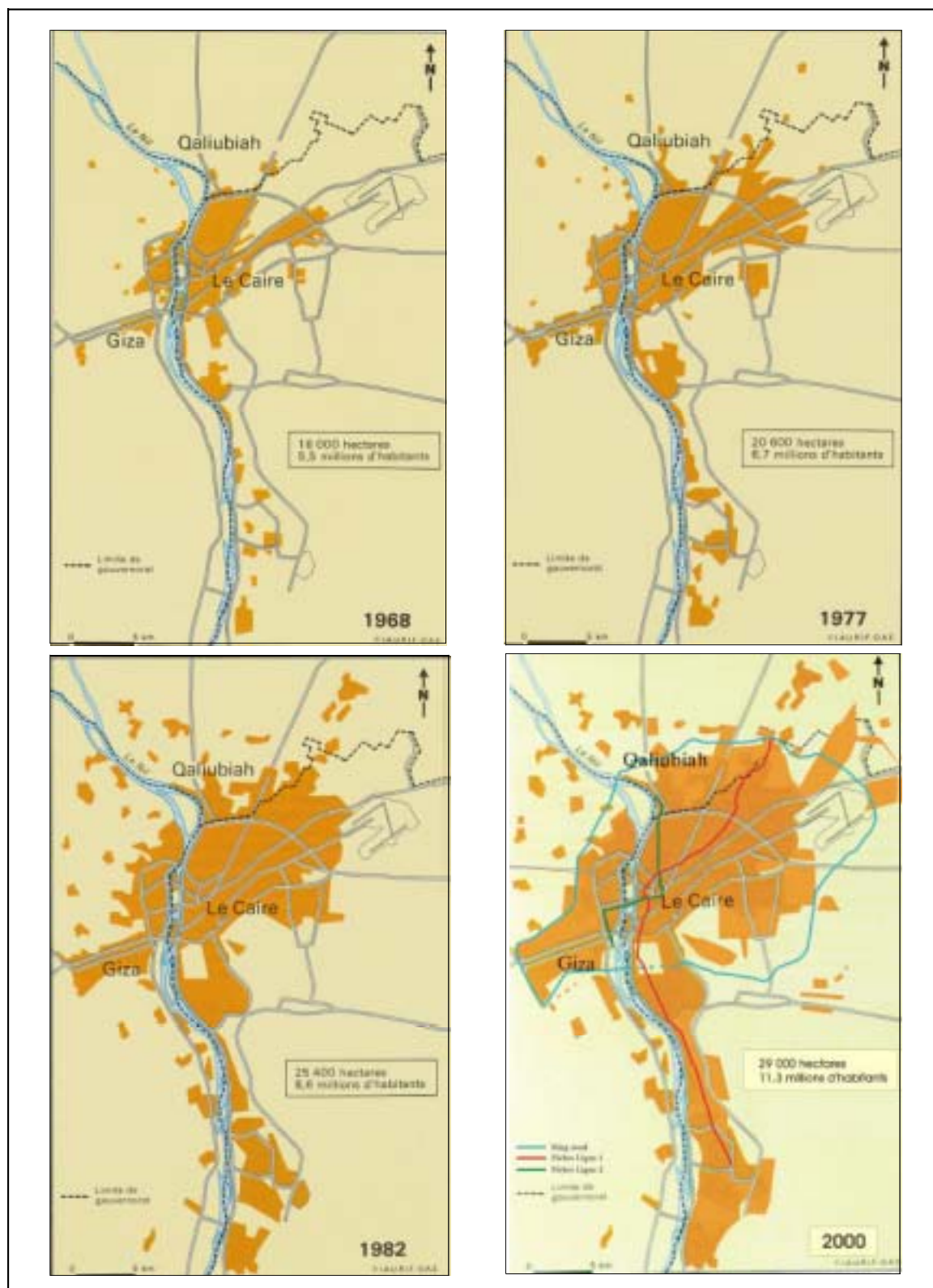


Figure 2.2.2 A Macro View of the Urbanization Process of the Study Area in 2000



Source: "Greater Cairo Public Transport Study and General Features of the Greater Cairo Metro Third Line", 1999 (SYSTRA)

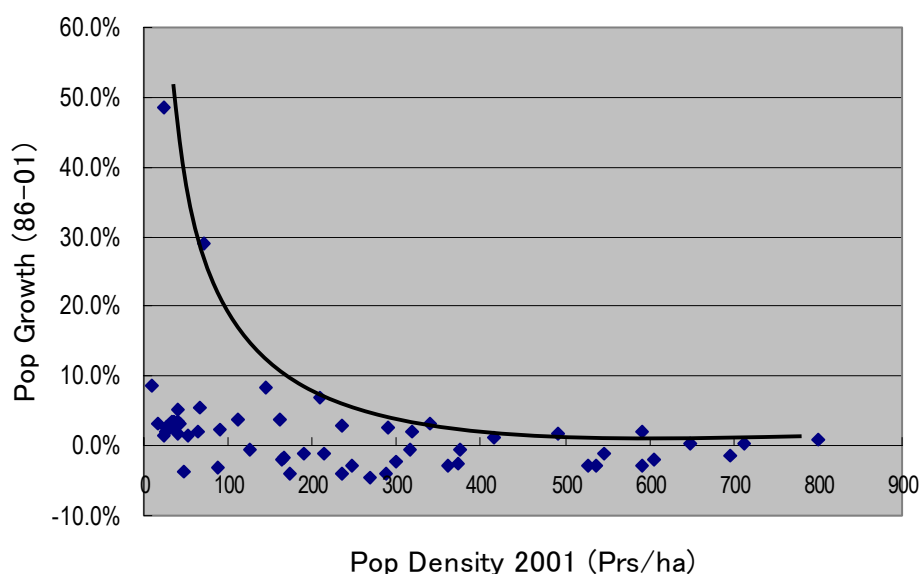
Figure 2.2.3 Cairo Urban Spreading since 1968

Table 2.2.1 Historical Changes in Urbanized Areas and Urban Population in GCR

	1968	1977	1982	2000
Urbanized Area (km ²)	160	206	254	290
Estimated Population in the Urbanized Area (million)	5.5	6.7	8.6	11.3
Population Density (prs/ km ²)	3.44	3.25	3.39	3.90

Source: Tabulated from "the Greater Cairo Public Urban Transport Study (1999)", SYSTRA

A more detailed population density analysis by *Qism* was made based on the socioeconomic survey result in the Study Area. The Study Team projected the 2001 population of a total of 60 *Qisms* as well as areas by *Qism*. The population density in 2001 and the average population growth rate between 1986 and 2001 were plotted in the coordinates, as shown in Figure 2.2.4. It can be found that the highest population density accounts for about 800 persons/ha (8 persons/ km²) and that the lower density *Qisms* are likely to have experienced a higher population growth during the past 15 years. A detailed description on the population estimation is in section 2.3.



*Source:
The JICA*

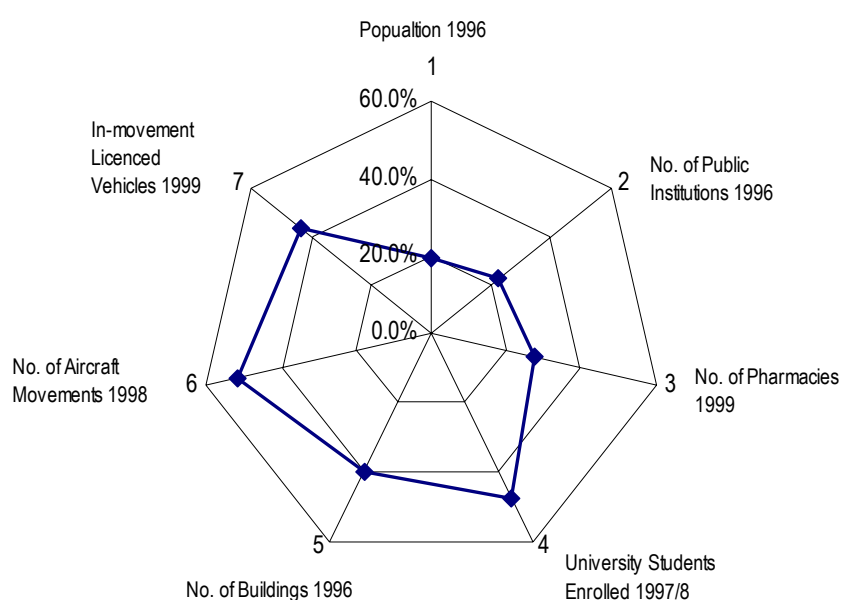
Study Team, based on the 1996 CAPMAS data

Figure 2.2.4 Relations between Population Density (2001) and Population Growth (1986-2001) by Qism

3) Concentration of Pivotal Urban Functions to the GCR

There are four (4) Governorates such as Cairo, Alexandria, Port-Said and Suez which are categorized by urban Governorates in the CAPMAS Census. These four shares 18.6% of the national total, and 43.6% of the urban population in the whole country the 1996 population.

The primacy of urban economies in the GCR, as the capital region, is characterized by a phenomenon that pivotal urban functions for economic, social and cultural activities have been predominately accumulated there, compared to the population. Figure 2.2.5 shows a comparative situation of the concentration into the GCR for same selected urban functions in terms of shares of the national total.



Source: The Statistical Year Book 1993-1999, CAPMAS

Figure 2.2.5 Comparative Concentration of Urban Functions in the GCR

Compared to the population share, the public service function represented by the number of public institutions seems to be proportionally located, while the higher educational function, represented by the number of enrolled university students, is extremely predominant in the GCR, sharing about 50% of the national total. The economic and traffic transactions, in terms of the numbers of aircraft movements and in-movements of licensed vehicles to the GCR, are also comparatively predominant. Thus, the socioeconomic activities have been greatly extended in the GCR, and these activities eventually generate a more elastic transport demand.

(2) Long-term Development Strategies for the Greater Cairo Region

1) The Physical Planning Law No. 3/1982

The General Organization for Physical Planning (GOPP) was established under Ministry of Housing, Utilities and Communities in 1973 as the national entity responsible for physical planning in Egypt at the regional, provincial, urban and rural levels. The GOPP has a key mission to propose physical and urban development policies and supervise the implementation in coordination with all relevant authorities at the national, regional and local levels. The GOPP is also mandated to establish norms and standards for industrial and urban agglomerations and develop sustained technical advice, training and human resource management to local governments.

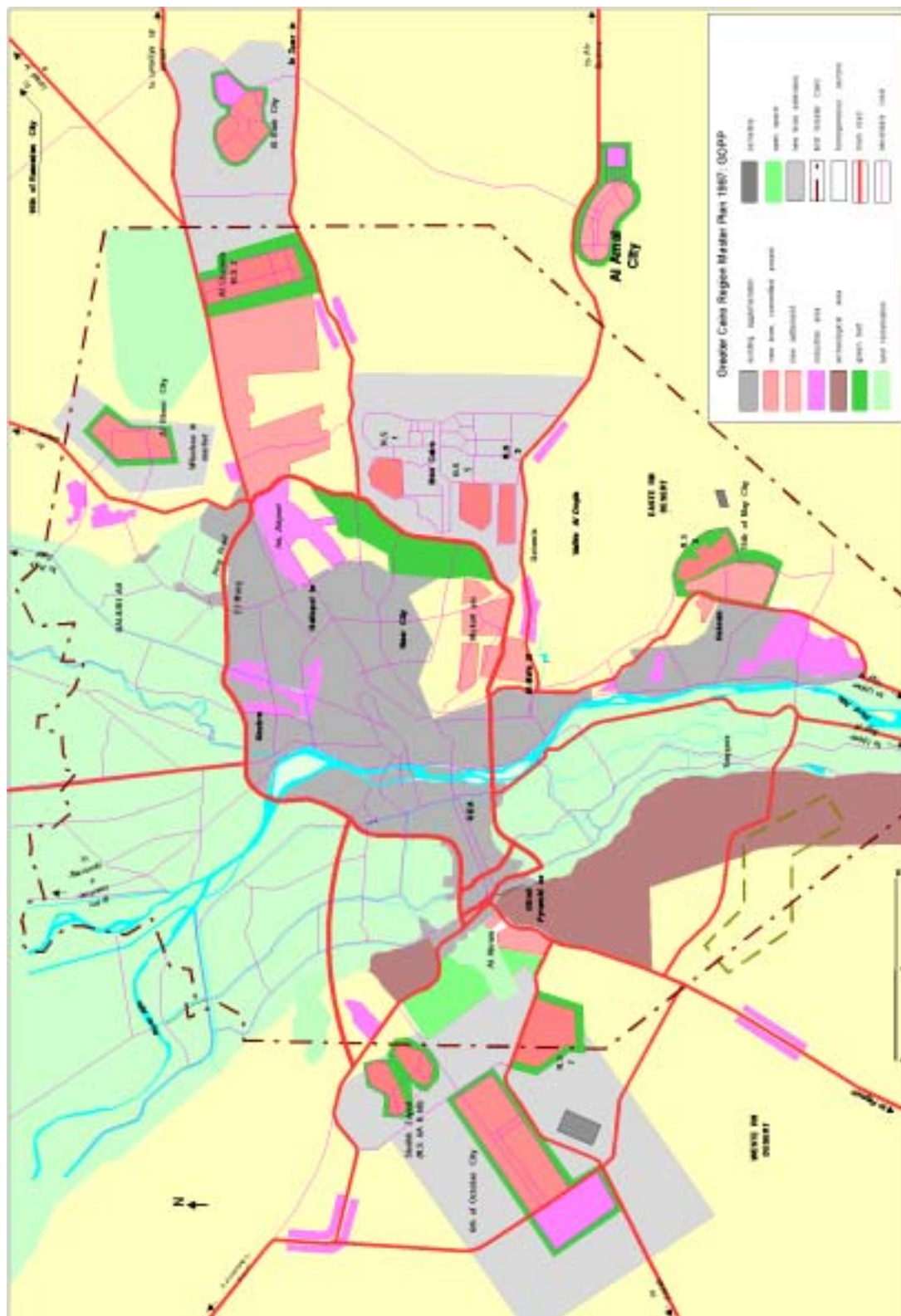
As a legislative framework for the regional development planning in Egypt, the Physical Planning Law No. 3/1982 was established to stipulate the contents, presentation procedures and accreditation of general and detailed plans, land subdivisions and district renewals, as well as expropriations and penalties for violations. Based on the legal framework, the GOPP has launched a number of regional development plans such as: 1) Development Map of Egypt 2017; 2) Development Strategy of Sinai 2017; 3) Delta Region Development Plan; 4) Development Strategy of Upper Egypt Region; 5) Suez Canal Regional Development Plan; 6) Development Strategy of Assiut Region; 7) Establishment of a National Hazardous Waste management System; and 8) Greater Cairo Master Plan.

Needless to say, the Greater Cairo Master Plan (GCMP), as shown in Figure 2.2.6, is relevant to this study. Nowadays, the up-dated GCMP was revised in 1997, and highlights some key elements to structure the Greater Cairo Region, viewing a wider spatial framework.

2) General Policy Directions of the GCR Master Plan

Towards a sustainable economic growth and improvement of the living conditions, the GCMP articulates five (5) key objectives:

- Protect arable land, while providing a better industrial location strategy;
- Improve public transportation, while facilitating infrastructure network;
- Protect historical heritage, controlling informal urban expansion;
- Provide alternatives to informal settlements, encouraging deconcentration of Greater Cairo Region; and
- Protect water resources with controlling pollution and noise resources.



Source: GOPP

Figure 2.2.6 Greater Cairo Region Master Plan 1997 by GOPP

For delineation of area-wise development strategies, the GCMP has applied a unique planning concept of “*Homogenous Sectors*” that is regarded as an area-wise planning unit, not an administrative division. The Greater Cairo Region is divided into 16 Homogeneous Sectors, each of which accommodates about 1 to 2 million inhabitants and plans to be self-sustainable or autonomous unit in terms of urban services and job opportunities. A population decentralization policy has been guided for these Homogenous Sectors. The GCMP aims to decentralize the inner sectors towards the new settlement areas outside the ring road. Although the Homogeneous Sectors of the central Cairo areas have been actually decreasing the population, the surrounding urban areas even within the ring road still show an increasing trend in the population.

3) Strategic Urbanization Corridors

The agricultural land areas in the Nile Delta are invaluable assets for the sustainable development of Egypt, therefore protection of these green areas from encroachment must be a critical policy. To this end, the GCR depicts a growth control policy in the north-south bound urban development along the Nile River, and intends to guide the current urban development momentum toward the east-west directions in desert areas. The focused new community development is in the line with this growth management policy.

Five (5) major corridors have been designated in the spatial structure of the GCR to link the Cairo economy with the other regions, such as Alexandria, Ismailia, Suez and the upper Nile region. Among them, the northwestern corridor along the desert road to Alexandria has been recognized as the most significant urban corridor to be further focused for a strategic urban growth.

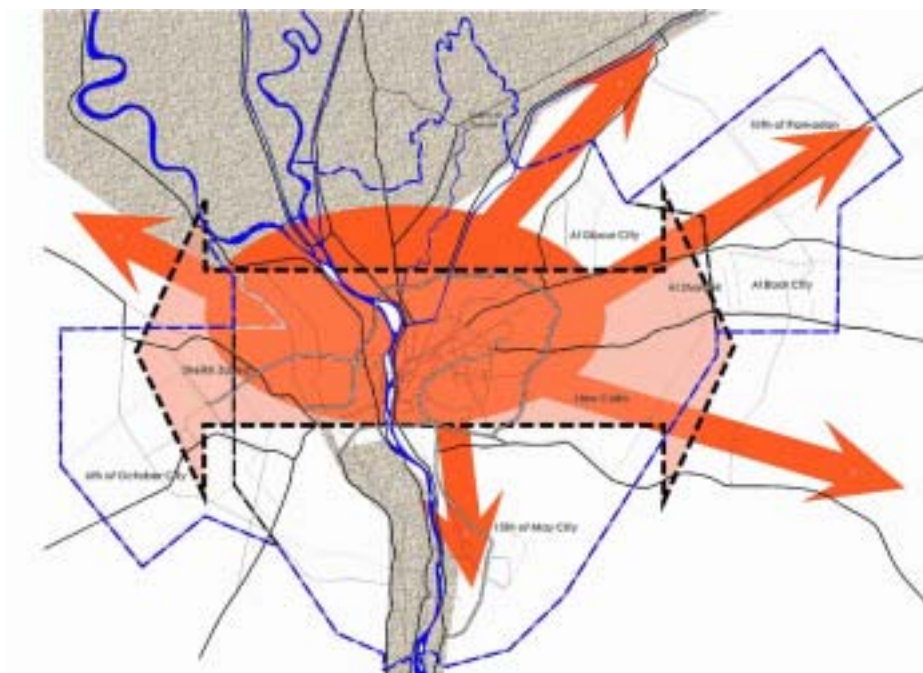


Figure 2.2.7 Major Urban Growth Corridors in the GCR

4) New Settlement Projects

An innovative shift of the urban planning and housing policy in the GCR is represented by the new community development projects initiated by the government in desert areas, instead of extending urbanization in the agricultural land areas in the Nile River Delta. The new community concept aimed to provide new settlement land areas to cope with the increasing housing demands as well as to create self-sufficient new communities with creation of job opportunities instead of being bed towns of Cairo. The private sector has been involved in the developments.

Nowadays, five (5) urban agglomerations can be recognized as new community areas in the suburban are, including eight (8) new town projects. The current status of these new community developments is tabulated in Table 2.2.2.

