urban population increment during the same period.

As seen from Table 1-4-1, the growth of urban governorates, comprising Cairo (1976 pop. 5,084,000), Alexandria (ditto 2,319,000), Port Said (263,000) and Suez (194,000), apparently slowed down to 1.8% per annum

---

1/ Noboru Nishifuji, Mamdouh J. El-Sharkawy and Toru Isurugi, Interim Report for Long-term Development Strategy of Egypt: Long-term Population Growth and its Impacts on the Socio-economic Problems in Egypt, April 1979.

relative to the total urban growth of 3.0% during 1966 - 1976. However, this was largely due to a spill-over of the Cairo metropolitan area to adjacent cities such as Giza (1976 pop. 1,233,000) and Shubra El-Khema (394,000). The population growth of metropolitan Cairo would increase from 1.9% to 3.1% per annum when combined with the populations of these two cities alone, and together accounted for 43% of the total urban population increment during the same period. Although the growth of the primate cities of Cairo and Alexandria still dominates the process of urbanization in Egypt, the secondary moderate-sized cities have shown considerable growth. The number of cities with a population of 200,000 - 500,000 increased from none in 1947 and four in 1960 (including Giza) to seven in 1976 (excluding Giza which passed a one-million mark and including Shubra El-Khema).

Although the demographic significance is relatively small, the presence of overseas Egyptians must be noted in 1976. According to the preliminary census estimate, the overseas Egyptians numbered 1.4 million in 1976, the bulk of which is attributable to the recently increased demand for labor in neighboring oil-exporting countries. The number accounts for only 3.7% of the total population and is unlikely to increase further in the future, but its economic impact has been undeniably significant with mixed effects. External migration has become a major source of scarce foreign exchange in the form of remittances and relieved the problem of domestic unemployment, on the one hand, and drained certain scarce segments of the labor force which are in great demand in the domestic labor market as well, on the other.

(3) Characteristics of Aswan Governorate

The population of Aswan Governorate numbered 305,000 in 1937 and more than doubled to 620,000 in 40 years. As shown in Table 1-4-1, the Governorate showed a high population growth of 5.1% per annum during 1960 - 1966 largely due to the construction of the High Dam, but during the subsequent decade it reverted to the status shared by many other governorates which had considerable net out-migration. Aswan City was the most affected by the High Dam construction in the Governorate. It was a provincial capital with only 22,000 inhabitants in 1937 and even a little smaller than Kom Ombo and Edfu, the two other urban centers of the Governorate. The High Dam construction boosted the City's population in the early 1960s which doubled from 63,000 in 1960 to nearly 130,000 in 6 years. The growth obviously tapered with the completion of the Dam since then, but Aswan remains the primary city of 144,000 inhabitants in 1976, distantly followed by Kom Ombo and Edfu.

The Governorate is currently divided into four administrative divisions as shown in Table 1-4-2, and the population distribution is fairly even except for the Nasser Division which consists of the relocated Nubians. Neighboring villages and hamlets are usually grouped to form one unit for administrative purposes with a combined population ranging from approximately 10,000 to 20,000. The population of the Project Area, which for practical purposes coincides with the Aswan Division, numbers 182,131 in 1976.

Table 1-4-2 Population Distribution in Aswan Governorate (1976)

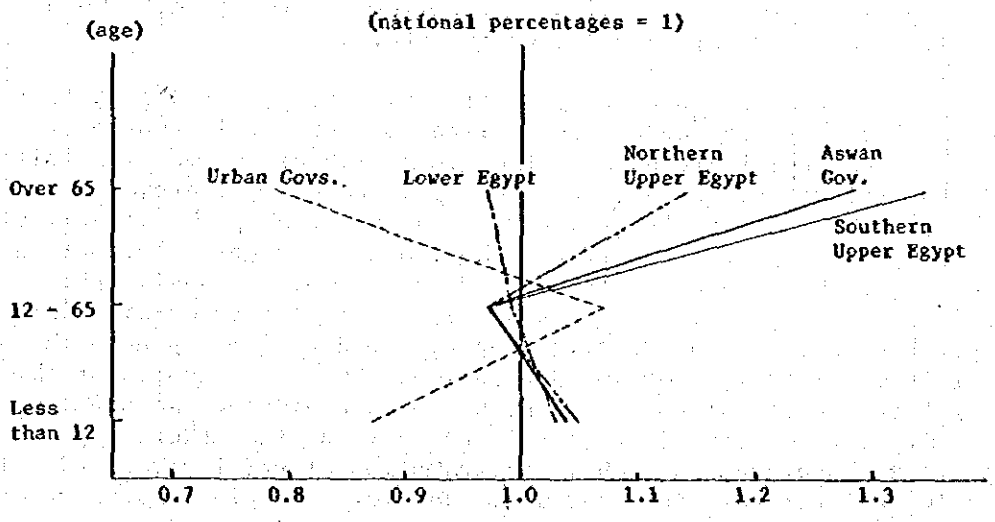
Aswan City	144,377
Rest of Aswan Division	37,754
of which, Centralized Village Units (2)	30,081
Others (3)[1/]	6,660
Lake Fishermen	1,123
Sub-total	182,131
Kom Ombo City	44,531
Centralized Village Units (8)[2/]	147,089
Sub-total	191,620
Edfu City	34,858
Centralized Village Units (7)	154,397
Sub-total	189,255
Nasser City	5,891
Centralized Village Units (6)	51,025
Sub-total	56,916
Governorate Total	619,932

Notes:
1/ Consists of Sahara City and High Dam (pop. 5,965), Iron Mine (182), and Abu Simbel (403), which are part of Aswan City in terms of administrative and social services. Abu Simbel, however, has recently been given the status of township.
2/ Includes the town of Daraw (pop. 18,793).
3/ Figures in parentheses show the number of village units.

Sources: CAPMAS, Regional Census (Sohag, Qena, Aswan and Red Sea South) 1976. Information from Regional Planning of Aswan.

The major demographic characteristics of Aswan Governorate are the low percentage of the broad age group of 12 - 65 years and the low sex ratio (the number of males per 1,000 females). Egypt as a whole has a high proportion of youthful population, reflecting the past rapid natural increase, and the age group below 12 years accounts for 32% of the total in 1976 (Table 1-4-3). The proportion of young population is appreciably higher in Lower and Upper Egypt than the national average. Especially, both Northern and Southern Upper Egypt have sharply contrasting broad age structures relative to the urban governorates, with their relative over-representation of young and aged segments (Figure 1-4-2), or higher dependency ratios (the ratio of the population less than 12 years and over 65 years to that of 12 - 65 years). This suggests the considerable out-migration in the past of the productive segment of the population from Lower and Upper Egypt, notably from the southern portion of Upper Egypt to which Aswan Convernorate belongs, to elsewhere such as the urban governorates.

Figure 1-4-2 Regional Differences of Broad Age Group Composition 1976



Note: Northern Upper Egypt comprises Giza, Beni-Suef, Fayoum, Minya and Assiut, Southern Upper Egypt comprises Sohag, Qena and Aswan

Source: CAPMAS, Preliminary Results of the General Population and Housing Census 22/23 Nov. 1976, in Egypt, 1978

The significantly lower sex ratios in Southern Upper Egypt (the figure for Northern Upper Egypt is apparently affected by the recent rapid urbanization in Giza Governorate) and, to a lesser extent, in Lower Egypt than the national average tally with the past sizable out-migration of the working-age male population (Table 1-4-3 and Figure 1-4-2). This trend roughly corresponds with the degree of urbanization because the urban sex ratio is never lower than the national average in every governorate of the country. Aswan Governorate presumably has had the largest impact of out-migration, because it has the lowest sex ratio in the entire country. The implication of out-migration is evident except in the Aswan Division, and especially pronounced in the Nassar Division where traditionally migration-prone Nubians were relocated in the earlier 1960s.

As shown in Table 1-4-3 and Figure 1-4-3, Aswan Governorate has a lower crude labor participation rate (the percentage of the economically active population of 6 years and over in the total population) than the national and regional averages, in fact the lowest among all the governorates in Egypt. It appears from the regional variations of the participation rates that the male participation is lower and the female participation is higher in urbanized areas, as is usually the case with other developing countries. This is primarily because more developed areas offer more and better opportunities for school enrollments, especially at higher educational levels, on the one hand, and have more jobs for females, on the other.

Another factor which must be considered with respect to Egypt is that the female, child and aged labor serves as a buffer in generally underemployed rural areas, with the men nearly always working full time and the women, children and the aged taking up whatever remains to be done beyond that largely during the seasonal peaks of agricultural work. Upper Egypt was reported to have heavier underemployment in rural areas than the delta in the mid-1960s, when a considerable portion of its agricultural land was yet basin-irrigated with only one cropping a year.[1/] The construction of the High Dam expanded the area under perenial irrigation in Upper as well as Lower Egypt, but the insignificance of cotton and rice, which have distinct seasonal peaks in labor requirements, in the cropping pattern of Southern Upper Egypt appears to have kept the labor participation of rural women and children at a lower level than in the delta. The lower female labor participation might be also related to the much more conservative attitudes about female labor in predominantly rural Upper Egypt. It must be emphasized in addition that the lower participation in Aswan Governorate is a corollary of the age and sex structure where the productive male segment is significantly under-represented.

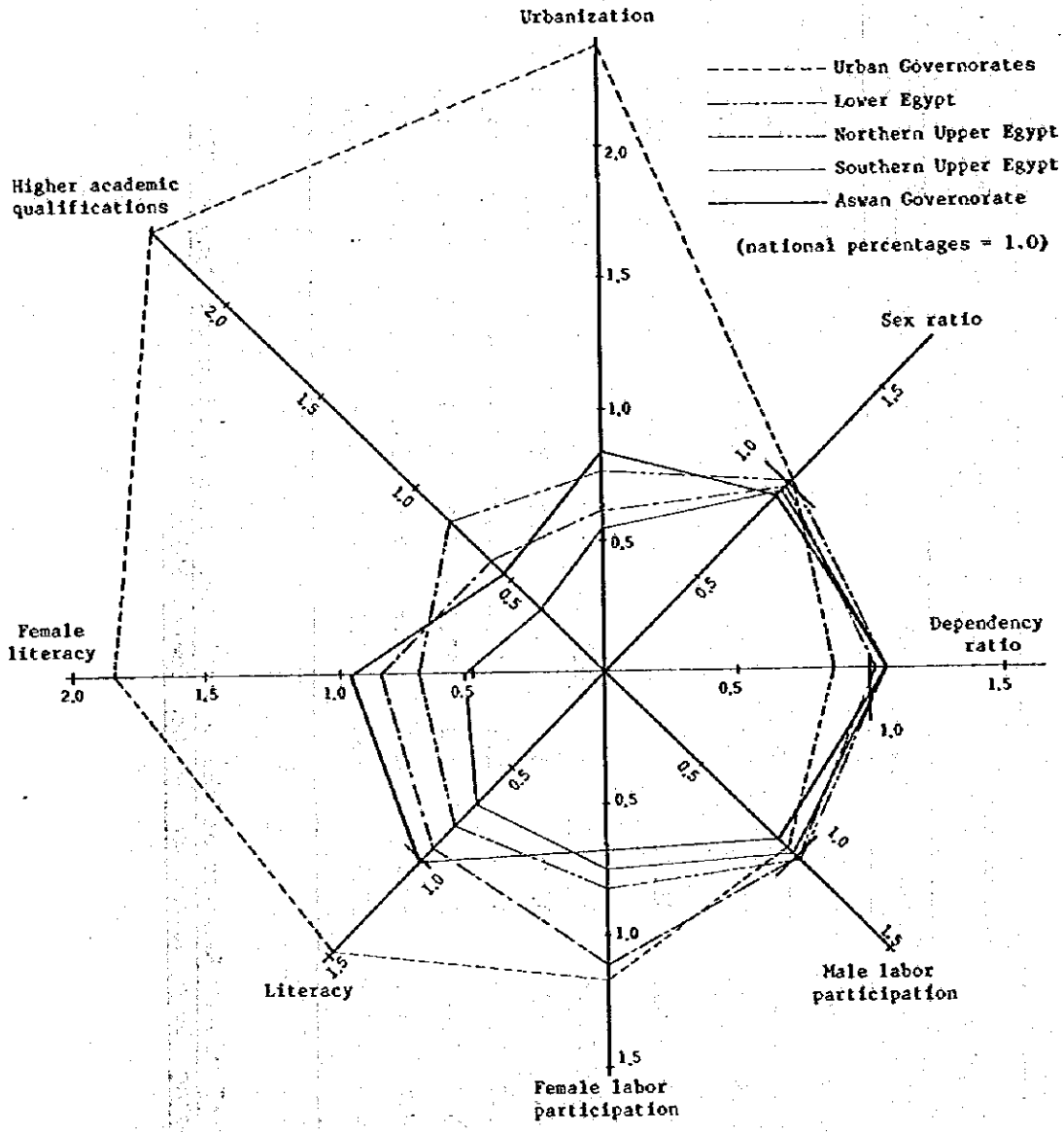
1/ Bent Hansen, "Employment and Wages in Rural Egypt", in Third World Employment, edited by Richard Jolly, et al., Penguine Modern Economics Readings, 1973.