The most progressed new communities area the western part of the GCR, consisting of the 6th of October and the Al Sheikh Zayed town, where a 2 million population is targeted in total and about 190 thousand housing units have been/are being constructed as of June 1999. Another huge scale urban agglomeration is the eastern part of the GCR, consisting of three towns such as the 10th of Ramadan, the Sherouq town and the Badar town, where an approximately 2 million population is expected, and a total of 122 thousand housing units have been/are being constructed as of June 1999. The almost matured new community is the 15th of May that was started in 1978. The target population is 250 thousand there, and as of June 1999, about 36 thousand housing units have been built up. The New Cairo, located just outside the Ring Road, is being developed with a 750 thousand population targeted. About 83 housing units have been/are being constructed as of June 1999. The other notable new community is the Obour City, located in the northeastern part outside the Ring Road. A half million people are to be accommodated there.

It can be generally recognized in the new community structure that two urban agglomerations with a 2 million population are to be located in the east and west side of the GCR, centering on the 10th of Ramadan and the 6th of October respectively, and another 1.5 million inhabitants are located in the three major new communities such as the Obour, the New Cairo and the 15th of May towns.

It should be noted that there exists a great discrepancy between the figures of the 1998 population described in Table 2.2.2 and the number of the residents which could be projected from the number of the housing units in June 1999, which is indicated in the far-right column in the same table. This means that a remarkable number of vacant housing units exist due to a failure of marketing or a great number of non-resident owners. For identification of the current progress of these new community developments, Figure 2.2.8 indicates a comparison among the targeted population, the 1998 population and potential inhabitants which could be accommodated in the housing units (as of June 1999). As seen in this figure, the most progressed developments are the 15th of May, followed by the New Cairo and the 6th of October.

It can be said in general that a more or less 30 to 40% has been achieved in terms of provision of housing units in the new communities as a whole in the GCR.

To achieve the planned decentralization by facilitating the new community developments, several efforts should be further made by relevant entities through encouragement of more strategic marketing activities, creation of more attractive living environment, provision of sufficient infrastructures, creation of more job opportunities and development of more convenient transport systems.

Table 2.2.2 New Community Developments in the GCR

New Community		Total Area (sq. km)		Population ('000)		1998	No. of Built-up Housing Units in June 1999	Potential Inhabitants to Accommodate in June 1999 (1)
		Original Master Plan	Revised Target	Original Master Plan	Revised Target			
1	6 th of October	360	408	500	1,500	260	155,139	651,584
2	Al Sheikh Zayed	33	39	500	500	0	35,770	150,234
West (1+2)		393	447	1,000	2,000	260	190,909	801,818
3	Sherouq	19	45	500	500	42	38,190	160,398
4	Badr	73	73	430	430	0	20,284	85,193
5	10 th of Ramadan	398	398	500	1,000	150	63,685	267,477
East (3+4+5)		490	516	1,430	1,930	192	122,159	513,068
6	15 th of May	27	35	250	250	190	35,834	150,503
7	New Cairo	37	157	750	750	98	82,833	347,899
8	Al Obour	88	68	500	500	50	34,010	142,842
Total		1,035	1,223	3,930	5,430	790	465,745	1,956,129

Source: GOPP and a projection by the JICA Study Team.

Notes: Potential population to accommodate in June 1999 was projected, multiplying the number of housing units by an average household size 4.2.

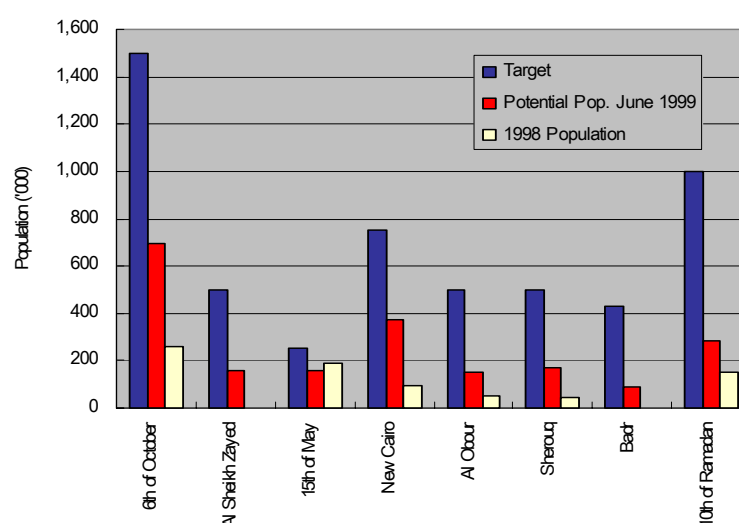
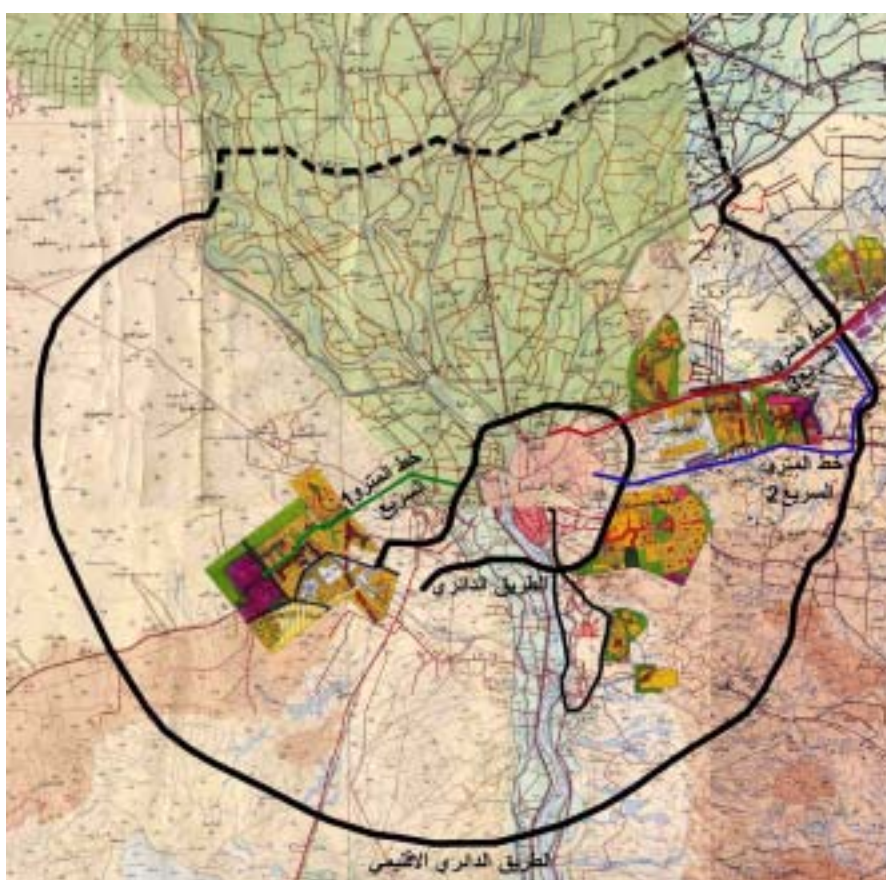


Figure 2.2.8 A Comparison among Target Population, 1998 Population and Potential Inhabitants by New Community Development

5) Ring Roads for the GCR Spatial Structure

A classical type of ribbon development has taken place in several radial corridors in the GCR. However, the Ring Road, of which the construction started in 1985, has given a new urbanization pattern that allows us to envisage a more structural and strategic development pattern, thereby extending a wider urban planning discussion for locations of major urban economic activities such as industrial and cargo distribution facilities as well as new commercial facilities. Currently, the GOPP has urged a planning argument for two project concepts in this regard. One is concerned with the completion of the Ring Road and its connection with the Alexandria desert road for complete formulation of a regional network. The completion of the Ring Road must be an urgent issue. The other is with the so-called **Regional Ring Road**, which is located in about 100 km radius areas encompassing outside the GCR.

The GOPP gives a priority to the southern part of the Regional Ring Road to integrate suburban economic agglomerations into a wider metropolitan region, and to provide functional linkages between the GCR and the other regional economies. Yet, the concept of the Regional Ring Road needs to be further scrutinized from the economic feasibility and transport planning point of view.



Source: GOPP

Figure 2.2.9 A General Concept of the Regional Ring Road

6) Urban Growth Management

No clear-cut legislative frameworks effectively practical for the urban growth management have been developed yet in the urban planning administration. A zoning system based on a long-term landuse plan has not been enacted to control locations and new development activities, either. The administration of land development and construction of buildings are managed with a permission-based system by the local Governorate in consultation with the GOPP, if is necessary. Thus, a comprehensive urban planning system is needed to establish.

2.3 CURRENT SOCIO-ECONOMIC SITUATION

2.3.1 The Study Area

In the Terms of Reference, the JICA Study Area has been defined in a general manner. The study should cover the Greater Cairo Metropolitan Area (GCMA) and a number of specifically mentioned new towns located outside the GCMA, for example, the new urban communities 6th of October and 10th of Ramadan. It was further stipulated that the transportation planning had to be executed at the local administrative unit of shiakha and/or village level.

Considering these guidelines, the JICA team has delineated and defined more in detail the boundaries of the Study Area. Practical methods to achieve this included the use of existing topographical maps, planning maps such as the Greater Cairo Master Plan, and any available administrative maps. Since the boundaries could not always be clearly determined in some fringe areas, such as the western boundary in the Governorate of Giza and the northern boundary in the Governorate of Qalyobeyya, interviews with the respective governors and with officers of GOPP have been held to confirm the exact coverage of the Study Area and its delineation. In principle, and where possible, the boundary of the Study Area follows existing administrative unit boundaries i.e. qisms, markaz and/or shiakhas. Table 2.3.1, shown below, provides summary data on the geographical coverage and administrative units contained within the Study Area. For this table, the Governorate of Sharqia has not been included (only the 10th of Ramadan is contained in the Sharqia Governorate).

Table 2.3.1 Study Area and Coverage of Administrative Units

	Cairo	Giza	Qalyobeyya	Total
Population 1996 (in '000s), Greater Cairo Region:	6,790	4,779	2,081	13,650
JICA Study Area:				
Population 1996 (in '000s)	6,801	3,975	2,328	13,103
% of each Govern.	100%	83%	87%	96%
No. of qism/markaz:	36	14	7	59
No. of shiakhas/village	292	144	94	530
Total population (in '000s) inc 10 th of Ramadan (Governorate of Sharqia)			13,151	(96%)

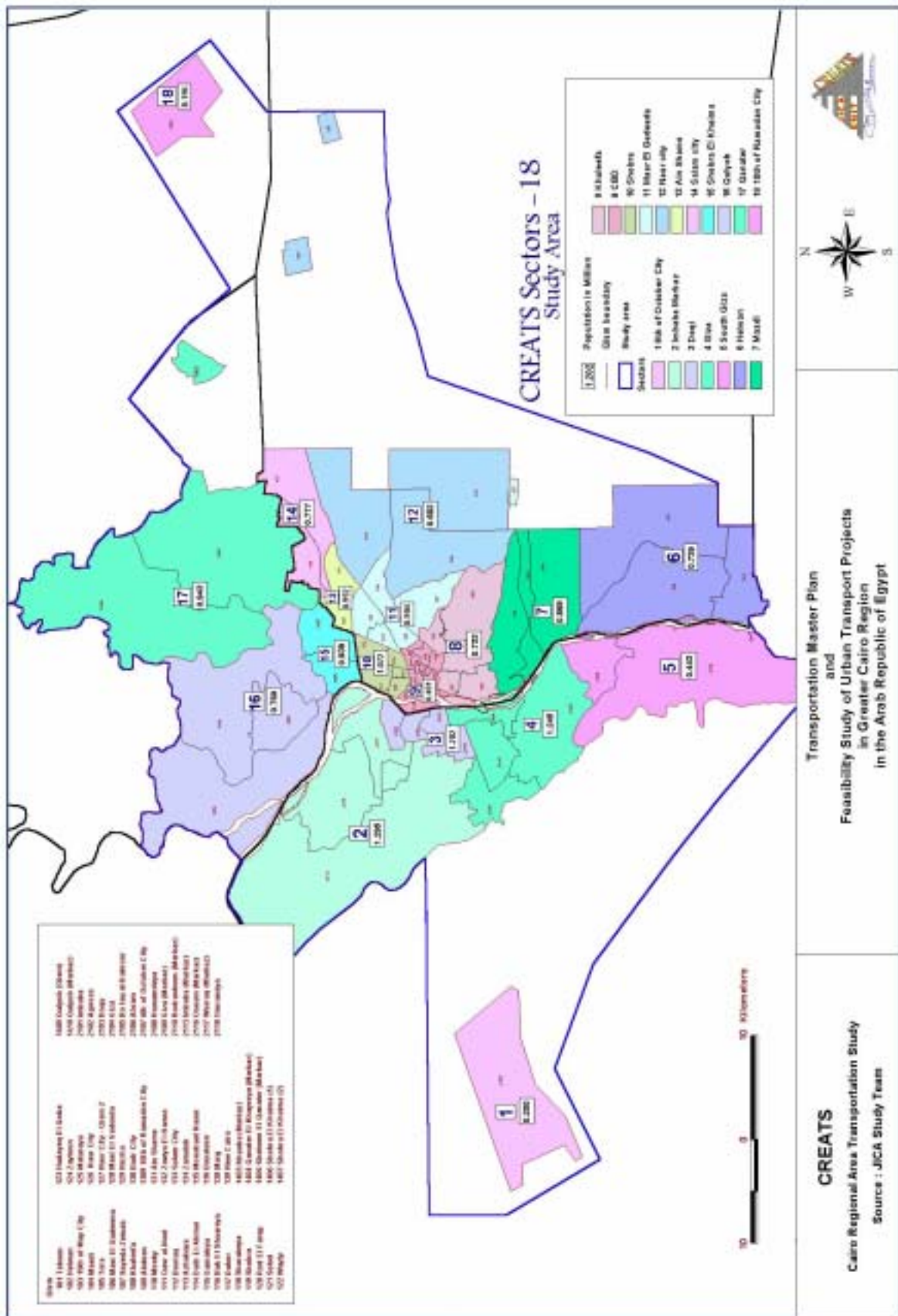
Source: Greater Cairo Atlas, GOPP; Study Area data calculated by JICA Study Team

Table 2.3.1 indicates that the JICA Study Area covers a high percentage (96 %) of the total population of the three main Governorates covered by the Study. This implies that any analysis of socio-economic characteristics studied at the Governorate level would be fully representative for the entire Study Area. The main advantage of this geographic feature is obvious: a number of statistical data are only available at Governorate level; for some analysis the use of statistics on Governorate level would simplify work procedures. It should be noted that there are some discrepancies between official data sources e.g. the population of Cairo Governorate is given as 6.79 mln from some sources whilst from CAPMAS the calculated figure was 6.80 mln. However, it must be considered that these differences are nominal.

At this stage of the project socio-economic analysis of this report will focus on main development characteristics and trends. Therefore, only the administrative levels of Governorates, strategic sectors and qisms/markaz are considered. Analysis at shiakha and village level now is too much detailed to be meaningful. The study work program has carried out an extensive socio-economic household survey at the detailed administrative shiakha level. In order to establish an initial socio-economic framework at shiakha level to support the required detailed survey work and its subsequent analysis, the Consultant has prepared a first crude estimate of key socio-economic parameters at this level. A most important anchor parameter is total population in each shiakha. Fortunately, this key parameter could be extracted from the official recent Census 1996 database, published by CAPMAS, the national statistical office. The socio-economic household survey in the JICA Study Area has generated a number of important and updated new key parameters, for example: the level and type of local employment, and household income.

Use of strategic sectors in the Study Area:

For the purpose of an aggregated and more planning oriented strategic analysis and synthesis, information has been aggregated into much larger strategic sectors. These strategic sectors are outlined below in Figure 2.3.1. These sectors follow closely homogenous zones developed by GOPP.



Source: CAPMAS, JICA Study Team

2.3.2 Macro-economic Development of Egypt and Cairo

(1) Macro-Economic Developments (1996-2001)

At the start of the economic structural reform program launched in 1991 by the government, with the assistance of the IMF and the World Bank, Egypt's economy experienced a situation of slow growth, high inflation (20 % per annum), large fiscal- and current account deficits, and a huge foreign debt burden (USD 51 billion or 144 % of the 1990/1 GDP). Three years later the Reform Program (ERSAP) and other economic measures (phased foreign debt relief after the Gulf war efforts) proved to yield substantial results: fiscal discipline was re-instated, inflation fell rapidly and economic growth increased to almost 5 % in 1995/96. The Egyptian government and the IMF agreed on a new structural reform aid program (USD 291 million) in October 1996 aiming at a broader package of structural economic reforms covering privatization of state enterprises, deregulation, trade liberalization, fiscal and financial sectors reform, and energy prices adjustments. Since 1996 the structure and growth performance of Egypt's economy has further improved.

Real economic growth increased from an annual average of 3.3 % in the period 1991/2 - 1995/6 to 5.4 % in the four years from FY1996/7 to 2000/1. Per capita growth jumped from an annual 1.3 % to 3.8 %. By the end of fiscal year (FY, ending June 30th) 2000/01, Egypt's GDP reached nearly LE 360 billion (USD 92 billion), or USD 1432 per capita against USD 1257 in 1996/7 (+ 14 %). Since the end of year 2000, the economy has faced a markedly slower growth. It is estimated that GDP will increase by probably not more than 3.5 %. With the devaluation of August 2001 (official exchange rate: 1USD= LE 4.3 at that time), GDP by end of June 2002 is estimated to be USD 88 billion.

Inflation fell drastically: from a high 20 % in 1991/2 to an average of 11 % in the years 1991/2-1995/6, and a much lower average of 3.2 % in recent years 1996/7-2000/1. This could have been achieved by economic and fiscal measures, for example: lower subsidies to public services and state enterprises, and a better controlled national budget policy. State budget deficits in 1995/6 were slashed to 5 %, and to 4.2 % in 1998/9. Total interest payments of government domestic debt stabilized at approximately LE 12.2 to 12.8 billion in the years 1995/6 and 1998/9 respectively (22 % of current budget). Foreign debt interest payments fell from LE 4.7 billion in 1993/4 to LE 2.6 billion in 1998/9.

From a macro-economic perspective, weak points in the economic structure are the imbalance between exports and imports, and the slow pace of broader economic reforms, in particular the privatization and deregulation process. For instance, the structure of export commodities (except petroleum products) indicates, in the period 1990-98, a declining share of industrial products; on the other hand, trade imports indicate that the share of manufactured goods (including many luxury consumption items and cars) increased. With respect to the reform program, the government takes a

(slow) step-by-step approach. Indeed, many required legislative measures have been taken already, but implementation of practical reforms still faces some bureaucratic barriers. This may be one of the reasons that much needed domestic and foreign investments are still at a relatively low level. A more vigorous implementation of a wider reform program enabling higher economic growth (6 % - 7 % per year) is an urgent policy measure in view of persistent social problems of poverty and the need to create an average of 500,000 additional jobs per year during the next 10 to 15 years. The export performance needs much improvements and should be broadened. New foreign exchange resources are required to replace the lower levels of foreign aid and the traditional remittances of Egyptians working abroad, mainly in the Gulf countries.

The recent economic slow down has created new problems for the current government budget. The proposed draft budget for FY 2001/2002 indicated a net budget deficit of LE 21 billion (USD 6 billion or 21 % of government income resources). If approved, the level of budget deficits of the last few years will jump from -1 % in 1997 and 1998, -3.7 % in 2000, to approximately -6.5 % of GDP.

A summary of macro-economic indicators and trends to illustrate these developments, for the country as a whole, is shown in Table 2.3.2 below.