Table 1-4-3 Selected Characteristics of Regional Population (1976)

	Urban Pop. (%)	Sex Ratio	Dependency Ratio (%)		Crude Labor Participation (%)			Literacy (%)			Pop. with Higher Academic Qualifications (%)
			Below 12	Over 65	Male	Female	Total	Male	Female	Total	
Whole Egypt	43.9	1,042	31.6	2.9	52.9	9.2	31.5	56.8	29.0	43.5	2.20
Urban Govs.	100.0	1,056	27.4	2.3	50.7	10.8	31.3	74.4	53.4	64.3	5.06
Lower Egypt	26.8	1,036	32.4	2.8	53.2	10.2	32.1	55.5	24.4	40.6	1.31
Northern Upper Egypt	33.6	1,055	33.3	3.3	54.4	7.5	31.5	47.9	20.4	34.8	1.77
Southern Upper Egypt	24.1	1,006	32.8	3.9	52.4	6.9	29.7	44.8	15.5	30.4	0.75
Aswan Gov.	37.0	980	32.9	3.7	48.3	6.3	27.1	60.0	27.8	44.0	1.16
Aswan Div.	79.3	1,049	33.0	2.5	47.7	6.9	27.8	74.2	44.2	59.8	2.22
Kom Ombo Div.	23.2	1,001	34.0	3.3	52.2	6.7	29.4	47.1	19.4	33.5	0.89
Edfu Div.	18.4	989	33.1	4.3	46.6	2.8	24.6	55.6	20.6	38.2	0.57
Nasser Div.	10.4	718	27.7	6.8	41.7	14.1	25.6	75.7	29.8	48.7	0.68

Sources: CAPMAS, Preliminary Results of the General Population and Housing Census 1976, and Regional Census (Sohag, Qena, Aswan and Red Sea South) 1976.

Figure 1-4-3 Selected Characteristics of Regional Population (1976)



Source: CAPMAS, Preliminary Results of the General Population and Housing Census, 22/23 Nov. 1976, in Egypt, 1978

The selected demographic characteristics as mentioned above roughly show that Aswan Governorate shares some common denominators with the predominantly rural regions isolated from the national centers of socio-economic dynamism. The available employment opportunities have been either insufficient or less remunerative so that the productive segments of the population have sought better chances available elsewhere, especially in large cities in the north. At the same time, the Governorate has a much better standing in the educational achievement of its population than in Upper Egypt as a whole. The literacy rate (10 years and over) is slightly higher than the national average and substantially better than the regional averages except that of the urban governorates. The female literacy, which could be regarded as one of the important indexes of social modernization in Egypt where women have been traditionally given much less opportunities for social advancement, is much higher than in Lower and Upper Egypt averages, although it falls a little short of the national average. The percentage of the population with qualifications higher than secondary school education is yet very low at 1.16% compared with the national average of 2.20%, but nonetheless the Governorate tops the rest of the Upper Egypt governorates excluding Giza Governorate.

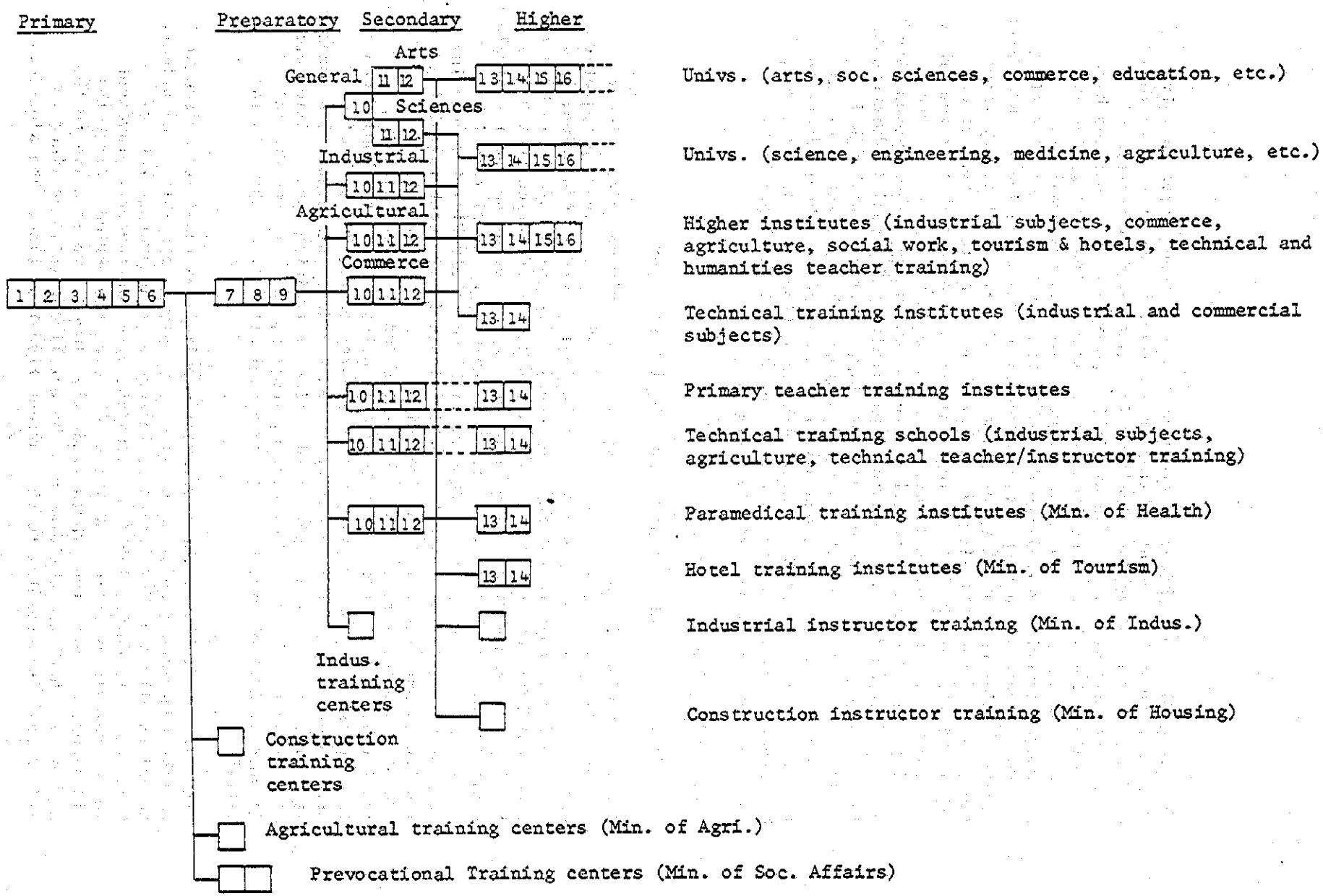
1.4.2 Education

(1) National Education System and School Enrollment

The formal education system in Egypt comprises six years compulsory primary education (starting at the age of six), three years preparatory education, three years general and technical secondary education, five years primary teacher training and technical training, two years higher technical training and four or more years higher education (see Figure 1-4-4). The Ministries of Education and Higher Education under a single minister have responsibilities for the administration of formal education including private schools, with the former Ministry covering from primary through secondary schools plus primary teacher training institutes and recently established five-year technical training schools, and the latter higher institutes and technical training institues. Universities are autonomous bodies. Private schools account for approximately 5% of primary school enrollments, 20% each of preparatory and general secondary students and 15% of technical secondary students. In addition, special education or training opportunities are offered by the Ministries of Health, Tourism, Industry and Mineral Resources, Agriculture, Housing and Social Affairs, as shown in the figure.

Since the early 1950s, the Government's policy has consistently sought to make education accessible to as many people as possible. The primary school enrollments, for instance, increased at an average rate of 6.3% per annum during 1952/53 - 1965/66, with consequent improvement in the enrollment ratio from 46% to 62% over the period. After the mid-1960s, however, the growth gradually slowed down relative to the number of school-age children and the enrollment ratio declined to 57% in 1975/76 according to the current Five-Year Plan. The slow-down

Figure 1-4-4 Educatioanl System in Egypt



since the mid-1960s was partly due to the conservative attitude among the population concerning female enrollment, but mostly due to the war economy which functioned to depress capital investment in the education sector. According to the current Five-Year Plan, 30% of the primary schools and 20% each of the preparatory and secondary schools were operated in a double- or triple-shift basis in Egypt in the mid-1970s and the ratios were higher in urban areas which absorbed increasing migration from rural areas.

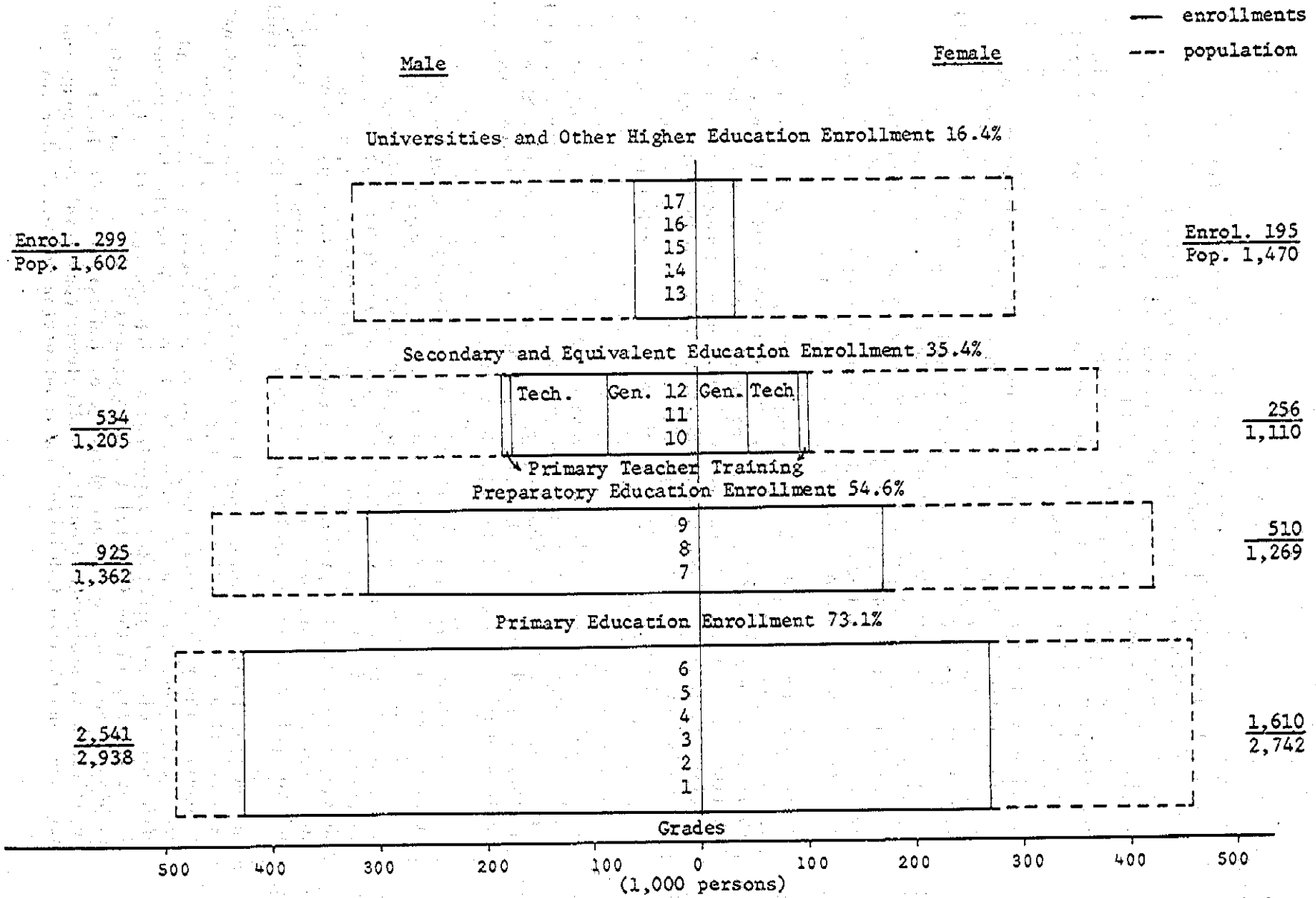
Although school attendance has become the common experience of most Egyptian children, drop-out rates are high in respective educational levels. A little less than 20% of the school-age children do not enroll at all, 12 - 15% of pupils who enroll in primary schools drop out before six years are over, 20% of those who sit for the general matriculation fail to get diplomas necessary to enter preparatory schools, 10% of the diploma-holders fail to get preparatory education, and so on. Approximately one-third of the children who start primary education are estimated to reach secondary schools.