Table 2.3.2 Egypt: Indicators of Recent Macro-Economic Development

	1991/2- 1995/6 (5 yrs)	1996/7	1997/8	1998/9	1999/0	2000/1	1991/2- 1995/6 (4 yrs)	2001/2
		(FY ending 30 June)						
Population: in million	2.0%	60.3	61.4	62.6	63.4	64.4	1.7%	65.5
Labor force, in million:	3.1%	22.3	22.7					
Recorded unemployment (%)		11.8	11.8	11.8	11.5			
GDP in LE billion (at constant factor 96/97):		239.5	253.1	268.4	285.8	295.2		305.5
GDP, aver. annual growth rate:	3.3%	5.3%	5.7%	6.0%	6.5%	3.3%	5.4%	3.5%
GDP in LE billion (current factor costs)		239.5	262.7	289.1	317.4	334.5		354.7
GDP at market prices: in LE. Billion		256.3	280.9	309.1	334.3	359.6	8.8%	378.4
GDP per capita in LE (market, nominal):		4,250	4,575	4,938	5,273	5,584	7.1%	5,782
Real growth per capita (LE):	1.3%						3.8%	
exchange rate: LE per USD, annual aver.:		3.38	3.4	3.4	3.47	3.9		4.3
GDP in USD billion (market prices)		75.8	82.6	90.9	96.3	92.2		88.0
GDP per head (USD)		1,257.5	1,345.5	1,452.3	1,519.7	1,431.8	3.3%	1,344.5
<i>Average inflation (% change p.a.)</i>		6.2	3.8	3.8	2.7	2.4		2.5
inflation index	11.0%	100.0	103.8	107.7	111.1	113.3	3.2%	116.1
Gross domestic savings (LE billion)		37.5	43.1	49.2	55.0	61.3		
Gross domestic investments (LE billion)		51.9	60.0	69.8	76.5	79.5		
Gross domestic investments (USD billion)		15.4	17.7	20.5	22.0	20.4		
<i>Investments as % of total GDP in market prices</i>	18.0%	<i>20%</i>	<i>21%</i>	<i>23%</i>	<i>23%</i>	<i>22%</i>	<i>22%</i>	
Exports of goods and services (USD billion)		16.6	15.6					
Imports of goods & services (USD billion)		20.6	22.7					
Balance of goods & services (USD billion):		-4.0	-7.0	-6.6	-5.9			
Transfers: official (net):		0.9	0.9	1.1	0.9			
Transfers: private (net):		3.3	3.7	3.8	3.8			
Total external debt (USD billion):	(USD 51bn in Fy1990¥91)	28.8	28.1	28.2	27.8	27.1		
Foreign debt (% of GDP)		38%	34%	31%	29%	29%		
Foreign-exchange reserves (USD billion)		19.4	18.8	18.1	15.1	14.2		
Outstanding debt and debt payments:								
Total public debt (as % of GDP):		104.3%	100.6%	94.1%	93.1%			
Total public debt (LE billion):		267.3	282.6	290.9	311.3			
Public external debt (LE billion):		97.3	95.5	95.9	96.5			
Public domestic debt (LE billion):		170.0	187.0	195.0	214.8			
foreign interest payments (LE billion):		3.1	2.7	2.6				
domestic interest payments (LE billion):		12.3	12.2	12.8				

Sources: Ministry of Economy and Foreign Trade, Quarterly Digest (Dec.2000), World Bank Development data 2000 CD-rom; and updates from the EIU (The Economist)

(2) National Development Planning

The Egyptian government's Vision 2017 document outlines its longer term development goals to be achieved over a period of two decades beginning in 1997. These goals focus on economic growth, reduction of poverty, full employment, the enhanced well-being of the population (with emphasis on education), access to family planning, improved maternal and child health care, population redistribution, environmental protection and management of natural resources. The Government of Egypt's programmatic approach includes, for example:

- Accelerated and steady economic growth led by the private sector:

GDP average annual growth rates are targeted at 6.8 % during the period 1997-2002, and 7.6 % during the years 2003-2017; total GDP is expected to increase 4.3 times from LE 256 billion in 1996 to LE 1,100 billion by 2017. Growth of the private sector would be enhanced through accelerated investments and increased privatization of state-owned enterprises and government services.

- Population growth is targeted to decrease from the current level of 1.8 % to 1.2 % per year in 2017, or an average annual rate of 1.53 %; hence, Egypt's total population is expected to increase from 59 million in 1996 to 80 million in 2017.

Existing desert lands allocated for reclamation/agriculture are located both in the north and south of the country. The north: near the Suez canal, the north coast and the north-east part of the Sinai, along the western Mediterranean coast (El Daboa); in the south: the South Valley program at Toshka on the western bank of Lake Nasser (first phase is 5,000 km²); and the East Oweinat program (south west of Toshka, with a potential to develop 1.89 km² of agricultural land according to the Egypt Almanac 2003, based on substantial quantities of subterranean water). All these programs together may increase the area under cultivation by 40 %. However, costs will be huge; for example, the Toshka irrigation program alone is estimated to require a total of USD 88 billion by 2017. In principle, the government is committed to provide the needed infrastructure for these programs (20 % - 25 % of the total investments), while it is expected that the private sector will invest in developing the agricultural projects, industries, supporting services, etc..

Lands allocated for construction of new urban communities are dispersed over different parts of the country; however, the most important and largest sites developed so far are located in the Cairo Region (see also section 2.3.4 regarding the new towns). Land allocated for tourism projects are concentrated in various regions: in the Western Desert Oasis, the Sinai desert and beaches, and mainly along the Red Sea coastline. Targets for development of the tourism sector in Egypt are very ambitious: the number of international tourist arrivals is expected to increase from 4 million in 1997 to 27 million in year 2017, or an average annual growth rate of 10 %. To accommodate the number of visitors some 600,000 rooms are required until 2017 (of which 50 % are planned along the Red Sea, and 19 % in the Cairo Region). The principal arguments for encouraging tourism development is that the sector contributes to large foreign exchange earnings and creates new employment opportunities for the people living in remote areas.

The main indicators and targets, proposed by the Egyptian government, are shown below in Table 2.3.3.

Table 2.3.3 Main Indicators & Targets of Egypt' s Economy (2017)

<i>Items:</i>	<i>1996 (actual)</i>	<i>Egypt: Long term targets (2017)</i>	
		<i>in 2017</i>	<i>assumptions</i>
1. Inhabited area:	5.5 % of total area or 55,000 km ²	25% of total area or 250,000 km ²	
2. Population:	59 million	80 million	growth rate: annual aver. 1.5%
3. GDP growth GDP growth rate:	LE 256 billion 4.8 % during the last 15 years	LE 1,100 billion average 7.6 % per year	
4. Employment	15.8 million	27 million	500,000 new jobs per year
5. International tourism: arrivals: number of rooms required:	4 million 76,000	27 million 600,000	growth rate= 10 % per year

Source: Egypt and 21st Century, Cabinet 1997. Statistical Yearbook for actual data.

(3) The Fourth (1997-2002) and Fifth 5-Year Plan (2002-2007)

The present 5-Year Plan (July 1997-June 2002) has reached its last year of implementation. The original plan projected an average annual growth rate of 7 % for the national economy; a breakdown of sectoral growth rates is shown in the following Table 2.3.4. Sectors with the highest annual growth rates are: the tourism sector (12.9 %), industry & construction (10.8 %), public utilities (10.2 %), and transport & communications (8.4 %). If fully implemented according to plan, total GDP of Egypt should reach a value of approximately LE 358 billion by June 2002 (at constant June 1997 prices).

The original plan required total investments in the order of LE 400 billion; a sectoral investment breakdown is presented in Table 2.3.4. The private sector is expected to provide some 70 % of total investments. The sector transport & communications would require LE 44 billion, of which approximately 50 % is to be funded by the private sector.

Table 2.3.4 Egypt's Fourth 5-Year Plan (July 1997- June 2002)

<i>Items:</i>	<i>1996 (actual)</i>	<i>Egypt: 5-Year plan target (2002)</i>	
		Growth target 1997-2002	Situation in June 2002
1 Population:	59 million	Growth rate: annual aver. 1.6 %	65 million
2 GDP aver. GDP/ capita (in USD where 1USD = LE3.38 year 1996/97): GDP growth rate:	LE 255.8 billion USD 1,282 5.5 % during the last 9 years	7 % during 5 years	LE 358 billion USD 1,629
3 Growth by main sectors: Total: agriculture: oil & gas: industry and construction: public utilities: transport & communication: commerce & finance: tourism: housing:		6.9 % 4.2 % 1.1 % 10.8 % 10.2 % 8.4 % 7.6 % 12.9 % 7.4 %	in LE billion: 360

Source: Fourth Five-Year Plan, Ministry of Planning.

Table 2.3.5 Planned Investments in the Fourth 5-Year Plan (1997-2002)

<i>Sectors:</i>	<i>Investments (constant 1997 prices)</i>	<i>% of each sector</i>	<i>Share of private sub-sectors</i>	
Total	LE 400 billion	100.0 %	LE billion in % 279 70 %	
1. agriculture:	45.9	11.5	28.5	62
2. oil & gas:	30.8	7.7	25.1	81.5
3. industry and construction:	92.1	23	84	91.2
4. electric power	28.6	7.1	17	59.4
5. other public utilities:	18.3	4.6	0	0
6. transport & communic..	44.1	11	19.5	44.2
7. commerce & finance:	10.3	2.6	7.4	71.8
8. tourism:	32	8	31.1	97.2
9. housing:	56.8	14.2	55.5	97.7
10. education	14.8	3.7	2.2	14.9
11. all others (e.g. health..)	26.3	6.6	8.7	33

Source: Fourth Five-Year Plan, Ministry of Planning.

At the time of report writing, there was no interim review of the Fourth 5-year plan available. Preparations for the Fifth 5-year plan have started but only sketchy information has appeared in the press, so far.

(4) Government Policies relevant for the Study Area

The Egyptian government is well aware that its ambitious economic program aiming at a long-term real annual growth rate of 7% to 8 % can only be achieved by pursuing

vigorously an extensive reform program covering a series of macro-economic measures and adjustments affecting the existing structure of the national economy. A number of key fields and measures of this reform program and existing economic incentives are quite relevant for the Greater Cairo Region which accounts for an estimated 32 % of Egypt's GDP in 1996 (see also section 3.6). These economic measures are briefly explained in this section: (i) the privatization program, (ii) new legal measures to boost foreign investments and recent trends of FDI's (foreign direct investments) and (iii) involvement of the private sector in the development of infrastructure.

1) Privatization Program

In 1996, when the privatization program began in earnest, 34 % of the workforce in Egypt was employed by the government: 4 million people were employed by the central and local government and service authorities, nearly one million in public enterprises, and 500,000 with the public economic authorities. The public enterprise sector, from which 314 companies were drawn for privatization, accounted for 10 % of GDP and employed 6 % of the total workforce prior to the privatization program being launched. By the end of 1998, shares of some 118 companies had been offered for sale. Strictly speaking, many of the companies included in the program have not been privatized, as the proportion of shares sold was too small. Majority stakes were sold in only 46 cases. For some time, the government apparently held the view that injecting new, private management, in combination with selling off minority shares to private investors would revive the bulk of the original public companies. In 1997 the slow pace of privatization forced the government to get the assistance of investment bankers to manage implementation of the program. By the end of 1998 the privatization program recorded accumulated sales of LE 13.7 billion.

The overall economic impact of the program and other measures to encourage growth of the private can be judged, for example, by the increasing share of the private sector (65 %) in total GDP. Another positive sign is the creation between 1995 and 1998 of 3,800 new private sector companies with a total investment of LE 16 billion.

2) Foreign Investments

Foreign investments in Egypt have started to increase since 1995/6. By the end of 1998 the FDI stock (foreign direct investments) amounted to USD 8.1 billion or approximately LE28 billion. The sector breakdown was: 52 % in manufacturing (USD 4.2 billion), 37 % in agriculture, and 11 % in other sectors including tourism. Among the larger emerging markets Egypt ranked 23rd in 1998 in the series of countries receiving foreign direct investments. The LE 28 billion FDI are probably only a small -but most welcome- fraction (15 %) of total gross investments realized in Egypt during the 3-year period 1995/6 to 1998/9, which is an estimated LE 185 billion. In 1998 Egypt received USD 800 million FDI which is only 0.65 % of the USD 123 billion FDI direct investments in 23 emerging markets world-wide. Though its present share of total FDI's is relatively small, Egypt's potential to attract FDI's is more favorable.

According to UNCTAD the US companies which have invested in Egypt show an average rate of return of 22 %, a higher rate compared with other emerging countries and a much higher rate than in Europe.

The Foreign Investment Law nr.8 of May 1997:

The Law for Investment Guarantees and Incentives was issued to replace the Investment Law nr.230 of 1989. Companies that were established under the abolished law will continue to enjoy the tax exemptions and guarantees provided for this until they legally expire. Important activities and projects eligible for tax incentives include e.g: manufacturing, mining, land reclamation, hotels and tourism villages, tourism transport, air and marine transportation, residential housing, infrastructure projects, venture capital activities, computer software, etc. Free zones also come under Law nr.8 of 1997. Projects in free zones can be established to carry out the above mentioned activities. The project can adopt any legal form recognized by Egyptian law but usually it takes the form of a joint-stock company. Some important tax exemptions and guarantees provided by Law nr.8 of 1997 are as follows:

(1) Projects inside the country (other than in free zones) enjoy a tax exemption from the profit tax (corporate tax or personal income tax as the case may be) for five years from the first financial year following the year during which they become productive or operational (i.e., capable of generating income from their main activity). However, projects established within the Old Valley in new urban communities, new industrial cities and remote zones enjoy these tax holidays for a ten years period. Projects established outside the Old Valley (such as Toshka, to the South of Aswan), enjoy tax exemptions for 20 years.

(2) Interest from bonds issued by joint-stock companies under Law nr.8 is exempt from tax on movable capital provided that the bonds are offered for public subscription and that they are registered at the Egyptian Stock Exchange (ESE).

(3) Guarantees: (a) projects may not be nationalized or confiscated, except by judicial procedures; (b) projects are exempt from legal restrictions on the ownership of real estate by foreigners, or projects with foreign participation; (c) import and export regulations for these projects are much simplified; (d) projects are allowed to freely fix the prices of their products without any government intervention or control; (e) the Investment Authority (Cafi) will assist the investor in acquiring a piece of land for a project in one of the new urban communities or cities at quite low prices.

The significance of the above mentioned laws, regulations and guarantees for the development of the existing new towns in the Cairo Region is twofold: (a) the laws and regulations themselves are liberal and simplify many existing bureaucratic procedures. (b) from an economic and financial point of view, the laws provide very substantial incentives to attract a variety of investors to the new urban communities. This is obvious (tax holidays) in the case of direct equity investments both by domestic and foreign investors; but, in addition, also some debt funding components of projects are

facilitated for the interested public through the tax exemption applicable to bonds. Impressive results of the Law nr.8 of 1997 can already been observed in the major new towns in the Study Area (6th of October, 10th of Ramadan): an estimated 1250 factories and 170,000 jobs have been created here during the last 5 to 7 years. The expectation is that the volume of existing productive investments in these new towns near Cairo will continue to grow rapidly, while the economic process will support employment and population growth of new towns.

Laws on Establishment of New Urban Communities (nr.59/1979, amended by laws nr.86-8/1997)

In addition to tax holidays granted under the Investment Law nr.86 of 1997, Law nr.59 of 1979, the New Urban Communities Law exempts projects located in new urban communities also from all tax on property for 10 years from the commencement of operations.

Real estate taxes:

These taxes are imposed on the rental income from buildings and agricultural land. Rental income is assessed by the government every 10 years for all buildings (within city boundaries) and all agricultural land whether actually rented to others or directly used or exploited by the owners. The original tax rate on buildings is 10 % for non-residential buildings, and ranges between 20 and 40 % on residential buildings depending on the average rental value of the room in a flat. The original tax is assessed on the net rental value; 20 % of the gross rental value is deducted for maintenance and expenses. In addition to the original tax there is a complementary tax called guard tax (khafar tax) whose rate is 20 % of the original tax. Both taxes are borne by the owner of property.

There are also some local taxes imposed by the governorates. For instance, in Cairo Governorate the following local duties are valid: (i) municipal duty at 2.67 % of the net rental value borne by the owner; (ii) occupancy duty at 4 % of the gross rental value borne by the occupant; and (iii) cleaning duty at 2 % of the gross rental value borne by the occupant.

The Mortgage Law of July 2001:

The government presented a mortgage law to Parliament. The new law is a novelty in housing finance in Egypt. If adopted, it will enable institutional investors such as insurance companies and pension funds to engage in long-term financing of the housing market. Low-middle income families earning a minimum of LE 1000 per month (USD 230) would be eligible to obtain long term mortgage loans (20 to 30 year loans). In theory, the potential market and target group for such loans is very large (more than 50 % of the population), but little is known about the effective demand and affordability of urban households for such loans.

Besides the drive to modernize and broaden activities of the financial markets and to boost savings, the apparent short and medium term reasons of the government to introduce the instrument of mortgage loans in Egypt have much to do with the persistently unbalanced situation of the housing market. During the late 1980's and early 1990's thousands of luxury apartment blocks have been constructed in the country. However, in many locations in the Cairo Region (including the new towns) and elsewhere a huge number of completed and semi-finished flats have been lying idle and empty for a long time. A major cause of this phenomenon is a lack of effective demand and appropriate finance available to end-users. The construction industry and property developers will certainly welcome implementation of the new mortgage law.

3) Involvement of the Private Sector in the Development of Infrastructure

Egypt is radically reforming the methods by which infrastructure is upgraded to meet current and future needs. To secure the finance necessary for implementing larger scale projects the government has moved rapidly towards extensive use of the BOOT (build-own-operate-transfer) and BOT (build-operate-transfer) project development systems. Law nr.18 of 1998 has been decreed in order to allow the granting of BOT concessions and contracts, first for the electricity generation and distribution sectors. Subsequently ports, including the construction of new ports and upgrading of existing ones were allowed; later other infrastructure sub-sectors followed. BOT contracts are eligible both to domestic and foreign investors. Egypt has evolved its use of BOT schemes on the basis of financing packages which include indemnities from the state as well as political risk insurance.

The government's strategy of creating private sector investment opportunities outside the privatization program had attracted, by early 1999, already more than USD 1.2 billion of investments in various sectors. Private sector power generation, gas distribution, seaport and airport construction and management, projects for road building, and private telecommunications are well advanced.

Major projects that have been considered for implementation, but whose status is still to be confirmed or is subject to change, are, for example: a 650 MW power plant at Sidi Krier-II with a US contractor (USD 400 million); two 650 MW power stations in the Gulf of Suez (a USD 1.2 billion BOOT contract, with the Egyptian EEA and the French EDF), the USD 220 million deal with British Gas International for the construction of a 500 km gas pipeline from Cairo to Asyut and local distribution networks. A total of 15 more BOOT power projects are planned for the next two decades. Plans are being prepared for a major motorway linking Alexandria, Cairo and the towns of Southern Egypt; another 6 BOT road projects are scheduled in various parts of Middle and Southern Egypt. A start has been made with offering BOOT contracts for new airports: in Al Alanien, Marsa Alam airport on the Southern Red Sea coast, the Ras Sidr airport on the Red Sea of Western Sinai, while two more BOOT airports are planned at Bahariya and Farafra in the Western Desert and Oasis Region.

2.3.3 Socio-Economic Development Trends

(1) Urban Development and Plans

The reviewed documents contain valuable, sometimes detailed, information concerning both socio-economic as well as urban land development and urban planning characteristics in the Study Area (the JICA study of 1989 providing the more systematic and detailed data and analysis). Any reader wishing to obtain a full analysis of the recent socio-economic and land development trends in Greater Cairo is recommended to consult these documents. An abstract of key findings of these studies is summarized below in Table 2.3.6.

Table 2.3.6 Master Planning and Urban Development Trends

Subject:	Features:
Area of recent Systra Study	Covers the urbanized area of Greater Cairo or the Greater Cairo Metropolitan Area (GCMA); it comprises 51 qisms and 408 shiakhkas with a total population of 11.3 million in 1996.
Master Planning in Cairo	<p>A first modern Master Plan for Cairo was prepared already in 1953; its horizon was a projected population of 5 million by the year 2000. A new Plan prepared in 1970 launched the concept of a few satellite towns close to Cairo. The Plan introduced the concept of constructing a Ring Road in order to contain urban growth of Cairo, and to open up new land for development. The decision to create new towns in the desert was taken in 1973. The new Master Plan of 1982 elaborated explicitly the development of 10 satellite towns and new settlements (later called: new communities) around Cairo. Urban extensions near and beyond the Ring Road accelerated in the years 1990-92 when state owned desert land was offered for sale, and when sections of the Ring Road were completed. The new settlements include -to the West: the cities of 6th of October, and Sadat town; to the East: New Cairo development; to the North East: Al Obour, Al Shorouk, Badr City, and the 10th of Ramadan, New Cairo</p> <p>The newest Master Plan version is approved in 1997; it is currently being revised and adapted.</p>
Urban development	<p>Population in the Cairo Central areas started to decrease between 1966 and 1976. Cairo Central Area lost 200,000 inhabitants, while the suburbs increased their population with some 2 million new inhabitants. Between 1977 and 1982 the total urbanized area increased from 265 km² to 326 km² (annual increase of 12 km²).</p> <p>Densities in Cairo were -and are still- notoriously high ; some neighborhoods (like Bab Al Shaaria) reached 10.5 inhabitants per km², Relatively new urban districts like Minshat Naser and Ain Shams also witness high density increases between 5 and 6 persons per km².</p> <p>Although there is a regional and local migration trend towards Giza and Qalyobeyya Governorates, it appears that less than expected arable lands had been urbanized (according to satellite photo studies: less than 2 km² per year from 1986 to 1989). In 1996 the GCMA covered officially 1,581 km² and counted 13.5 million inhabitants.</p> <p>Development of the new communities has taken off by massive construction. However, today, a high share of buildings remain incomplete or vacant.</p>

Source: JICA Study Team

(2) Historic Population Growth Trends within the Study Area

During the inter-census periods 1966-1976-1986 when the population⁵ of the Greater Cairo Region grew from 7.09 million to 12.31 million, the average annual growth rate stayed at a high level for almost twenty years: between 2.6 % and 3 %. Part of the growth was attributed to migration. After 1986 the annual population growth rate started to decrease rapidly, to an average 1.9 %, during the recent inter-census period 1986-1996. Recent demographic studies have indicated that future growth of the Greater Cairo Region will be more in line with the steadily declining national growth trends.

Main trends and directions of population growth:

In the following Table 2.3.7, recent population trends during the period 1986-1996 within the Study Area are shown. These areas are calculated from the JICA study's database and GIS. As such, calculated areas may differ from those utilized by the GOPP. It is believed that the difference is because GOPP calculate area using built-up area only whereas the calculations given below are based on geographical area which would include land that is not built-up. However, because the analysis refers to changes over time with the same parameters, then the differences between the two approaches are not relevant and the conclusions would be expected to be similar.

In summary, while the overall growth of population within the Study Area was an average of 2.1 % per year, the population of Cairo Governorate grew at only 1.5 % per year. In contrast, the Giza Governorate grew at a double rate of 2.5 % per year, while population growth in the Qalyobeyya Governorate was even higher with an annual rate of 3.0 % (almost 50 % above the average Cairo Regional trend). These trends imply that there are: (a) different (average) natural growth trends in Cairo Governorate compared with Giza and Qalyobeyya; and (b) there are probably significant internal (net) urban migration flows from Cairo Governorate to Giza and Qalyobeyya⁶. Without differential growth trends in the region, Cairo City's population would have been approximately 480,000 higher in 1996, while both Giza and Qalyobeyya would have respectively 220,000 and 260,000 less people. It must be remembered that, by 1996, the impact of population growth in the new towns surrounding Cairo had already a little impact on the divergent suburban growth trends in Cairo Region. The City of 6th of October registered 35,000 inhabitants, 10th of Ramadan 48,000 and Al-Oboor City only 1,000: in total 84,000 people or 18 % of the incremental intra-urban migration flow during the period 1986-1996.

⁵ 'National Project for Developing Cairo Region, 1997-2017', Ministry of Planning, 1997

⁶ See also National Project document for more detailed information

(3) Urban Population in the 1996 Census

The 1996 Census has recorded and published specific data concerning urban population at regional and district level. Since such data had not been recorded in the 1986 or any previous Census, it is impossible to calculate accurate trends of recent urbanization processes in larger agglomerations like the Cairo Region, especially in the semi-urban districts of Giza and Qalyobeyya Governorates. Out of a total 1996 population of 4.2 million in the Giza Study Area (part), the population classified as urban amounts to 2.5 million or 59 %. The urban population is mainly concentrated in 7 fully urbanized districts and together the 7 districts form effectively the Giza town. The district of markaz Al-Umraniya has an 80 % urban population. The 1.7 million rural population is mainly concentrated in the remaining 6 districts: markaz Awsim, al-Warraq, Imbaba, al-Gizah, al-Badrasayn, and al-Saf. It must be noticed, however, that the markaz al-Warraq, partly located on an island in the Nile River, has a high population density (1.48 persons per km²), which is not typical for a rural district.

The Qalyobeyya Study Area (part) has an urban population of 1.1 million or 48 % of the total. The main urban center is Shrubal al-Khayma (860,000 people) and the smaller town of Qalyub (97,000 people). The other 4 districts have only small urban populations. Overall, the Study Area, including Cairo City and the new towns, had in 1996 an urban population of 10.5 million (78 % of the total Study Area), while the remaining 2.9 million was classified as rural.

Table 2.3.7 Area, Population and Pop Densities by Governorate

Governorate	Area total (km ²)	Population		Pop growth	Pop. density (persons/ km ²)		Urban total	Rural total	Urban share
		1986	1996		1986	1996			
Cairo	640	5,856,823	6,800,992	1.5%	0.91	1.06	6,800,748	0	100%
Giza	616	3,097,133	3,974,640	2.5%	0.50	0.65	2,492,171	1,561,267	63%
Qalyobeyya	531	1,726,879	2,327,680	3.0%	0.33	0.44	1,126,962	1,199,375	48%
Sharqeyya (10th of Ramadan City only)	38		47,833				47,833	0	100%
Total Study Area	182,635	10,680,835	13,151,145	2.1%			10,467,714	2,760,642	80%

Source: CAPMAS

2.3.4 Present Conditions in the Study Area

(1) Development of New Towns in Cairo Region

The recent and future developments of new towns (or new settlements) in the Cairo Region play a strategic role in the location of future incremental population growth and economic development in the Study Area. There is almost no recent socio-economic data available in the latest Census 1996 published reports. Through interviews with government officials (the GOPP office of the Ministry of Housing),

site visits to selected towns, screening of available new town plans and documents, and interviews with local Town Council officers, notably their public relations departments, Consultants were able to prepare a preliminary updated profile of local conditions in these towns. Following Table 2.3.8 presents key summary data on 9 new towns located in the Cairo Region. Table 2.3.9 provides more detailed information on a number of the new towns.

Although data collection and -analysis (including translation from Arabic) was performed by the team with utmost care, the present reported findings in this section must be considered as preliminary results, and hence, they should be treated with caution. The original data are derived from various sources. But even the most substantial information source (GOPP office) produced sometimes unclearly defined -and inconsistent- planning data. Thus, the main findings and conclusions of this section will be sufficient.

Table 2.3.8 Key Summary Data – 9 New Towns

Item	6th of October	Sheikh Zaid City	New Communities nr-7	sub-total West (CREATS)	Sadat City	sub-total West	Al Obour City	Al Shorouk City	Badr City	New Cairo City	10th of Ramadan	Al Amal City (land only)	sub-total East	Total
1 Population (actual)														
Cens. 1996	35,000	n.a	n.a	35,000	n.a	35,000	n.a	n.a	n.a	n.a	48,000	n.a	48,000	83,000
end year 1998 (actual)	n.a	n.a	n.a	n.a	n.a	0	n.a	n.a	n.a	n.a	80,000	n.a	80,000	80,000
Mid year 2001 (estimate)	200,000	n.a	n.a	200,000	n.a	200,000	n.a	42,000	n.a	90,000	196,000	n.a	328,000	528,000
Planned population: (Master plans)														
Long term development:	1,500,000	500,000	n.a	2,000,000	n.a	2,000,000	500,000	500,000	430,000	n.a	1,000,000	n.a	2,430,000	4,430,000
Master Plan - revised 1997:	1,000,000	500,000	n.a	1,500,000	n.a	1,500,000	500,000	500,000	430,000	750,000	500,000	n.a	2,680,000	4,180,000
2 Production & employment:														
Census 1996: residents employed (total)	13,270	n.a	n.a	13,270	n.a	13,270	294	n.a	n.a	n.a	17,680	n.a	17,974	31,244
end year 2000, total (estimate)	120,000	n.a	n.a	120,000	25,000	145,000	23,000	n.a	19,200	n.a	141,600	n.a	183,800	328,800
nr of existing factories (Dec.2000)	(a) 617	n.a	n.a	617	253	870	50	n.a	63	n.a	946	n.a	1,059	1,929
nr factories under constr.(Dec.2000)	(a) 340	n.a	n.a	340	155	495	326	n.a	162	n.a	353	n.a	841	1,336
employment in factories (Sept.1999)	(a) 104,217	n.a	n.a	104,217	24,851	129,068	19,091	n.a	15,619	n.a	117,244	n.a	151,954	281,022
(incl. factories under construction)														
employment in factories (end 2000)	(b) 99,700	n.a	n.a	99,700	25,045	124,745	23,044	n.a	19,231	n.a	117,751	n.a	160,026	284,771
aver. nr workers per factory (yr2000)	104	n.a	n.a	n.a	99	n.a	461	n.a	305	n.a	124	n.a	151	148
3 Urban planning (latest update)														
Master Plan - Long Term area: in km ² :	40,800	3,900	n.a	44,700	n.a	44,700	6,800	4,500	7,300	15,700	39,800	n.a	74,100	118,800
Master Plan (revised-97), total area:	36,000	3,300	n.a	39,300	n.a	39,300	6,854	4,246	7,300	3,700	23,000	n.a	45,100	84,400
of which urban area, in km ² :	26,700	n.a	n.a	26,700	n.a	26,700	5,313	1,890	5,170	3,600	23,000	n.a	38,973	65,673
gross pop. density (Master Plan 97):	28	152	38	38	73	38	73	118	59	203	22	n.a	59	50
nr dwellings constructed end 1998	34,800	n.a	n.a	34,800	n.a	34,800	n.a	22,300	17,500	8,900	22,100	n.a	70,800	105,600
nr dwellings constructed end 2000	40,700	n.a	n.a	40,700	n.a	40,700	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a

Data sources: (a) Ministry of Housing, Utilities & Urban Communities

Note: 1 feddan= 0.42 ha, 1 km²= 100 ha

CREATS Phase I Final Report Vol. III: Transport Master Plan
Chapter 2: URBANIZATION STRUCTURE AND SOCIO-ECONOMIC FRAMEWORK

Table 2.3.9 Detailed Data, Selected New Towns

Item	Source	6th of October **	Al Obour City **	Al Shorouk City	Badr City **	New Cairo City (two areas)	10th of Ramadan **	sub-total East	Total
1 Population (actual: Mid 2001)		200,000	n.a.	42,000	n.a.	90,000	196,000	328,000	528,000
2 Urban planning (latest update)	GOPP 1999								
<i>Master Plan:</i>									
Master Plan - Long Term area: in ha:	(a)	40,800	6,800	4,500	7,300	15,700	39,800	74,100	114,900
Master Plan (revised-97), total area:	(a)	36,000	6,854	4,246	7,300	n.a.	n.a.	n.a.	n.a.
of which urban area, in ha:	(a)	26,500	5,313	1,890	5,170	2,234	23,000	37,607	64,107
of which parks & green area, in ha:	(b)	2,520	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
of which residential area, in ha:		n.a.	n.a.	n.a.	3,545	n.a.	n.a.	n.a.	n.a.
of which infrastruct & utilities, in ha:	(a)	5,156	1,837	2,169	630	n.a.	5,693	10,328	15,484
of which industrial zone, in ha:		n.a.	n.a.	n.a.	n.a.	n.a.	4,050	n.a.	n.a.
<i>Developed land:</i>									
infrastructure & utilities: ha in 1995:	(a)	4,361	1,588	n.a.	518		2,024	4,130	8,491
infrastructure & utilities: ha in 1998:	(a)	6,405	1,641	n.a.	918	86	2,904	5,549	11,954
residential land: ha in 1998:		n.a.	n.a.	n.a.	n.a.	1,455	n.a.	n.a.	n.a.
industrial land developed by 1998, in ha:	(a)	10,960	4,538	n.a.	2,907	0	7,020	14,465	25,425
industrial land sold by end 1995, in ha:	(a)	4,416	777	n.a.	518	0	5,264	6,559	10,975
industrial land sold by end 1998, in ha:	(a)	5,234	1,094	n.a.	1,005	0	5,830	7,929	13,164
industr.land utilised (net plot area) in ha:	(b)	842	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
<i>Developed constructions:</i>									
residential units (dwellings) in 1995	(a)	27,574	n.a.	10,820	13,584	2,032	21,100	47,536	75,110
dwellings in 1998:	(a)	34,789	n.a.	22,269	17,456	8,897	22,100	70,722	105,511
dwellings by end of 2000::	(b)	40,695	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
community services buildings: (incl: schools, health, social, public service, religious, social)									
in 1995:	(a)	74		3	7	8	74	92	166
in 1998:	(a)	75		5	12	11	78	106	181
commercial, office buildings in 1995:	(a)	41		1	5	0	63	69	110
commercial & office buildings in 1998 (incl.few industrial service units)	(a)	42		4	7	0	70	81	123
sub-total invest build..s '98:(LE*1000)	(a)	309,096		12,719	11,172		54,000	77,891	386,987
<i>Industry (manft.),total invest (LE*1000)</i>									
existing factories, by end 1995:	(a)	n.a.	0	n.a.	57,144	n.a.	6,957,488	7,014,632	7,014,632
factories under construction, 1995:	(a)	n.a.	0	n.a.	102,906	n.a.	1,212,851	1,315,757	1,315,757
existing factories, by end 1998:	(a)	3,190,533	46,016	n.a.	288,975	n.a.	12,633,727	12,968,718	16,159,251
factories under construction, 1998:	(a)	2,582,257	0	n.a.	312,439	n.a.	788,999	1,101,438	3,683,695
Industry (manft.), total employ. yr2000: (includes factories under construction)	(c)	99,737	23,044	n.a.	19,231	n.a.	117,751	160,026	259,763
Aver.investm.(1998)/worker (LE*1000)		58	2		31	n.a.	114	147	205
<i>Developed infra & utilities (until 1998):</i> (investment data = in LE*1000)									
water supply: network in km:		780	n.a.	548	161	33	944	1,686	2,466
drainage sewerage network in km:		440	n.a.	321	108	21	602	1,051	1,491
total investment costs water+sewerage:		563,183	n.a.	296,500	155,904	67,970	403,907	924,281	1,487,464
roads, network in km:		311	n.a.	31	79	20	361	491	802
telecom, network in km:		722	n.a.	59	228		622	909	1,631
total investm, in roads & telecom:		174,544	n.a.	241,772	52,733	32,730	176,228	503,463	678,007
electricity network in km:		2,887	n.a.	766	723	36	2,370	3,895	6,782
investm, in electricity networks:		416,196	n.a.	121,992	140,437	49,157	280,239	591,825	1,008,021
sub-total invest infrastr. '98:(LE*1000)		1,153,923	n.a.	660,264	349,074	149,857	860,374	2,019,569	3,173,492
increase in total infra-investm.95 to 98:		61%	n.a.	n.a.	n.a.	n.a.	66%	n.a.	n.a.
govern.invest infrastr. '2000: (LE*1000)	(b)	1,790,000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
of which: main infrastructure		1,140,000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
of which: secondary infrastructure		640,000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
of which: services:		10,000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Data sources:

(a) Ministry of Housing, Utilities & Urban Communities

(c) Ministry of Economy

Note: 1 feddan= 0.42 ha, 1 km² = 100 ha

(b) Local City Council Offices, Public Relations Dept.

(1) New Towns and their Location:

Nine new towns in the region are situated within the Study Area. One of these new towns, 15th of May, lies within the existing boundaries of Cairo city; it is located in the south near Helwan district. The town covers a gross area of 1,260 ha (12.6 km²). Development started in the early 1980's; its population increased from 24,000 in 1986 to 66,000 in 1996 (Census data). This is an established new town and, therefore, little reference has been made, for analytical purposes, to the settlement for the remainder of this section

The city 10th of Ramadan, is located in the eastern desert on the road to Ismailiya, at a distance of 50 km from Cairo center. The majority of the new town sites are located closer to Cairo. Distances to Cairo center vary between 20 km (New Cairo, 15th of May), and 30 to 35 km (6th of October, Madinat Al-Oboor, Madinat Al-Shorouq, Madinat Badr). Sheikh Zaid City and New Communities No. 7 are very close to 6th of October. It is understood that development at these latter two cities is at a preliminary stage. For the purposes of this study, therefore, the information obtained for these two cities has been aggregated with 6th of October.

An additional new town, Sadat City, lies outside the Study Area and is located along the desert road to Alexandria, at a distance of approximately 50 km from Cairo. This settlement is also only briefly referred for the analysis contained in this section of the report.

(2) Master Plans, Planned Land Use and Population Capacity of New Towns:

Master Plans have been prepared for all new towns, while plans for individual towns have been integrated in an overall Greater Cairo Master Plan (GCMP), already in 1982. Since then, the GCMP has been reviewed, adapted and officially approved several times: for instance in 1992 and most recently in 1997. Currently, the existing GCMP is again being reviewed and updated. Overall, there is a tendency to enlarge the gross plan area of most new towns. Apparently, land use plans of specific towns are also adapted to new market conditions and land demands for new functions. For example, plans for 6th of October have incorporated new and extended functions for recreation and tourism. The plans for New Cairo have been adjusted to market trends demanding more spacious residential development (villa style).

One remarkable feature of most new town Master Plans is their very extensive land utilization (plans). The addition of total gross master plan area of 7 new towns in the Study Area amounts to 84,400 ha (844 km²); 39,300 ha (393 km²) is situated in the western desert (mainly 6th of October but also Sheikh Zaid City); and 45,100 ha (451 km²) is located in the eastern desert (Madinat Al-Aboor, Shorouq City, Madinat Badr, New Cairo but mainly the city 10th of Ramadan with 23,000 ha (230 km²)). The vast scale of these planned developments can be understood when these areas are compared with the existing urban development of Greater Cairo. For instance, the area defined in the recent Systra study Greater Cairo Metropolitan Area, covers all of Cairo City's 41 qisms with 57,700 ha (577 km²), the 7 urban qisms in Giza Governorate with 10,200 ha (102 km²), and 3 urban qisms in

Qalyobeyya with 3,760 ha (376 km²), or a total of approximately 72,000 ha (720 km²) and 11.3 million inhabitants in 1996.