Severe overcrowding and its consequent lowering of academic standards are also found in higher education. Despite the Government's attempt to limit the university or equivalent level enrollments due to the shortage of facilities in the early 1960s, annual acceptances continued to climb rapidly and reached 110,000 in 1974/75. In 1976/77, approximately one out of every six among the population aged 18 - 22 years is estimated to have been studying at universities and other post-secondary educational institutions (Figure 1-4-5). Egypt is currently said to have an over-supply of university graduates, especially those in non-technical disciplines. The shortage and inadequacy of teaching facilities at universities and other higher education facilities, where it is said that the actual enrollments are four times the capacities, have serious implications, especially in the faculties like medicine, and various engineering and industrial subjects.

Since the cease-fire in 1973, the Government has taken a series of steps to revamp the educational system. Due to the various measures taken, the primary school enrollment ratio seems to have improved substantially to reach an estimated figure of 73% in 1976/77 as shown in Figure 1-4-5. In the current Five-Year Plan (1978 - 82), it is envisaged to raise the primary school enrollment ratio to 95 - 100%, to accept all the primary-school-diploma holders to preparatory schools and to train a necessary number of teachers by the end of the plan period.

In addition to the measures geared to solve the long-standing educational problems like over-crowding, low academic standards, etc., the Plan recognizes the past relative neglect of post-preparatory technical and vocational education and emphasizes its improvement to provide students with more relevant practical experiences which are and will be in demand chiefly in the industrial and construction sectors. This policy is adopted to remedy a serious shortage of industrial middle-level technicians or sub-professionals, middle-level commercial and management personnel and skilled industrial and construction workers. Therefore,

Figure 1-4-5 Estimated Enrollment Ratios by Educational Level (1976/77)



Sources: Ministry of Education, Educational Statistics, 1950/51 - 1976/77. CAPMAS, Statistical Yearbook, 1978.
N. Nishifuji, et al., op. cit.

the Plan envisages first of all that the percentage of students enrolled in technical schools will be increased from 52% to 61% of the total secondary school enrollments by the end of the plan period.

In addition, two-year post-secondary technical training is being improved by reinstituting some of the existing three-year technical secondary schools into five-year technical training schools or by revamping the existing two-year technical training institutes to offer specific technical training. During 1975 - 1978, five five-year technical training schools were established, with IDA or UNDP financing on equipment, to provide preparatory school graduates with specialized training in textile technologies (Shobra and Tanta), food technologies (Mostorad), metal, electric and electronic technologies (Aswan) and industrial (mechanics) instructor training (Koba). According to the Ministry of Education, it is planned to establish by 1980 eight more five-year technical schools which specialize in such technologies as petrochemicals (Alexandria), agricultural engineering (Zagazig and Kafr El Sheikh), construction (Dar El Salam), ship-building (Port Said), land reclamation (Ismailia), electricity and electronics (Assiut) and decorative arts (El Zawia El Hamra). In addition, five post-secondary two-year technical training institutes have been or are about to be renovated or newly established with IDA financing on equipment at Alexandria, Aswan, Benha, Mataria and Zagazig. According to the Ministry of Higher Education, about six more higher technical institutes will be either renovated or newly established by 1980 to attain a more even regional distribution of specialized sub-professional training opportunities.

(2) Education in Aswan Governorate

Table 1-4-4 shows the recent school enrollments from primary to secondary education in Aswan Governorate. The growth rates in enrollment during 1973/74 - 1977/78 in the Governorate were generally higher than the national figures and the student-teacher ratios at respective levels are equal to or higher than the national averages except for general secondary education. Because the percentages of the Governorate enrollments in the national totals at respective educational levels are higher than the Governorate's share in the total population except for general secondary education, it may be said that Aswan is not far behind the national standard. However, the academic standards of students do not seem to be encouraging, as seen from the substantially higher ratios of failures in the nationally instituted diploma examinations than in Cairo as shown below.

	Aswan	Cairo
Primary school diplomas	66.7%	75.0%
Preparatory school diplomas	63.0%	72.4%
General secondary school diplomas	50.1%	83.3%
Technical secondary school diplomas	58.7%	76.6%

Source: Ministry of Education

Table 1-4-4 School Enrollments in Aswan Governorate

	1973/74	1975/76	1977/78	(%)
Primary Schools	73,213	80,894	84,394	
Annual Growth in Aswan				3.6
Annual Growth in Egypt				1.8
No. of Pupils per Teacher				
in Aswan	42	40	31	
in Egypt	42	37	34	
Preparatory Schools	20,563	24,435	29,276	
Annual Growth in Aswan				9.2
Annual Growth in Egypt				8.4
No. of Pupils per Teacher				
in Aswan	41	40	34	
in Egypt	38	39	38	
General Secondary Schools	4,488	5,259	5,992	
Annual Growth in Aswan				7.5
Annual Growth in Egypt				6.5
No. of Students per Teacher				
in Aswan	26	29	28	
in Egypt	22	22	21	
Technical Secondary Schools	6,641	7,292	8,646	
Annual Growth in Aswan				6.8
Annual Growth in Egypt				7.9
No. of Students per Teacher				
in Aswan	19	13	15	
in Egypt	19	16	15	

Source: Ministry of Education.