The planned long term (year 2022) capacity of all new towns is set at approximately 4.5 million inhabitants. Overall gross densities would be in the order of 0.5 persons per km² (compared with present 1.57 persons per km² in Cairo Metropolitan Area). Obviously, major spatial differences between the existing Cairo urban area and the new towns are the constraints of the desert environment, the inclusion and creation of larger green areas or green belts, and the deliberate choice to create a different and more spacious urban environment than existing densely populated Cairo.

(3) Land Development and Costs:

Unfortunately, available GOPP planning and monitoring documentation concerning implemented project works in most new towns is not always precise enough and not up-to-date. For example, concerning land- and infrastructure development, one would expect a clear and classic reporting of the quantities of planned and implemented functional areas, such as: residential (gross and net area), area used for infrastructure, industrial area, parks and other green or open air functions, education and other communal services, and commercial areas. Such clearly defined data or lacking, even a key item like developed residential land. Only, indirectly can one assess the scope of actual developments, for example: by comparing the number of constructed dwelling units with other plan items (the length of water supply networks, roads, etc..).

A recent field visit to the 6th of October City clarified some urban planning data. For example, it was confirmed that the officially designated new town area (within its official boundaries) covered 36,000 ha (360 km²). But only 8,400 ha (84 km²) are assigned as built-up area; this includes residential zones, the 1,000 ha (10 km²) industrial zone (gross area), and all its local supporting infrastructure like roads, space for local commercial and services functions, etc. The larger green belts and agricultural land being developed at the edges of the city are not included in the 8,400 ha (84 km²) built-up area.

For some of the new towns infrastructure development costs incurred until 1998 are well reported in GOPP documents. For five new towns (6th of October, Shorouq City, Madinat Badr, New Cairo and 10th of Ramadan) total investment costs for infrastructure sub-sectors water supply, drainage/sewerage, road network, telecom and power supply amounted to almost LE 3.2 billion, of which LE 1,154 million for the 6th of October city and to LE 860 million for the 10th of Ramadan. Referring to the total urban area as defined in each Master Plan, respectively 26,500 ha (265 km²) and 23,000 ha (230 km²), the average cost per km² would, for these towns, amount to LE 435 per km² (6th of October) and LE 374 per km² (10th of Ramadan). However, the data by end of 1998 show only a partial picture of the overall needed investments in infrastructure. The Town Council public relations office of 6th of October reported that, by the end of year 2000, total investment cost for infrastructure has increased to LE 17.9 million or LE 675 per km².

(4) Existing Infrastructure Development, Construction of Buildings:

Table 2.3.9 provides a fairly comprehensive picture of the infrastructure networks completed until the end of 1998. For example: for the indicated new towns (excluding Madinat Al-Aboor) approximately 2,500 km of water supply systems has been developed, 1,500 km of drainage/sewerage networks, 800 km of roads, 1,600 km of telecom network, and 6,800 km of electric power line networks. Apparently, these data concern all types of land development in the new towns, including the new industrial estates.

(5) Existing Population and Employment:

Today, of the new towns in the Study Area, the two most important, both in terms of population and employment, are the cities 6th of October and the 10th of Ramadan. By June 2001, these towns had approximately 200,000 inhabitants each, and 217,000 local industrial jobs (respectively 100,000 jobs in 6th of October, and 117,000 industrial jobs in 10th of Ramadan). Total current population residing in all new towns of the Study Area is estimated at some 530,000. The planned long term (year 2022) capacity of all new towns is set at approximately 4.5 million inhabitants.

In addition to jobs in the manufacturing sector, it is obvious from quick site visits to the two main new towns that local permanent employment is also created in other sectors like: government and private services, commercial development, the recreation sector, local transportation, and utilities. A third major sector of local employment is found in the construction activities. Construction, usually considered as a temporary and 'foot-loose' activity and source of employment, plays in the early- and medium-term phases of new town development a crucial role of semi-permanent job creator with impact on other local service sectors as well. The type of jobs and skills may change over time from road and other infrastructure builders to housing construction, maintenance activities and more service oriented smaller scale home-improvement business. For a considerable period, say 10 to 15 years, 'local' employment generated by construction activities in new towns will have a relatively larger impact (share) on total local employment.

For some time in their development cycle new towns will have a skewed, not a standard overall local employment profile. Yet, it implies that there will be a minimum level of local jobs in commercial and service activities. A reasonable reference point to gauge such minimum 'local job level' can be found from previous urban studies in the Cairo Region. For instance, in the JICA 'Transportation Master Plan' of 1989, it is found that local districts (qisms) in the suburbs of Cairo have a minimum ratio of 80 jobs per 1000 inhabitants (compared with an average of 160 jobs in the whole town), and a maximum of 640 jobs per 1000 inhabitants in the CBD area. Hence, a level of 100 extra jobs per 1000 inhabitants (all sectors besides manufacturing) may be considered as a minimum of additional local employment in new towns.

Finally, a comprehensive profile of employment in the Cairo Region new towns, has to distinguish both the total level of overall available local jobs, and the

employment level of residents, considering both the flows of incoming and outgoing job commuters. Unfortunately, so far, no up-to-date and official data or estimates could be obtained concerning employment in other sectors than local manufacturing. The Home Interview Survey results, undertaken for this study, are of assistance in obtaining reasonable estimates of local employment characteristics in the entire Study Area, including the new towns.

(6) Industries:

Perhaps one of the major attraction factors contributing to the recently observed faster growth of new towns in the Cairo Region, is the development of the industrial sector in these towns. Government policy supports the location and creation of new domestic and foreign (mainly) manufacturing establishments through several economic and financial incentives, for instance: (i) the provision and easy access to relatively cheap and well planned and serviced industrial sites, and (ii) the granting of a five to ten-years tax holiday. As a result of this policy, effectively implemented during the last 5 to 8 years, substantial basic employment has been created in the Study Area in four new towns classified as industrial towns. The larger concentrations of new industrial jobs occurred in the two largest towns: 6th of October and 10th of Ramadan. The other officially classified new 'industrial towns' are Madinat Al-Oboor and Madinat Badr (Shorouq City and New Cairo do not belong to this category; and presumably, financial incentives for industrial investments do not apply to these towns).

From Table 2.3.8, it can be observed that, by the end of year 2000, total employment in the manufacturing sector in all new towns of the Study Area amounted to approximately 260,000 jobs (the official 'industrial' towns Sadat City, and 15th of May are not considered here). The latter figure includes the number of (planned) jobs in factories under construction. Overall, there are 1,676 existing factories, and 1,181 factories units under construction, or a total of 2,857. A detailed review of the case 6th of October city indicates that approximately 70 % of the total employment is attributed to existing factories.

(7) The Case of 6th of October City:

Besides the data reported above, some interesting features of the development process of this new town were given to the Consultants during a short interview with the local Town Council 's public relations office. These are detailed below.

Land development and land sales cost recovery:

The government undertakes most land development and infrastructure works; cost recovery is obtained through the sales of (long term) land use (rights). In principle, land sales through the responsible government agency aim at recovering mainly the land development costs: investments in infrastructure. Land in the new towns itself can not be sold. Hence, official land prices are relatively low. Current average prices (mid 2001) per land use category are: (i) residential land: LE 220 per m²; industrial: LE 180/m²; and commercial land LE 370/m². At present almost all land in 6th of October is sold (including all industrial land), although it has to be

confirmed whether this applies to serviced land only or to all available raw land within the boundary of the new town. Investors, corporations and private individuals obtaining land and building permits through the official government agencies (at low prices) are obliged to start construction within a period of two years. In practice this does not always happen; a kind of parallel (private) speculative land market is flourishing. Prices in this market are much higher than the official prices. Early year 2000 prices reached a maximum level of LE 2000/m²; now land prices dropped to LE 1000 or less.

Residential development:

During the initial development stages, since 1982, housing, mainly walk-up flats for 'pioneer settlers' in the city had been built by the government. This nearly 20 years old residential quarter is located close to the main industrial zone of the city. Since then, the government has been constructing most of the type of so-called economic class dwellings, while in recent years a Moubarak Youth housing program is being developed, as well as some special purpose smaller housing projects for very low-income shelterless people, for mentally retarded people, etc.. Today, an estimated 40,700 dwellings are constructed in the city, mainly multi-storied dwellings. Besides dwellings subsidized by government, private housing corporations, private commercial developers, and individuals are active in housing construction. The housing stock today consists of the following type of dwellings:

Table 2.3.10 Type of Dwelling and Housing Stock

Type of dwellings:	nr. of units	price class (LE)
1 economic class	19,163	less than 20,000
2 Moubarak program	13,591	n.a.
flats:	4,448	50,000 to 100,000
3 medium class flats:	3,108	above 100,000
4 luxurious housing	385	
5 villas:		
Total:	40,695	

Part of the government subsidized housing stock is rented (rents vary between LE 200 to 400 a month depending on location and size of the flats). Another part of the dwelling stock constructed by government was sold to lower income families (prices for a 62 m² flat used to be only LE 10,000 some 5 years ago). Some of these dwellings are sold in the private market for LE 20,000 and more. In the new town, one may observe many completed but empty dwellings, besides semi-finished constructions. According to the local public relations office this phenomenon is mainly explained by the fact that local infrastructure and services are not completed and not available at the time. The general observation is that once all infrastructure services are in place, potential residents will settle there.

Profile of inhabitants City of 6th of October:

The 1996 Census data report that the number of residents in the new town was only 35,000. According to the latest estimates (Town Council publications relations office), population in 6th of October was approximately 200,000 by mid 2001. If this figure is correct, the population would have increased at an average annual rate of 47 %. It seems that the large influx of new settlers started after the Gulf war in 1992. Many would be settlers and investors used to work in Gulf countries. They used their savings and the opportunities offered by the new town land and facilities already in place. Some of these Gulf workers are not permanent residents, yet; but they have already built a house or acquired a dwelling here, and they come during their vacation periods. However, the big attraction factor for most new settlers is the fact that a large number of new local jobs (100,000) have been (and are still being) created, mainly in the manufacturing and related sectors. The profile of recent new settlers is: relatively young families, small family size (2 to 3), both man and wife are employed, they have a good educational background (many have obtained a technical training). Average monthly salaries are in the order of LE 1,000. Average household income is in the range of LE 1,500-2,000 per month (2 jobs per household).

2.3.5 Gross Regional Product (GRDP) of the Greater Cairo Region

There are no official regional product statistics available in Egypt. In the absence of such a database, the classic method to estimate the product of an area such as Greater Cairo Region consists of:

- i) calculating shares of employment in various economic activity sectors, using the latest census data; and
- ii) estimating the relevant regional product based on assumptions with respect to likely differences in regional and national productivity.

Two scenarios, A and B, are used to calculate the GRDP for the Greater Cairo Region. Scenario A takes the assumption that productivity per employee, in each economic activity sector, is the same irrespective of whether the production is carried out within the GCR or elsewhere in the rest of the country. Scenario B takes the assumption that, for certain economic activities, productivity per employee is higher than in the rest of Egypt. These two scenarios are outlined below. Table 2.3.11 summarizes the results of these two scenarios. Table 2.3.12 presents more detailed figures for the country and for scenario B, which is considered to be more realistic.

Employment data, by main economic activity sectors, for Egypt and Greater Cairo are from the latest 1996 census. GDP data of Egypt (at factor costs, in current prices) are from the same year 1996. The employment and GDP data are not published according to exactly the same activity sectors (for instance: the sub-sector housing & real estate services is available only in the national accounts, not in employment statistics). However, by and large, corresponding sectors of the GRDP for Cairo could be established for the year 1996.

Scenario A

This scenario assumes that all economic activity sectors in the GCR have the same productivity per employee as for Egypt as a whole. Total employment in Egypt was 15.77 mln and total GDP (in 1996/97) was 239.5 bln LE. Therefore, average GDP per employed person was 15,189 LE for the country as a whole. GDP per capita was 4,040 LE.

For the GCR, the total number of employed persons was 3.7 mln. Using the same productivity per employed person, by economic activity sector, the average productivity per employed person was estimated to be 16,950 LE (or almost 12% higher than the rest of the country). The difference between the average productivity per employee for Egypt and for the GCR is due to the higher proportion of employees in the production services (transport, finance, hotels and restaurants etc) in the capital. Therefore, due to the different employment structure in Greater Cairo, the share of Greater Cairo's GRDP as a proportion of total GDP is slightly larger (27 %) than its share of employment (23 %).

Scenario B

This scenario introduces a more realistic approach in estimating the GRDP of Greater Cairo by assuming that productivity per employed person in four economic sectors in Cairo is 25 % higher than in the rest of Egypt. These sectors are: construction, manufacturing, transport, and trade-storage-telecom. Although detailed data are not available to prove this, the assumption of a 25 % higher productivity is not an arbitrary one; perhaps, it is even a conservative guesstimate. Primate cities in several developing countries generate a disproportionately larger share of GDP compared with their population or share of national employment and Cairo will be no exception. The selection of the indicated four sectors is based on field observations, and on a number of secondary statistics all pointing to a higher capital intensity of these type of activities established in the Greater Cairo Region. On this basis, the average productivity per employed person, in the GCR, was estimated to be 20,235 LE (or 33% higher than the rest of the country). From this, Cairo's GRDP of 1996 is estimated to be LE 75 billion or 31 % of Egypt's GRDP. Consequently, the average GRDP per capita in Greater Cairo is estimated to be 5,685 LE or almost 41 % higher than the average GDP per capita of Egypt.

Table 2.3.11 Gross Regional Product of Greater Cairo Region (1996)

<i>assumptions: scenario-A & -B</i>	<i>Egypt (total)</i>	<i>Greater Cairo Region</i>	<i>Share Cairo Region</i>
(A) employment total, (in 000's):	15,768	3,697	23 %
GDP ¥ GRDP, (in LE million):	239,500	63,844	27 %
aver. productivity /employee (in LE):	15,189	16,950	112 % of Egypt
aver. GDP per capita (in LE.):	4,040	4,740	117 % of Egypt
(B) aver. productivity /employee (in LE):		20,235	133 %
GRDP, in LE million:		74,760	31 %
aver. GDP per capita (in LE):		5,685	141 % of Egypt

Source: JICA study team calculations

Estimated Greater Cairo Regional Product in 2001:

The projected GRDP of Greater Cairo for the year ending December 2001 is estimated based on the latest available published national GDP data for Egypt, and on the same above calculated share of Cairo GDRP in 1996. Official preliminary GDP estimates of Egypt for year 1999-2000 (year ending in June 2000) amounted to LE 335 billion (GDP at factor costs, in current prices). By December 2001, Egypt's GDP is estimated to be approximately LE 365 billion. Hence, the share of Greater Cairo (population 14.4 million, see also section 3.8) is then assumed to amount to LE 113 billion or USD 25.1 billion (USD 1,780 per capita, calculated at the prevailing exchange rate of USD=4.50 LE in Feb 2002).

Relationship between GDP per capita and household income:

For future planning forecasting purposes, the relationship between GDP per capita and household income was tested. This relationship was tested for two countries, Japan and Thailand. A plot of these two variables, for both countries is shown below in Figures 2.3.2 and 2.3.3.

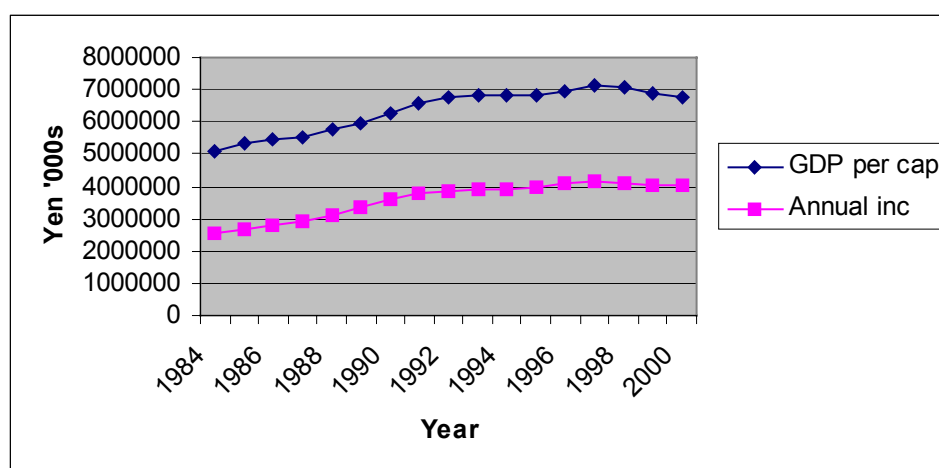


Figure 2.3.2 GDP per capita and Household Income, Japan

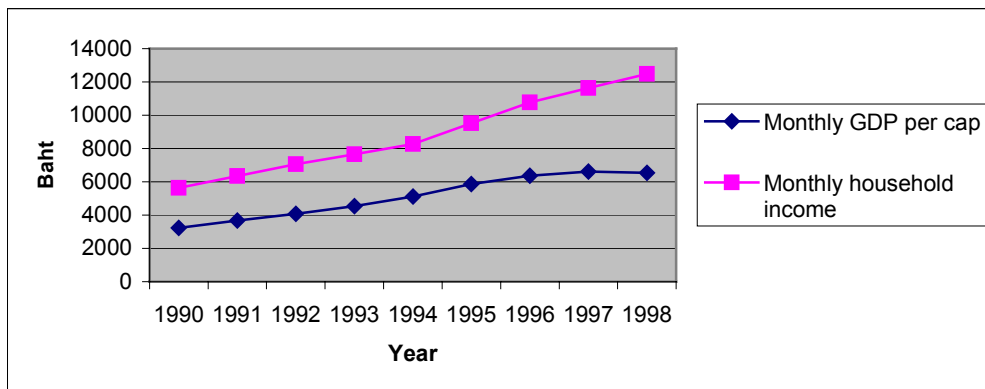


Figure 2.3.3 GDP per capita and Household Income, Thailand

It is clear that there is a significant relationship between these two variables and therefore estimates of future household income can be correlated with that of future GDP estimates.

Table 2.3.12 Detailed GRDP, Egypt and Cairo, 1996

	Item	Egypt			GCR	
		Total	Urban	Rural		
	Population total (in 000's)	59,272	25,286	33,986	13,151	22%
	urban population:	25,286	6		10,467	41%
	rural population:	33,986			2,760	8%
	Employment by sector (in 000's)					
1	agriculture, incl.livestock, fishing	4,881	558	4,323	197	4%
2	mining & quarrying	64	43	21	17	27%
3	manufacturing (incl.large, medium, small)	2,177	1,383	794	817	38%
4	petroleum products	0			n.a	
5	electricity, gas, water	159	96	64	47	30%
6	Construction	1,283	760	523	461	36%
	sub-total: commodity sector (1-6)	8,564	2,840	5,724	1,539	18%
7	transport, storage, & telecom	916	575	342	313	34%
8	trade, finance & insurance	2,142	1,479	663	814	38%
9	hotels & restaurants	206	156	50	88	43%
	sub-total: production services (7-9)	3,264	2,210	1,054	1,215	37%
10	social insurance & health	374	242	132	106	28%
11	Education	1,511	835	676	296	20%
12	social & personel services	349	213	135	142	41%
13	govern.& public administr, defence	1,533	878	655	347	23%
14	housing & real estate,	0	n.a	n.a	0	
15	activities not adequately described	174	95	79	49	28%
	sub-total: social services sector (10-15):	3,940	2,263	1,677	940	24%
	Total employment:	15,768	7,313	8,455	3,697	23%
	<i>sub-total employ males:</i>	<i>13,667</i>			<i>3,108</i>	<i>23%</i>
	<i>sub-total employ females:</i>	<i>2,101</i>			<i>589</i>	<i>28%</i>
	Domestic Product (1996/97) (At factor costs in current prices, L.E.million)					
1	agriculture, incl.livestock, fishing	42,325			1,708	4%
2,3	manufacturing, incl.mining	43,383			20,181	47%
4	petrol and gas production	15,854			n.a	
5	electricity, utilites(gas, water)	5,135			1,527	30%
6	Construction	12,750			5,728	45%
	sub-total: commodity sector (1-5)	119,447			29,143	24%
7	transport, storage, & telecom	22,695			9,688	43%
8	trade, finance & insurance	51,027			24,241	48%
9	hotels & restaurants	3,830			1,639	43%
	sub-total: production services (6-8)	77,552			35,569	46%
10	social insurance & health	165			47	28%
11,1	education, social & personel services	19,061			4,489	24%
13	govern.& public administr, defence	18,900			4,278	23%
14	housing & real estate,	4,375			1,234	28%
15	activities not adequately described	0			n.a	
	sub-total: social services sector:	42,501			10,048	24%
	Total GDP: (1-15)	239,500			74,760	31%
	<i>per capita GDP, in L.E</i>	<i>4,041</i>			<i>5,685</i>	<i>141%</i>
	<i>per capita GDP, in USD (current rate)</i>	<i>1,192</i>			<i>1,677</i>	<i>141%</i>

Table 2.3.12 (continued) Detailed GRDP, Egypt and Cairo, 1996

	Item	Egypt			GCR	
		Total	Urban	Rural		
	Productivity/employed person (1996/97) (At factor costs in current prices, L.E.million)					
1	agriculture, incl.livestock, fishing	8,672			8,672	100%
2,3	manufacturing, incl.mining	19,358			24,197	125%
4	petrol and gas production	0			0	
5	electricity, utilites(gas, water)	32,220			32,220	100%
6	Construction	9,939			12,424	125%
	sub-total: commodity sector (1-5)	13,947				
7	transport, storage, & telecom	24,763			30,954	125%
8	trade, finance & insurance	23,824			29,780	125%
9	hotels & restaurants	18,606			18,606	100%
	sub-total: production services (6-8)	23,758				
10	social insurance & health	442			442	100%
11,1	education, social & personel services	10,250			10,250	100%
13	govern.& public administr, defence	12,329			12,329	100%
14,1	housing & real estate, & other activities	25,176			25,176	100%
	sub-total: social services sector:	10,787				
	Average GDP per employ.person: (1-15) (not included: petrol.&gas production)	15,189			20,235	133%

Source: CAPMAS for population, employment, GDP Egypt National Accounts, Ministry of Economy, JICA study team estimates. N.B. some differences due to rounding

2.3.6 Vehicle Ownership

This section describes recent trends and patterns related to vehicle ownership in Egypt as well as the Greater Cairo Region. Comparisons are also provided to observed vehicle ownership rates in other Middle East and North African (MENA) nations

(1) National Trends

Vehicle ownership in Egypt grew from 1.29 million vehicles in year 1987 to an estimated 2.3 million cars, buses and trucks in year 2000. During that period, car ownership has dominated, averaging some three-quarters of car, bus and truck registrations. Trucks account for almost all remaining registrations, with buses only contributing some two percent toward the registered fleet. Over the same period, unit ownership of cars, buses and trucks increased from 26.4 vehicles per 1,000 persons to 36.4 vehicles per 1,000 persons (Figure 2.3.4). Motorcycle ownership during year 2000 was an estimated 520,000 units, or 8.2 motorcycles per 1,000 persons.

The rate of growth in registered cars, buses and trucks averaged 4.6 percent per annum between 1987 and 1999. Stratified, ownership of cars, buses and trucks grew by 4.5, 4.1 and 5.0 percent per annum, respectively. Vehicle ownership therefore grew considerably faster than unit national income and population (Figure 2.3.5).

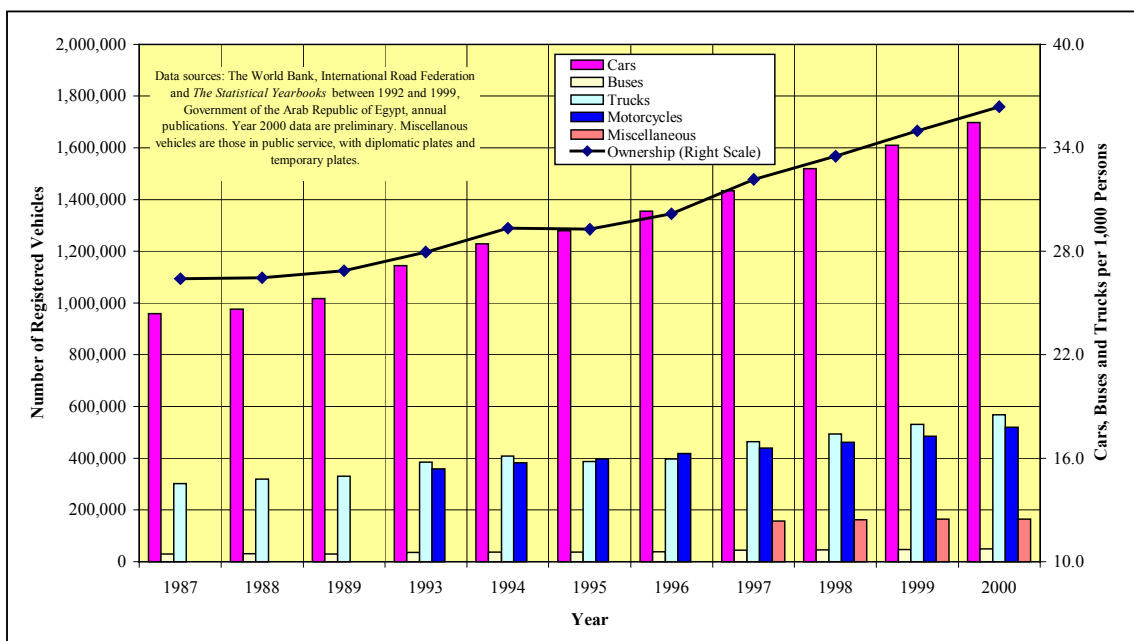


Figure 2.3.4 Recent Vehicle Ownership Trends in Egypt

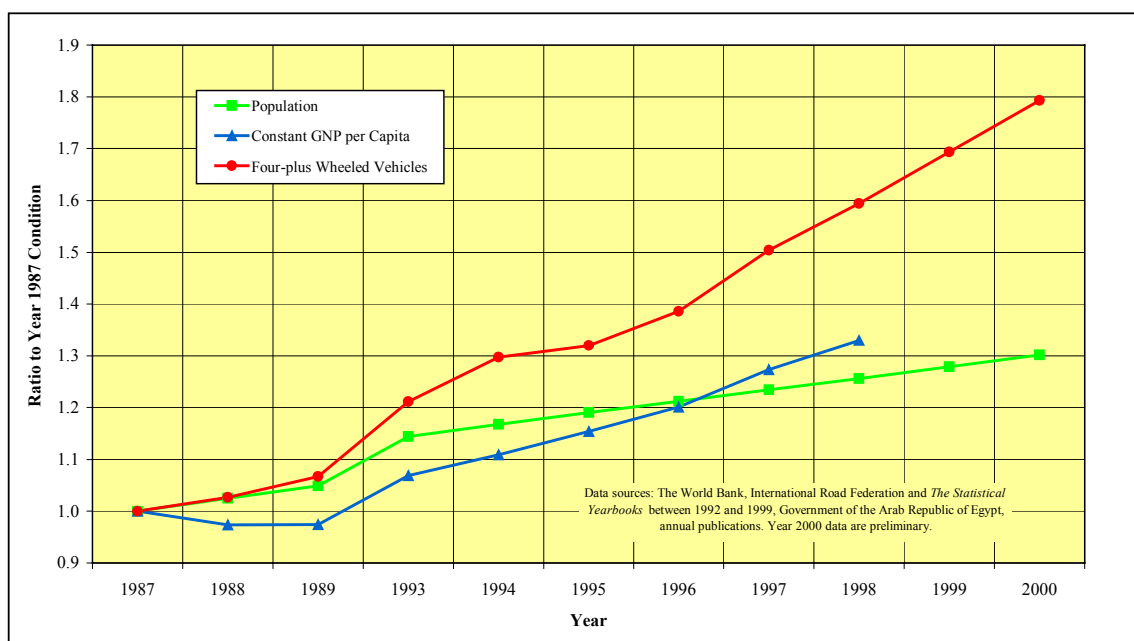


Figure 2.3.5 Egyptian Vehicle and Socio-Economic Indexes: 1987-2000

(2) Regional Patterns

Egyptian nation-wide characteristics include an estimated year 1999 population of 62.5 million persons, a year 1998 GDP per capita of 1,162 constant year 1995 US dollars, and a year 1999 ownership of 2.35 million vehicles (cars, buses, trucks,

miscellaneous vehicles⁷) as well as 485,300 motorcycles. The Greater Cairo Region, as the nations capital, holds a dominant role in terms of national share. Population, which during 1999 totaled some 15.8⁸ million persons, represents about one-fourth of the Egyptian total.

Vehicle ownership has historically been concentrated in Greater Cairo, particularly in case of passenger cars. Year 1999 data confirm that almost 60 percent of cars, about one-half of buses and miscellaneous vehicles, as well as some one-third of trucks and motorcycles registered in Egypt are based in Greater Cairo. Thus, vehicle ownership in Greater Cairo considerably exceeds the national norm; in case of cars, 59.0 vehicles per 1,000 persons compared to the Egyptian country-wide total of 25.7 vehicles per 1,000 persons (Figure 2.3.6).

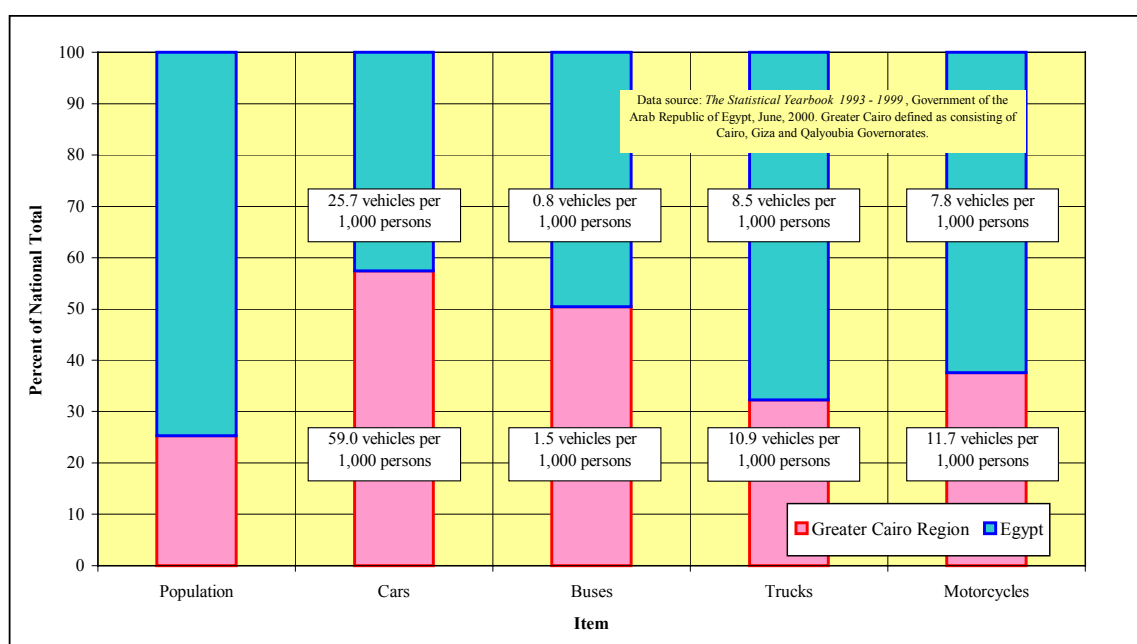


Figure 2.3.6 Year 1999 Relative Vehicle Ownership and Population Composition, Greater Cairo and Egypt

The Cairo concentration in vehicle ownership becomes even more obvious when registration data are reviewed at the Governorate level of detail. Cairo Governorate dominates, accounting for some 831,000 four-plus wheeled vehicles (cars, buses, trucks, miscellaneous), or 35 percent of the national total of 2.35 million vehicles. The equivalent unit ownership rate is 116.6 vehicles per 1,000 persons. The Cairo Governorate ownership total is more than twice that of the next two highest Governorates, Alexandria and Giza (Figure 2.3.7). Unit Governorate vehicle ownership declines roughly in proportion to absolute ownership.

⁷ Includes vehicles in public sector service, diplomatic license plates and temporary license plates.

⁸ Includes Cairo, Giza and Qalyobeyya Governorates.

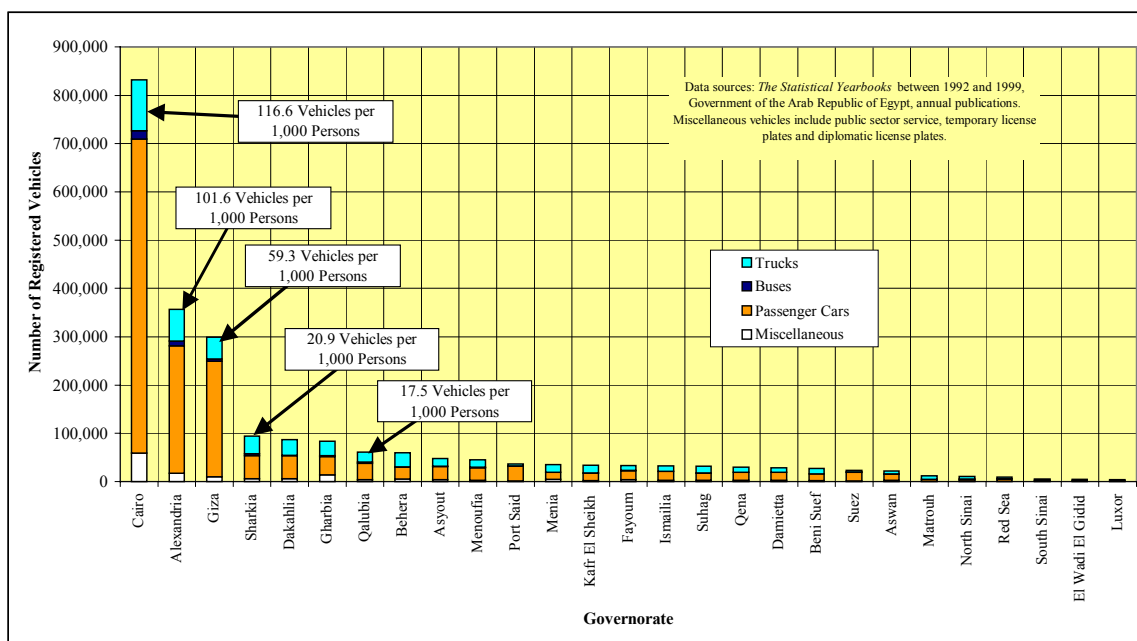


Figure 2.3.7 Year 1999 Registered Vehicles by Governorate

A similar picture emerges in terms of motorcycle registrations. Cairo Governorate, with some 103,900 registered motorcycles, accounts for roughly 21 percent of the national total of 485,300 motorcycles. However, unit ownership differs from absolute ownership in that smaller Governorates, having less total motorcycles, exhibit higher unit ownership rates than Cairo Governorate. The highest 1999 unit rate is noted for Damietta Governorate: 18.6 motorcycles per 1,000 persons (Figure 2.3.8).

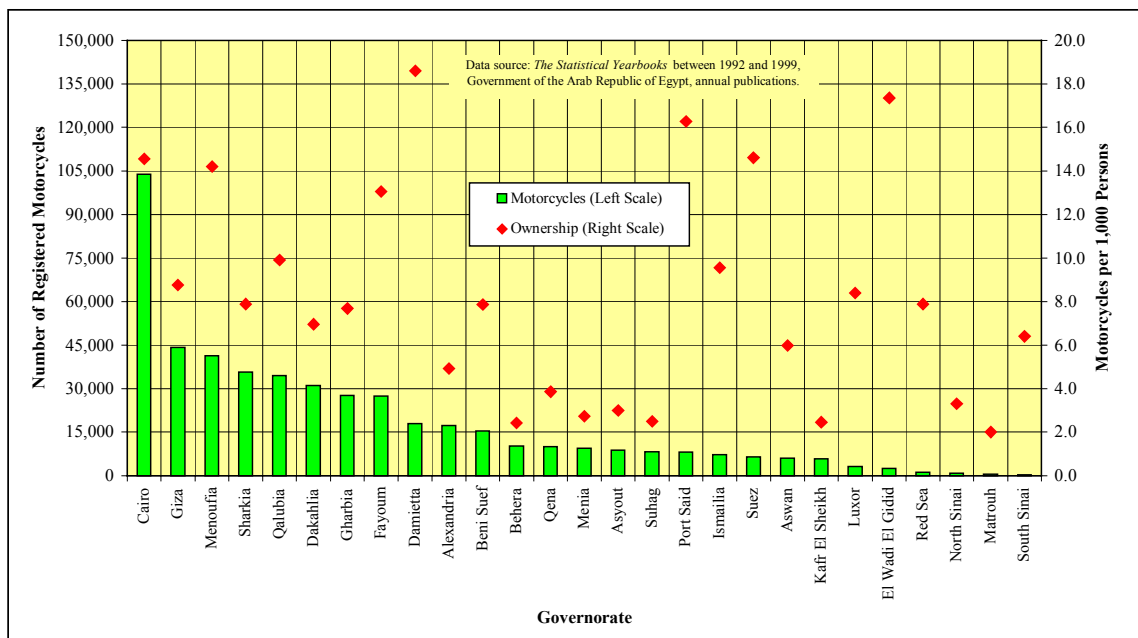


Figure 2.3.8 Year 1999 Registered Motorcycles by Governorate

Almost three-fourths of Egyptian vehicles are registered in Cairo, Giza, Qalyobeyya and Alexandria Governorates, as well as some two-thirds of total vehicles (Table 2.3.13).

Table 2.3.13 Comparison of Year 1999 Regional Vehicle Ownership

Governorate	Number of Vehicles					
	Cars	Buses	Trucks	Misc.	Total	M.cycles
Cairo	650,051	17,425	105,314	59,052	831,842	103,867
Giza	239,023	4,246	45,562	10,141	298,972	44,203
Qalyobeyya	34,320	2,247	20,360	3,945	60,872	34,500
Subtotal	923,394	23,918	171,236	73,138	1,191,686	182,570
Alexandria	263,923	9,604	66,394	17,319	357,240	17,301
Rest of Egypt	417,685	13,902	292,266	73,132	796,985	285,428
Total	1,605,002	47,424	529,896	163,589	2,345,911	485,299

Source: The Statistical Yearbook of 1993-1999, op. cit.

As a result, unit ownership in the rest of Egypt is quite low, averaging 9.6 cars per 1,000 persons, 18.4 total vehicles per 1,000 persons, and 6.6 motorcycles per 1,000 persons (Table 2.3.14).