With respect to post-preparatory technical education, there are currently four industrial secondary schools (two in Aswan and one each in Edfu and Kom Ombo), two agricultural secondary schools (Kom Ombo and Edfu) and five commercial schools (two in Aswan, 1 each in Kom Ombo, Edfu and Nasser) plus one recently reinstituted five-year technical training school in Aswan, which are all administered by the Ministry of Education (the total enrollments are shown on Table 1-4-4). The Ministry also runs three primary teacher training institutes (two in Aswan and one in Kom Ombo), enrolling about 1,400. In addition, there is a two-year institute to train social workers (approx. 300 enrollments).

For post-secondary education, the Ministry of Higher Education runs one higher technical institute which teach industrial and commercial subjects in Aswan and plans to renovate it with IDA financing on equipment (approx. 1,800 enrollments). In addition, there is a higher technical training facility run by the Kima Factory under the supervision of the Ministry of Higher Education, which offer a series of 9-month courses for 5.5 years in total on chemistry, metallurgy, mechanics and electricity (annual output of approx. 60 trainees). Two faculties of science and education (chiefly secondary school science teacher training) of Assiut University are currently operating in Aswan. This extension campus currently enrolling about 2,000 students will be moved from the congested city center to the west bank of the Nile near the Old Dam, where land-levelling has been already started, and eventually separated as Aswan University with additional faculties of arts, agriculture, engineering and other disciplines. It is envisaged that the present training facility at the Kima Factory will be removed to be taken over by the faculty of engineering at this university. In addition, there is a four-year institute which train social workers in Aswan (approx. 500 enrollments).

Besides the formal technical training facilities above, there are four vocational training centers in the Governorate which are run by government agencies other than the Ministries of Education and Higher Education. The Ministry of Industry and Mineral Resources have two vocational centers (Aswan and Kom Ombo), which give practical training in mechanics and electrical works from 1 to 3 years. The Ministry of Agriculture has a training center for agricultural mechanics in Kom Ombo, while the local government runs a vocational center for mechanics, boat-building, driving, etc. in Aswan, both giving courses ranging from 3 to 6 months.

1.4.3 Public Health

(1) General Conditions in Rural Egypt

The fundamental health policy of the government, which was adopted in the last few years, aims at establishing a network of health units, health centers and district hospitals, covering the whole rural areas where 56.1% of the total Egyptian population resides. In principle, one health unit is to be established in every village with a population

of more than 3,000. With priority given to those people still living in the area more than 2 km from the nearest unit, the policy was intensively put into effect by the Ministry of Health, and by the end of 1977, there were 1,681 rural health units, each having a standard design of rooms appropriate for all out-patient activities and accommodation of one physician and nursing staff; 568 rural health centers, each provided with in-patient accommodation with 10 - 20 beds; and 23 rural hospitals, which are promoted from rural health centers. The number of units, centers and hospitals totals to 2,272, and one unit covers 9,049 people, or the unit/village ratio of 1/1.77.

All rural health institutions deal with basic health services in an integrated manner, including maternal and child care, school health care, communicable disease control, endemic parasitic disease control, environmental sanitation, national family planning, health education, medical cure, vital registration, dental care service, TB control program, malaria and filaria control programs, and health care programs.

Every medical graduate must go through the obligatory service in the Ministry of Health for four years, including at least one year of service in a rural health unit. Annual output of medical graduates is about 10,000. The standards of medical education are, however, not satisfactory due to overcrowding in the universities.

The annual governmental budget for public health services has been as low as LE 2 per head, or only 4% of the total government expenditure. Without a considerable increase of the budget, it will become difficult before long to provide the increasing population with adequate public health services which are given free of charge. Due to the generally low standards of public services, those who need intensive and qualified medical cares must, and prefer to, go to mostly urban private clinics which charge generally high fees.

Despite the intensive campaign on family planning, the birth rate in Egypt is still as high as 37.7 per 1,000, with the natural increase rate of 2.59%. The infant mortality rate is 116 per 1,000, which is ten times the rate in Japan, and infectious diseases are prevalent among infants under the age of five. Although the Egyptian Government has good facilities for vaccine production, some of the communicable diseases, such as Rift Valley Fever and infectious hepatitis of types A and B, are still difficult to control.

(2) Schistosomiasis

Egypt is at present virtually free of malaria, while the elimination of schistosomiasis has not been attained. Extensive, well-planned and organized control programs have been carried out over the period of several decades, but it was far from extinguishing the disease. According to the recent survey by Dr. Miller et al.,[1/] historical data

1/ F.D. Miller, M. Hussein et al., Schistosomiasis in Rural Egypt: A Report of U.S.-Egypt River Nile and Lake Nasser Research Project, U.S. Environmental Protection Agency, 1978.

of the prevalence of schistosomiasis in Egypt indicates an overall decline of the prevalence rate after the construction of the High Dam. In 1935, the prevalence rate in the entire Nile Valley and delta area was 46.95%, but the rate in the whole rural area was 25.9% in 1976. Nevertheless, the disease is increasing in certain areas and the number of infected individuals has not decrease in some other areas. There is an evidence that the prevalence rate of schistosomiasis definitely increased in areas where the irrigation method was changed from basin to perennial irrigation.

At present, seven to ten million rural Egyptians are estimated to be infected with the disease. Recently, some significant changes in epidemiological patterns of schistosomiasis have been observed. In the delta area, S. haematobium infection is on the decrease, while S. mansoni infection has significantly increased. The reasons are speculated as follows, Firstly, after the construction of the High Dam, the less turbulent water flow of the irrigation cannals in the delta became more suitable for the Biomphalaria snails. Secondly, the Biomphalaria snails can survive in a relatively high concentration of molluscicide than Bulinus snails. Thirdly, S. mansoni infection is much more difficult to treat than S. haematobium infection, and remains unaffected by many chemotherapy control measures. Moreover, a progressive increase in the population densities of Biophalaria snails has been recorded in the Nile delta. There is also a reported migration of Bulinus snails from the delta area down to the middle Nile Valley, and a small colony of Biomphalaria snails have been recently recognized in Aswan.