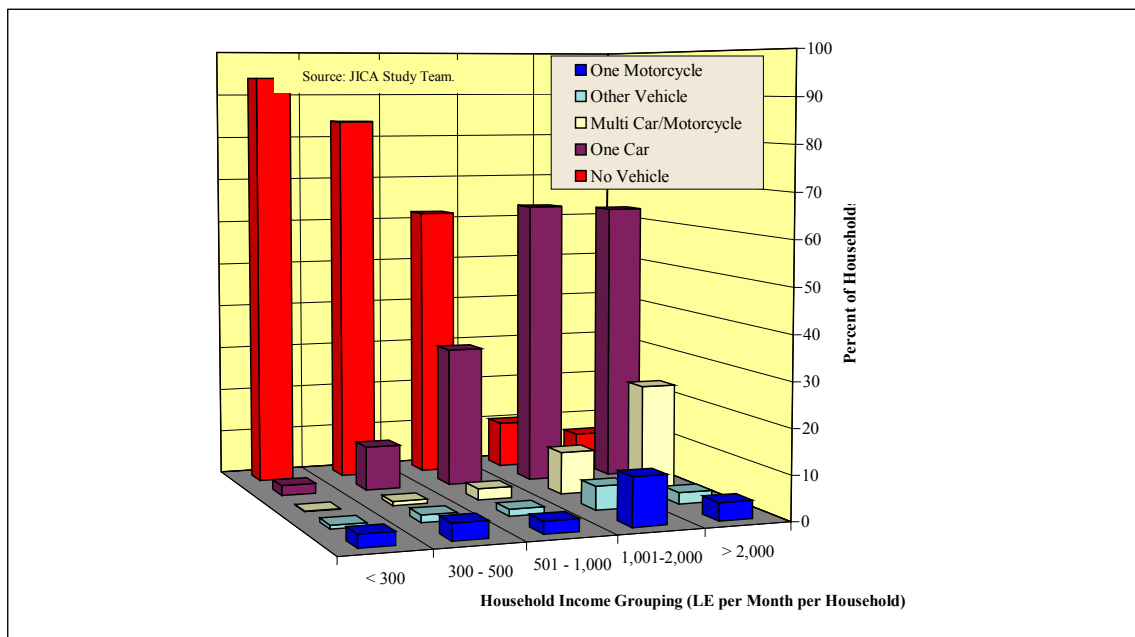
Table 2.3.14 Comparison of Year 1999 Regional Unit Vehicle Ownership

Governorate	Vehicles per 1,000 Persons					
	Cars	Buses	Trucks	Misc.	Total	M.cycles
Cairo	91.1	2.4	14.8	8.3	116.6	14.6
Giza	47.4	0.8	9.0	2.0	59.3	8.8
Qalyobeyya	9.9	0.6	5.8	1.1	17.5	9.9
Subtotal	59.0	1.5	10.9	4.7	76.1	11.7
Alexandria	75.0	2.7	18.9	4.9	101.6	4.9
Rest of Egypt	9.6	0.3	6.7	1.7	18.4	6.6
Total	25.7	0.8	8.5	2.6	37.5	7.8

Source: JICA Study Team

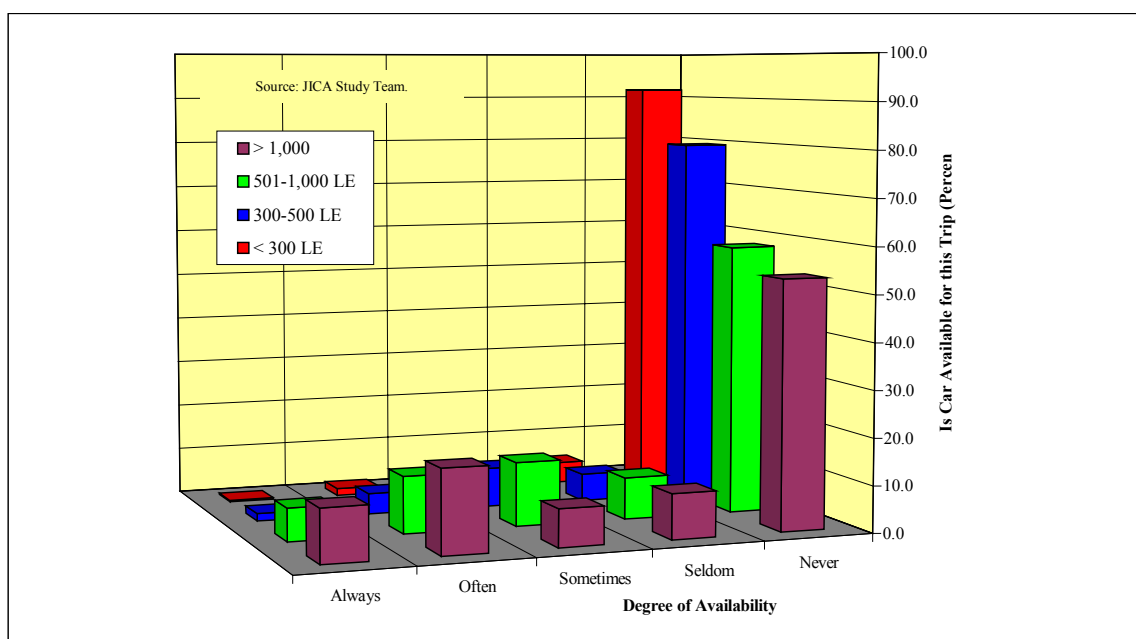
Previous analyses are based on vehicle registration information maintained by the various Ministries of the Interior. It is of interest to briefly refer to findings of CREATS surveys, which provide additional insight as to the availability of private transport in households of varying incomes.

Differences among household income groupings are apparent in terms of vehicle ownership, as confirmed by the Household Interview Survey. Roughly 95 percent of study area households in the lowest HIS income grouping (less than 300 LE per month) indicate not owning any vehicle, a statistic which only declines slightly for the 300-500 LE per month grouping. For incomes above 1,000 LE, more than 60 percent of households indicated owning one car, and a further 10-25 percent, depending on income grouping, indicated owning multiple cars and/or motorcycles. Ownership of one motorcycle is, in comparison, minor with highest incidence being some 10 percent of households within the 1,001-2,000 LE grouping (Figure 2.3.9).



**Figure 2.3.9 Vehicle Ownership by Household Income Grouping
 CREATS Study Area**

The impacts of implied vehicle availability on trip making is also confirmed by the Revealed Preferences Survey, during which interviews were conducted with users of various modes regarding the current mode used as well as potential alternative modes which could be used to complete the current journey. One question for public transport users was whether or not a car is available to complete the journey. Results mirror the ownership pattern in that, for household incomes above 1,000 LE, about 50 percent of respondents replied “never”. For the lowest income grouping, the corresponding statistic is more than 90 percent (Figure 2.3.10).



**Figure 2.3.10 Vehicle Availability by Income Grouping
 CREATS Study Area**

(3) Fleet Composition

The capacity profile of trucks and buses was examined based on data recently compiled by CAPMAS⁹. These data stratify capacity based on various types of ownership. In case of buses, several considerations emerge (Figure 2.3.11):

- Of 18,400 buses identified within Greater Cairo, some 9,300 are shown as being in private commercial service, 4,900 in public sector service, 1,800 used for tourism purposes, 1,500 as buses for hire and almost 1,000 being school buses.
- Size distributions differ according to vehicle use. For example, almost two-thirds of buses in public sector service are noted as being large vehicles, whereas almost 40 percent of buses classed as being in private commercial service are shown as having a passenger capacity of 11-19 persons.
- Composite bus data for Greater Cairo mirrors nationwide data in that some 6.5 percent of buses are shown as having a capacity of less than 10 persons, 25.7 percent between 11 and 19 persons, 14.6 percent between 20 and 29 persons, 3.5 percent between 30 and 39 persons, 26.1 between 40 and 49 persons, as well as 23.6 percent as 50 or more persons.

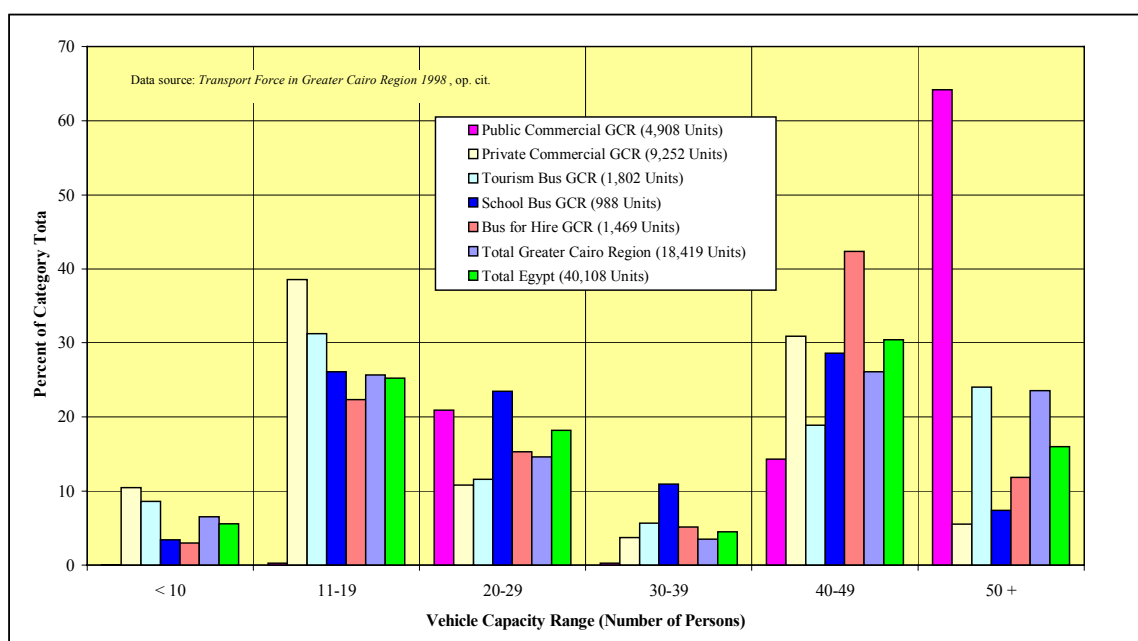


Figure 2.3.11 Distribution of Buses by Capacity: Greater Cairo Region and Egypt

The fleet profile for trucks indicates that (Figure 2.3.12):

- Of 98,400 trucks identified within Greater Cairo, some 88,500 are shown as being in private commercial use and 9,900 in public sector service.

⁹ *Transport Force in Greater Cairo 1998*, by Central Authority of Public Mobilization and Statistics, Public Mobilization Sector, November 2000 (translated).

- Size distributions differ according to vehicle use. Some 57 percent of trucks in public sector service are noted as having capacities of less than three tons, and a further one-third of vehicles as having a capacity of between five and 9.9 tons. In case of trucks classed as being in private commercial service, about 80 percent are shown as having a capacity of less than three tons.
- Composite truck data for Greater Cairo mirrors nationwide data in that 76.7 percent of trucks are shown as having a capacity of less than three tons, 4.0 percent between three and 4.9 tons, 16.9 percent between five and 9.9 tons, 2.1 percent between 10 and 14.9 tons, as well as 0.4 percent as 15 or more tons.

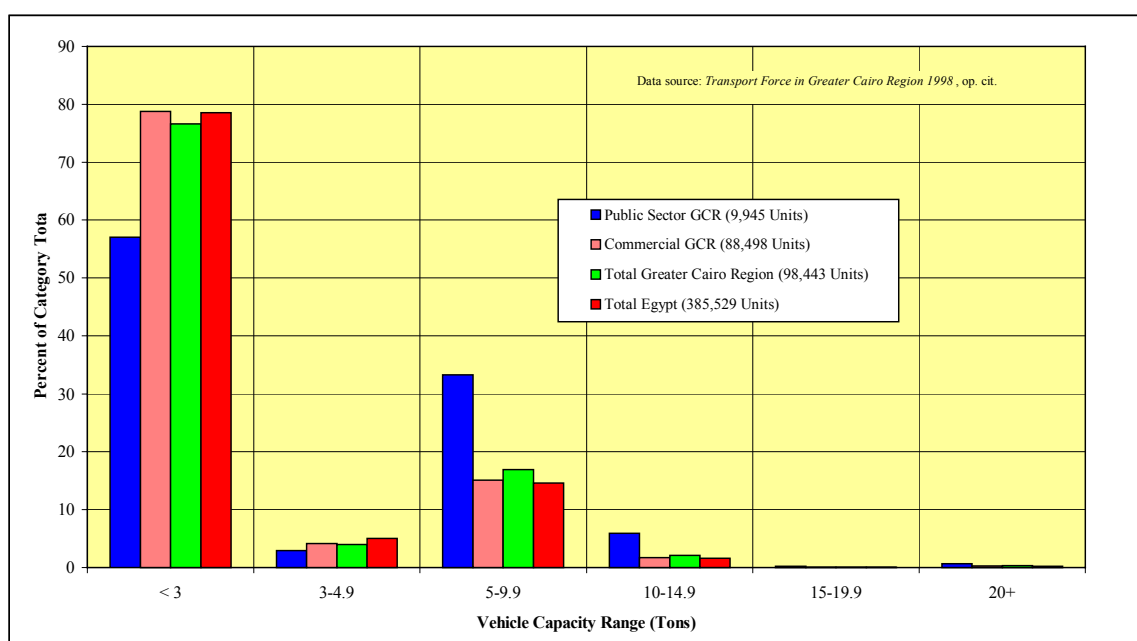


Figure 2.3.12 Distribution of Trucks by Capacity: Greater Cairo Region and Egypt

(4) Mena Comparison

Unit vehicle ownership can best be compared among countries if quantified vis-à-vis economic well-being, principally GNP per capita in constant terms. Thus, as an initial step, a review of MENA economic performance is in order.

1) Economic Performance

Highest year 1998¹⁰ unit national incomes (GNP per capita expressed in constant year 1995 US dollars) are noted for Kuwait, the UAE, Israel and Qatar, nations all classified as having achieved high income¹¹ status. Kuwait, with a year 1996 GDP

¹⁰ Year 1998 constant unit national income was not, at time of writing, available for Kuwait, Oman and Qatar. Most recent available data (1995 or 1996) are used instead.

¹¹ Income levels are, according to World Bank criteria, expressed in four categories based on year 1997 GNP per capita (Atlas Method): low: \$785 or less; lower middle: \$786-\$3,125; upper middle: \$3,126-\$9,655; and high: more than \$9,655.

per capita of 21,439 constant 1995 US dollars, appears to have achieved highest MENA unit national income. Bahrain, Saudi Arabia and Oman comprise MENA nations within the middle (high) income category, while Egypt, with a year 1998 GDP per capita of 1,162 constant 1995 US dollars (and 1,290 current US dollars), is categorized as a middle (low) income nation. The most modest unit national incomes (low) are noted for Yemen and Sudan. For highest income nations, purchasing power parity (PPP) per capita typically approximates GNP per capita, thus reflecting higher living costs. In case of the UAE, for example, GNP per capita totals some \$17,800, while PPP per capita reaches \$18,900. For other income groupings, PPP per capita exceeds GNP per capita. In case of Egypt, for example, GNP per capita totals some \$1,200, while PPP per capita is more than 2.5 times higher, reaching \$3,200 (Figure 2.3.13).

Economic performance was also examined based on changes in GNP per capita (expressed in constant US dollars) between years 1987 and 1998, as well as between years 1993 and 1998. The latter focuses more on recent economic achievements. A wide variety of growth patterns are apparent, including extended contractions in several nations. Lebanon, with growth rates in unit national income for both time periods approximating ten percent per annum, appears to have achieved highest MENA growth, largely as a result of post-war rehabilitation. Egypt emerges as one of the MENA leaders with an average annual growth rate of 2.6 percent over the 1987-1998 period, and 4.4 percent over the 1993-1998 period. In fact, over the 1993-1998 period, only Lebanon and the Sudan appear to have achieved higher growth; in the case of Sudan the small absolute size of the Sudanese economy should concurrently be noted (Figure 2.3.14).

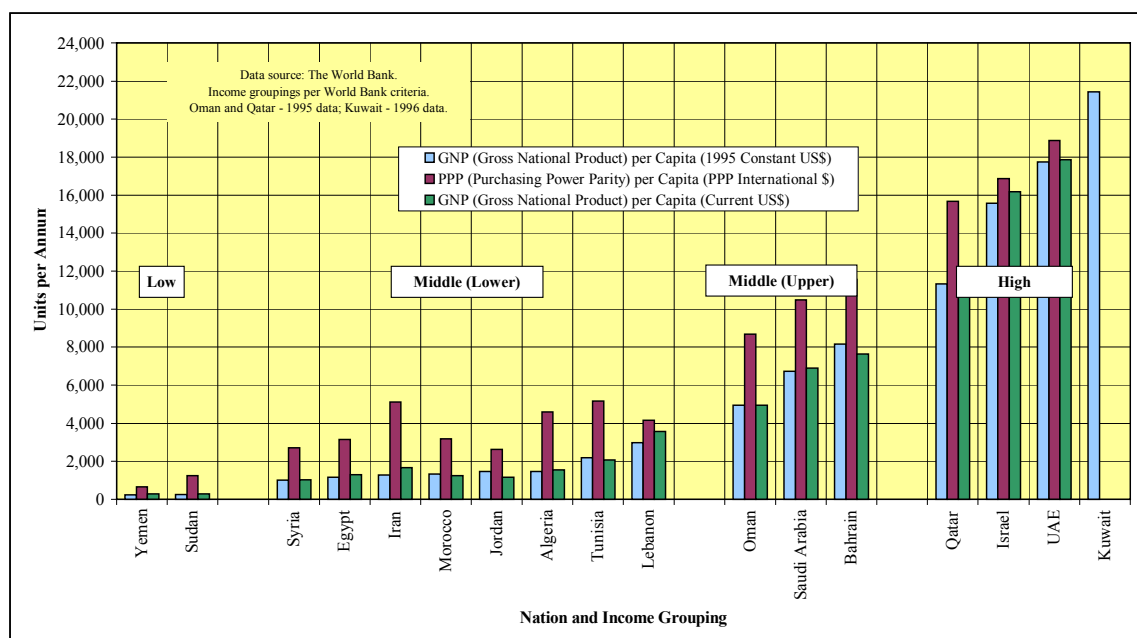
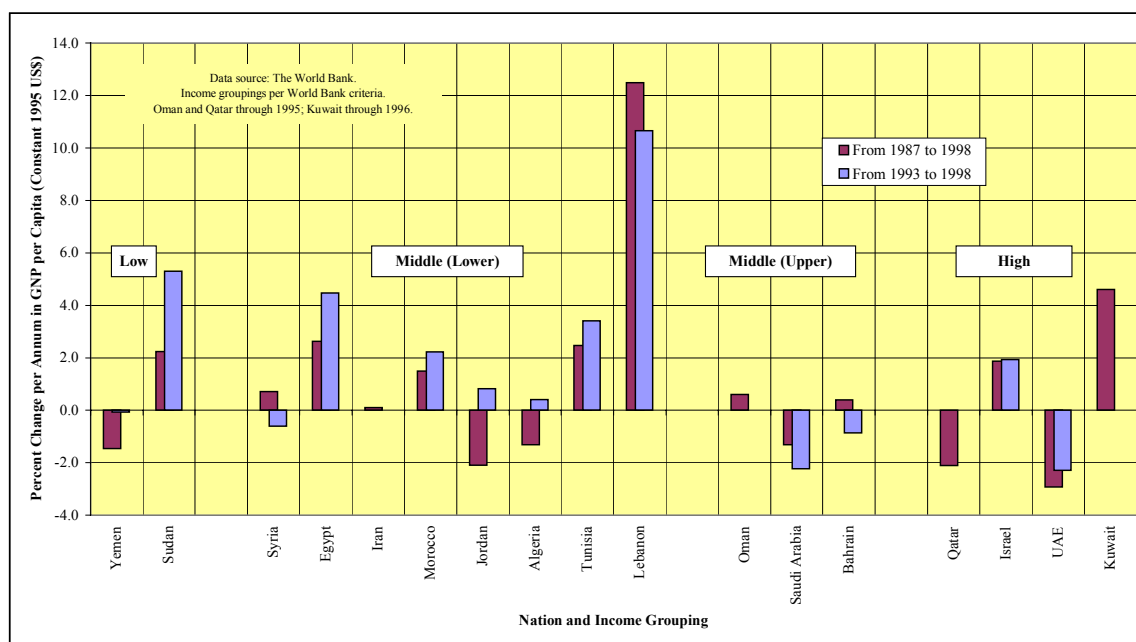