So far as the strategy of schistosomiasis control is concerned, the Faiyum Project, which started in 1968, was definitely successful in coping with the notorious disease. Fortunately, Faiyum Oasis, with one million population, has only one inlet canal from the Nile. The prevalence rate of S. haematobium showed a definite sign of decrease through the snail control operation of applying Baluscide to the water for 6 - 8 hours at 2 ppm, three times a year, together with the application of chemotherapy to the infected individuals with Metrifonate for once every two to four weeks, with the maximum dose of 7.5 - 10 mg/kg. The infection rate has decreased from 45% to 5 - 6%, with no detection of new cases and disappearance of snails within three years after the start of the Project. Overall cost of this program per year was US$0.5 per head. The Faiyum Project suggests the possibility of controlling S. haematobium with the applications of Baluscide and Metrifonate at the cost of less than one dollar per head per year in endemic areas.

The control project in Middle Egypt has been carried out since 1976 and in Upper Egypt since 1979. The control strategy in the Nile delta, however, is still extremely difficult, because of the mixed infection of S. haematobium and S. mansoni and the need of intensive environmental control measures which are highly expensive.

(3) High Dam Lake Area

(a) Schistosomiasis and Malaria

Large artificial lakes created in Africa are reported to have brought dramatic environmental changes, resulting in the proliferation of disease vectors and the increase of infection. These experiences must be taken into serious consideration in formulating a development plan to redistribute agricultural and fishing population around High Dam Lake. Particularly, the effects of the High Dam construction on the health conditions of people working in the lake or near the lakeshore have to be carefully examined, notably with respect to schistosomiasis and malaria.

After the construction of the High Dam, various surveys were conducted in the lake area. The most significant finding has been the proliferation of Bulinus snails in the entire length of the lake due to the rich aquatic vegetation and the moderate temperature of water throughout the year. In some coastal areas, schistosome-infected snails were already discovered. At present, the number of fishermen working in the lake is estimated to be around 7,000, most of whom come from Sohag and Qena Governorates where urinary transmitted schistosomiasis has been endemic among the population.

Results of the examination conducted by the Aswan Health Authority on fishermen who stopped in Aswan before they entered the lake indicates the substantially high rate of urinary transmitted schistosomiasis infection; 65% in 1975, 66.6% in 1976, 43.3% in 1977, and 22.0% in 1979. No fisherman is officially permitted to fish unless the detection of schistosomiasis proves negative. This measure, however, has not been carried out strictly enough, and there are possibilities of the lake water being already contaminated by S. haematobium through the infected fishermen who were incompletely treated or untreated. Biomphalaria snails have been already found in the Nile immediately downstream of the Old Dam, although apparently not in the lake.

The coastal water near fishermen's camps is in danger of schistosomiasis transmission because of the already abundant population of Bulinus snails. No active transmission of the disease has been reported among the fishermen in the lake due to the widely scattered distribution of the fishing camps, but the expected population increase is likely to trigger the danger unless some effective control measures are introduced.

Regarding the malaria transmission, on the other hand, the breeding place of notorious mosquito, Anopheles gambia, is still far down south from the Egypt-Sudan border, and it would be difficult for the mosquito to establish a coci of malaria infection over the vast area of High Dam Lake without human settlements.

(b) Venomous Animals

Rich vegetation of the lakeshore enhanced the insect population which attracts scorpions and vipers from the desert. Two species of vipers,

Certes certes and Certes viper, are currently common in the lakeshore. Another danger is from jackals which are attracted from the desert by the litter and decayed fishes around fishermen's camps. Consequently, fishermen are afraid to sleep on the lakeshore, and rest in their boats to avoid scorpions, vipers and jackals at night.

1.5 REVIEW OF EXISTING DEVELOPMENT PLAN

The existing Five-Year Plan is based on "The Five-Year Plan 1978-1982" published in January 1978 and consists of 13 volumes (Vol. 11 yet unpublished). The Egyptian Government employs a so-called rolling system, revising the above plan every year through the five-year period. This means that finance and investment for this year are being operated under the Five-Year Plan 1979-1983. In this chapter, description will be given mainly of the relative importance of the Project Area vis-a-vis the long-range perspective on which the five-year plan is based in order to indicate the medium-term issues for the development in the High Dam Lake area.

1.5.1 Long-range Perspective for Development

In recent years, the Egyptian Government has attached great importance to the long-term perspective in development planning; the Ministry of Planning, the Institute of National Planning, the President's Office, etc. are respectively working on a long-term planning perspective. Prepared in the most concrete form in recent years is the "Road to the Year 2000" published by the Ministry of Planning in 1976, and the contents of this paper are all incorporated in the above Five-Year Plan (1978-1982).

The most important long-term issue as envisioned in the five-year plan is regional redistribution of population and the expansion of inhabitable areas to enable such distribution. The five-year plan estimates the population of Egypt in the year 2000 at 60 million at minimum and 70 million at maximum, and deems it impossible to absorb the rapid population increment into the existing dwelling areas along the Nile Valley and in the delta, because the current density per unit of inhabited area is already extremely high in both urban and rural areas.

In the paper mentioned earlier, the Ministry of Planning divides the country into eight regions for planning purposes. Table 1-5-1 shows the population and the available inhabitable area as of 1976 and the Ministry's estimates for the year 2000 in each region. The details of how the estimates were made are not clear, but the rough outline of the procedure is said to be as follows. The population size absorbable in the Nile Valley and its delta was first estimated, then the remaining population was allocated to the other regions like the northwestern Mediterranean coast, the New Valley, the High Dam Lake area, the Red Sea coast, Sinai Peninsula, etc., where there are expected to be high development potentials. What should be noted in the table is that Southern Egypt which includes the Project Area is expected to take on growing importance in terms of population absorption. That is, the share of Southern Egypt in the total population will increase from approximately 16% in 1976 to some 27% in the year 2000.

Table 1-5-1 Projected Population Distribution in 2000

Region	Population ('000 persons)		Inhabited Area (km^2)	
	1976	2000	1976	2000
Greater Cairo	9,177	9,150	2,210	2,224
Alexandria	4,860	7,360	10,900	12,806
Delta	8,690	9,490	9,750	10,970
Suez Canal	3,700	9,420	4,520	43,140
Matruh	113	3,110	560	30,560
Northern Upper Egypt	4,320	6,980	4,510	13,780
Assiut	1,750	8,780	1,750	61,810
Southern Upper Egypt	4,290	8,410	4,200	26,810
Whole Egypt	36,900	62,700	38,400	202,100

Notes:
- Greater Cairo; Giza, Qaliubia
- Alexandria; Alexandria, Beheira, New cities
- Delta; Dakahlia, Damietta, Kafr El Sheikh, Ghabiya, Menufia
- Suez Canal; Port Said, Ismailia, Suez Canal, Sharkiya, Sinai
- Matruh; Matruh
- Northern Upper Egypt; Faiyum, Beni Suef, Minia
- Assiut; Assiut, New Valley
- Southern Upper Egypt; Sohag, Qena, Aswan, Red Sea

Source: The Five-Year Plan 1978-1982, Vol.II, Table 15.

The major projects which are considered necessary to realize the expected population distribution are as follows:

(1) Southern Egypt

- Reclamation and cultivation of 3 million feddans in the west of High Dam Lake and the south of the New Valley
- Agricultural expansion of 100,000 feddans in Qena and Aswan
- Reclamation of 500,000 feddans in the New Valley using underground water
- Exploitation of phosphate in the New Valley
- Exploitation of iron ore in Aswan
- Exploitation of kaolin, etc. in Kalabsha
- Exploitation of clay and manufacture of bricks in Kurkur
- Manufacture of cement in the New Valley
- Extraction of marble and granite in Aswan and the New Valley
- Fishery in High Dam Lake
- Tourism

(ii) Northwestern Coast (the area extending about 500 km along the Mediterranean coast and about 20 km into the inland)

- El-Hamman/Sidi-Krir: chemical industry, agriculture and tourism
- El-Dabaa/Fouka: agriculture and agro-industries
- Ras-el-Hekma/Hewala/ Bagosh: tourism and light industries
- Mersa Matruh: free zone, tourism and light industries
- Sidi Barrani: agriculture and agro-industries
- Saloum: commerce

In addition to the above, there are projects for the development of pasture lands, presently wide-spread in the region and those for the exploration and exploitation of petroleum along the coast. This region had a population of only 130,000 in mid-1970s but is considered to be able to absorb about one million by 2000.

(iii) Red Sea Coast

- Improvement and expansion of Safaga Port
- Improvement and expansion of the phosphate company
- Installation of seawater desalination plants
- Extension of water pipeline from Qena to Kilo
- Extension of water pipeline to Safaga
- Construction of water pipeline from Safaga to El-Qusseir
- Construction of Qena/Safaga railway

In addition, the region is richly endowed with various mineral resources and mining will eventually become the mainstay of the future economic activities. There is also the possibility that this area may become a resort center.

Judging from the distribution of the major projects above, the development of Southern Egypt up to the year 2000 comprises (i) the Eastern Belt featuring the mining industry (Red Sea Coast), (ii) the Central Belt centering around agriculture, fishery, mining and manufacturing industries and tourism (Qena-Kom Ombo-Aswan) and (iii) the Western Belt centering around agriculture and mining industry (the New Valley). The essential feature of the development prospects in the Central and Western Belts is that most of the planned land reclamation up to the year 2000 is concentrated therein. The Five-Year Plan envisages that about 2.5 million of feddans of new farm land (the figure has been increased to 2.8 million since the Plan's publication) will be reclaimed by 2000, and the regional breakdown is as follows:

Region	Area (1,000 feddans)
West Nubariya	208
South Port Said Valley	487
Southern New Valley and the Lake Area	1,300
Others	500
Total	2,495

With regard to water resources for the new farm lands, the following surplus resulting from the completion of the Jongley Canal in the Southern Sudan and the spread of water saving irrigation techniques is anticipated:

Water Resources	Quantity (milliard m^3)
Nile River	55.500
Drainage Water	12.168
Underground Water	0.500
Total Supply	68.168
Total Demand (agriculture, power generation, etc.)	51.000
Surplus	17.168

Another feature of the Central Belt is that it is envisaged to have more varying development potentials than its eastern and western counterparts. This means that infrastructure to be expanded can be used for multi-purposes, thus contributing to the efficiency of development efforts as a whole. In other words, the Central Belt has better development prospects as far as Southern Egypt is concerned.

1.5.2 Medium-term Development Prospects

The medium-term development outlook as envisaged in the current Five-Year Plan (1978-1982) are as follows.

(i) The rate of growth of GNP will accelerate from 9.3% in 1978 to 11.9% in 1982 per annum. This accelerating growth will, of course, be the result of overall increases in investment activities, but mainly attributable to increased earnings from petroleum, the Suez Canal, and tourism.

(ii) The rate of growth in private consumption will be about 8% per annum, which is lower than the GNP growth rate. This is due to the fact that the increase in GNP depends largely on earnings from petroleum and Suez Canal sectors as mentioned earlier and that such earnings will not go to the private sector but directly to the Government.

(iii) Public consumption will increase at an annual rate of 9.3%.

(iv) The total consumption will account for about 83% of GDP in 1982. The implied high savings rate of 17% has never been achieved in Egypt since the 1950s. However, petroleum production which is expected to swell from £E 386 million in 1975 to £E 2,214 million in 1982 will greatly change in the savings rate. The earnings are quite important not only for the national finance but also for the reduction of the sizable balance-of-payments deficit.

(v) Loans from foreign sources will continue to be needed to cover the balance-of-payments deficit. However, the percentage of the loans in GNP will fall from 11.5% in 1978 to a mere 2% in 1982.

(vi) The percentage of investment in GNP will increase from 23% in 1977 to 28% by the end of the plan period. Investment will be financed with domestic savings, funds from Arab and other foreign countries, and multinational and bilateral loans.

(vii) The investment strategy will be to get returns on investment as quickly as possible by giving top priority to projects nearing completion. As for new projects, investment funds will be allocated to (i) those which play a highly strategic role such as production of fertilizers, construction materials, particularly cement, (ii) those which meet the basic needs of the population such as foods, clothing, housing, etc., and (iii) those which lead to export promotion.

(viii) Major roles will be assigned to projects financed with private capital, both domestic and foreign, in line with the "open door" policy.

(ix) The public sector investment will emphasize the development of rural communities, allocating 25% of the total investment to improve the standard of living of the farming population.