Figure 2.3.13 Year 1998 Unit National Income Representative Middle East and North African Nations



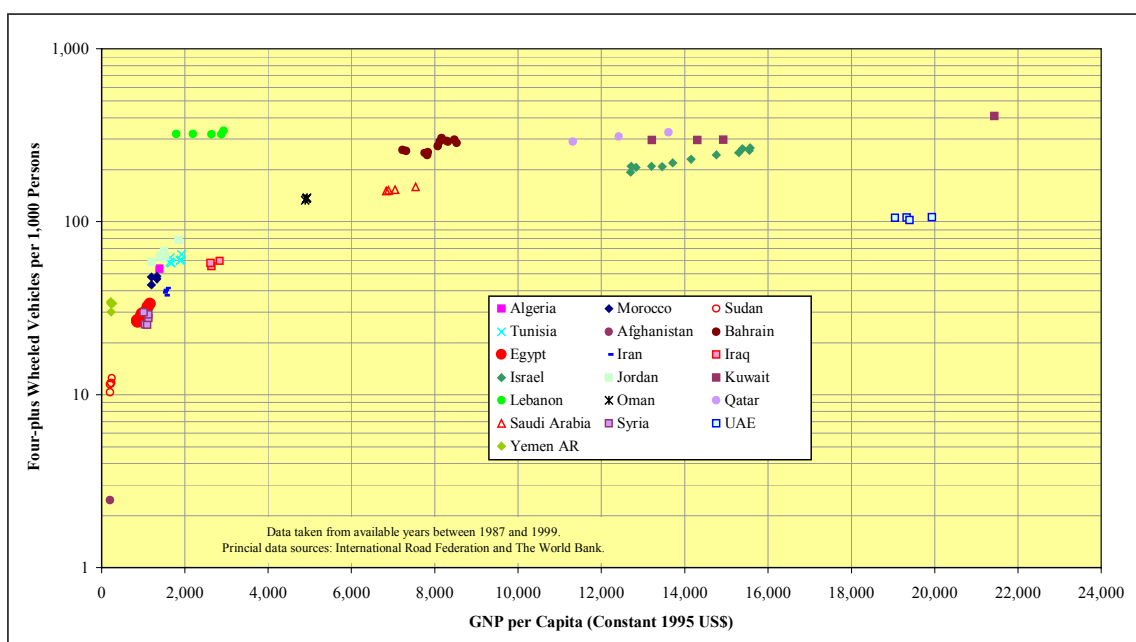
**Figure 2.3.14 Recent trends in Unit National Incomes
 Representative Middle East and North African Nations**

2) Vehicle Ownership

Vehicle ownership is considered an excellent surrogate measure for road traffic growth; that is, likely levels of future traffic activity may be estimated based on forecast rates of growth in four-plus wheeled vehicle (cars, buses, trucks) registrations. Within a MENA context, unit ownership, that is, registered four-plus wheeled vehicles per 1,000 persons, is highest in more affluent countries. In Israel, for example, a total of 1.6 million vehicles were registered in 1998 consisting of 1.3 million cars, 282,000 trucks and some 15,000 buses. This translates to a unit ownership of 267.6 vehicles per 1,000 persons.

Vehicle ownership in MENA varies from amongst the lowest to near the highest in the world. This pattern is inexorably linked to national economic well-being; that is, GNP per capita. A review of data available¹² over the past ten years reveals several clear trends. At lower income ranges, say GNP per capita of less than \$3,000 (in constant 1995 terms), unit vehicle ownership increases very rapidly with, and at an elasticity of considerably greater than, the rate of growth of unit national income. Vehicle ownership continues to increase but at a more moderate rate until GNP per capita reaches about \$11,000. Above that total, the ownership rate of growth slows considerably mirroring the GNP per capita growth rate (Figure 2.3.15).

¹² To include GNP per capita in constant 1995 US dollars, as well as modal vehicle registration data.



**Figure 2.3.15 Overview of Vehicle Ownership Patterns
 Representative Middle East and North African Nations**

This trend, as well as patterns discussed in the previous section, confirms that Egyptian vehicle ownership patterns are very much in line with MENA expectations; that is, for the given level of unit national income, vehicle ownership can be expected to increase at a rate considerably above that of unit national income.

2.3.7 Socio-economic Framework in 2001

(1) Short Term Population Projection

Population is the most important variable concerning the projection of all socio-economic indices. The general approach for projecting the short term population total and population distribution in the Study Area is based on the following considerations:

(1) Overall Population Growth Trends of the Study Area:

In the previous sections, an analysis of long term population growth trends revealed a declining growth in the Study Area from a high level of approximately 3 % per year to an average of 2.1 % per year during the inter-census period 1986-1996. Recent demographic studies have indicated that future population growth of the Cairo Region will be more in line with the steadily declining national growth trends. According to official projections for Egypt, an average annual growth of 1.4 % is expected until year 2022; intermediate average annual growth rates are: 1.8 % for the period 1996-2001, 1.5 % for 2001-2011, 1.2 % for the period 2011-2022 (ref.: World Bank, Development Indicators 2000).

(2) Growth Trends of Specific Areas:

The same analysis revealed during the period 1986-1996 differentiated growth trends in each of the three main Governorates in the Study Area: an average annual growth of 1.5 % in Cairo Governorate, 2.5 % in Giza, and 3.0 % in Qalyobeyya. Moreover, as explained in section 2.3.4 (Tables 2.3.8 and 2.3.9) population growth in the new towns has taken off very substantially during the last five years.

The above mentioned overall population trends of larger areas, and the growth trends 1986-1996 of each specific zone form the basis of estimating the population in each area for the year 2001. Further detailed mechanism of population projection proceeded as follows:

(a) Cairo Governorate: it is assumed that the earlier observed trend of decreasing population (1986-1996) in 20 qisms of the central parts of Cairo Governorate will continue for the recent five year period 1996-2001 (practically: the negative annual growth rate of each specific zone is maintained for the projected population 2001).

A few qisms are treated as special cases: (i) the 15th of May is assumed to have developed less rapidly (5 % per year) than in the recent past (10 % per year); (ii) the recent high growth rate of Madinat City (5.6 % per annum) is slowing a bit to 4 % ; (iii) and the new rapidly developed areas like Al-Salam, and Al-Marg also experience a slower growth (5 % per year instead of 12.6 % and 7.7 % respectively). For the remaining qisms the observed positive growth trends during 1986-1996 are, in principle, maintained; exceptions are those zones with already very high gross population densities (above 4 persons per km²); in the latter cases projected growth rates are set approximately 50 % lower than the earlier trend.

For Giza a similar procedure as in Cairo Governorate is followed. In the period 1996-2001 three qisms with high population density experienced a negative annual growth or stagnation: Al-Agooza, Al-Doqqy, Al-Giza, and in line with a general lower growth trend for Greater Cairo, the remaining qisms and markaz are assumed to grow a bit slower than in the previous decade. For Qalyobeyya all of the qisms and markaz are assumed to have a slower positive growth than in the previous decade.

The result of the population projections at Sector level is shown at the end of this sub-section in Table2. 3.15.

(2) Short Term Estimation: 2001 of Employment and Students

The estimation of employment and students were made based on the expanded results of the HIS, finally. Numbers of employments at working places and students at school locations and vehicle accessibility by sector are shown in Table 2.3.15 as well as the population estimates. Employment categories are as the HIS.

Figure 2.3.16 to 2.3.18 illustrate population density, employment density at working place and household income distribution in 2001 in the Study area, respectively.

**Table 2.3.15 Population, Employment and Students by Sector
-2001-**

Sector	Population	No. of HH	HH size	Monthly Income (LE per Month)	Employment			Students		Vehicle Availability (%)	
					Primary	Secondary	Tertiary	Non-Univ.	Univ.		
1	6 th of October City	200,018	53,055	3.77	874	3,731	81,273	47,103	52,806	35,598	40.4
2	Imbaba Markaz	1,294,733	300,542	4.31	449	26,576	41,594	85,699	359,286	0	18.6
3	Doqy	1,202,073	298,954	4.02	855	10,031	126,301	260,658	349,082	8,870	38.5
4	Giza	1,245,232	311,274	4.00	716	16,030	68,368	193,864	382,413	209,440	33.1
5	South Giza	442,993	98,912	4.48	550	9,111	19,256	36,915	150,259	0	25.6
6	Helwan	739,425	171,873	4.30	633	3,755	125,338	73,131	228,848	84,870	29.9
7	Maadi	868,801	213,462	4.07	807	8,372	58,536	93,690	211,938	9,531	35.6
8	Khaleefa	733,216	199,822	3.67	587	3,357	52,320	136,785	222,448	35,374	26.4
9	CBD	400,831	117,430	3.41	727	6,618	205,607	416,478	158,289	22,186	32.4
10	Shobra	1,072,188	272,018	3.94	584	2,092	48,356	127,884	269,859	9,034	26.6
11	Masr El Gedeeda	861,861	223,560	3.86	964	8,914	121,203	285,923	296,778	281,619	43.8
12	Nasr City	723,837	190,340	3.80	1,309	10,424	123,830	242,134	227,774	79,592	53.8
13	Ain Shams	991,625	235,628	4.21	599	2,764	31,676	89,173	264,992	10,908	27.5
14	Salam City	776,582	188,855	4.11	569	2,396	30,948	66,604	189,270	0	26.4
15	Shobra El-Kheima	939,285	213,042	4.41	480	7,580	61,034	76,063	283,133	7,579	19.5
16	Qalyob	760,435	163,675	4.65	450	16,918	39,139	75,787	222,647	0	19.4
17	Qanater	942,767	216,429	4.36	417	12,369	51,206	86,938	281,780	1,279	17.5
18	10 th of Ramadan City	196,085	48,777	4.02	560	3,726	96,338	55,062	58,471	6,893	25.6
Total		14,391,987	3,517,650	4.09	672	154,762	1,382,324	2,449,890	4,210,071	802,774	29.9

Source: CAPMAS, JICA study team calculations. Sectors are shown in Figure 2.3.1.

With reference to the above table, the following activities are included under employment:

Economic activity

Employment classification

agriculture/hunting, mining/quarrying

Primary

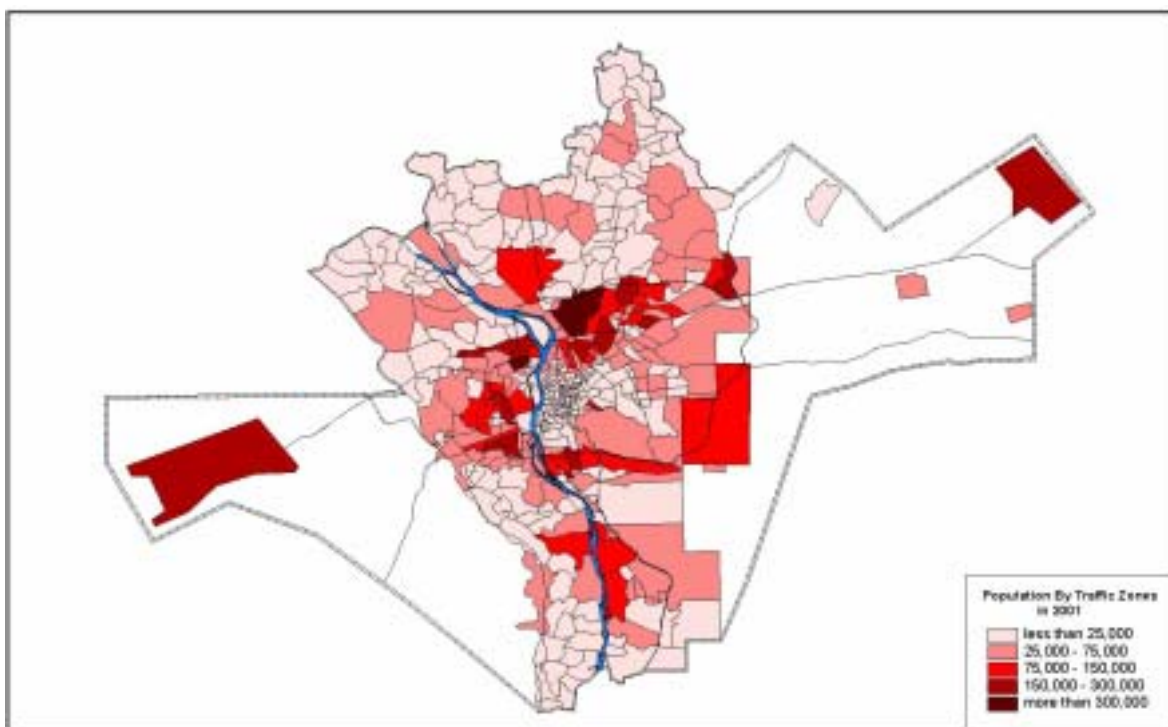
manufacturing, electricity/gas/water, construction

Secondary

restaurant/hotels/tourism, transport/storage/communication,
finance/real estate, services, wholesale/repair, education,
health/social work

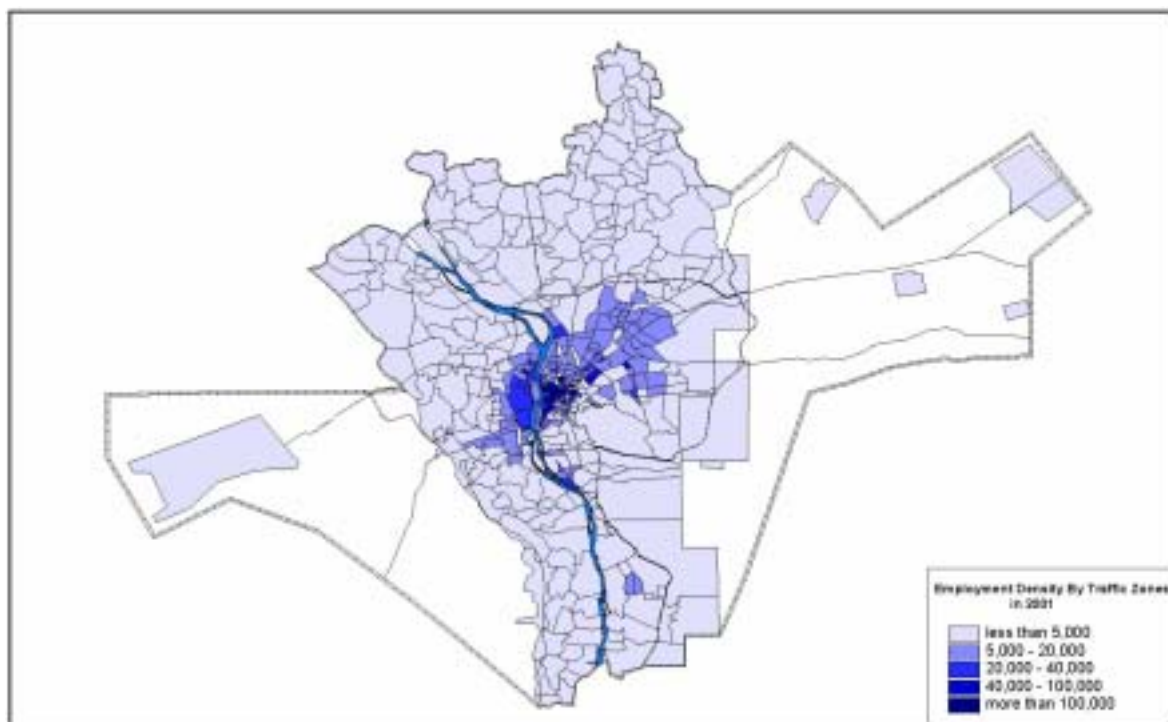
Tertiary

These are potential basic variables to explain trip generation and attraction in the course of the transport demand model building.



Source: JICA Study Team

Figure 2.3.16 Population Density Map – Year 2001 –



Source: JICA Study Team

Figure 2.3.17 Working Place Employment Density Map – Year 2001 –

Source: JICA Study Team

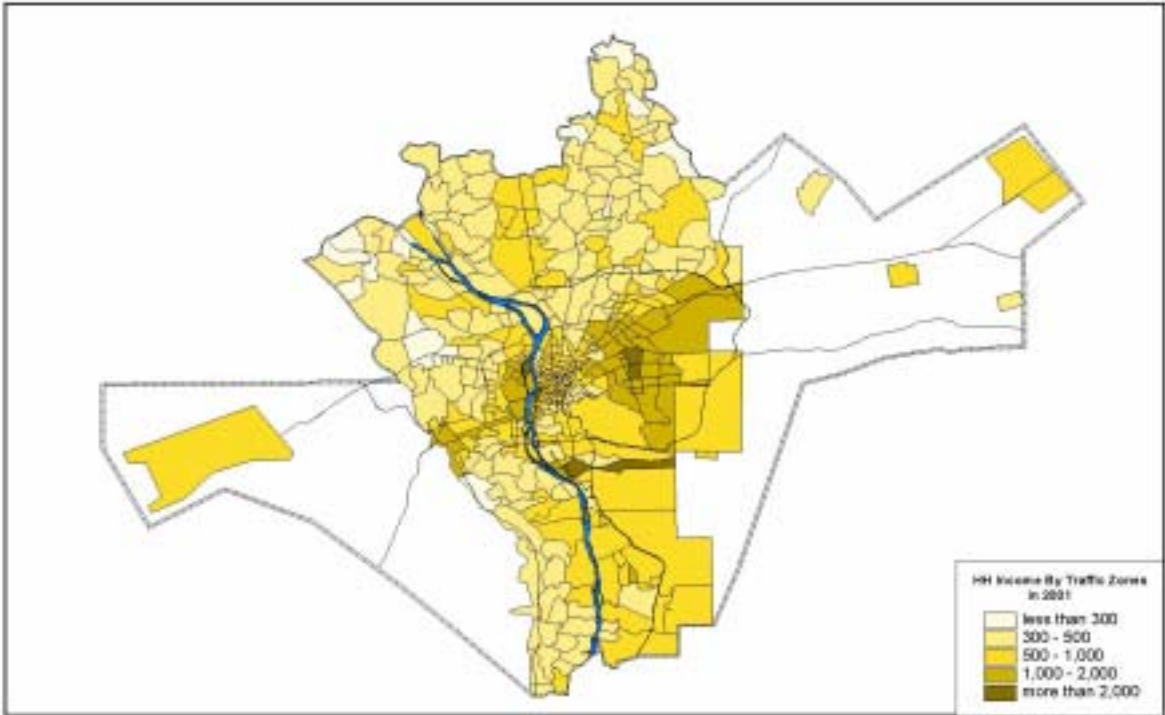


Figure 2.3.18 Income Distribution Map – Year 2001 –

2.4 FUTURE SOCIO-ECONOMIC FRAMEWORK

2.4.1 Approach used

In order to predict transport patterns for future years within the study forecast period (yrs 2007, 2012, 2022), it is necessary to estimate key growth factors i.e. economic and population growth factors. On the basis of these estimates it is possible to further estimate the variables (population, employment, students, household income) for each traffic zone for the traffic model. Given the length of the forecast period, twenty years, it must be stated that there are some uncertainties regarding precise estimates. However, past growth trends form an important indication of the way that the economy and the population will develop. A good understanding of past economic activity including growth rates and the way that certain activities such as services are concentrated is an important guide for future developments. Similarly, an analysis of past population growth forms an important foundation for forecasting future population levels.

In addition to this, there are also some possibilities regarding the geographical distribution of the future population. This particularly concerns the question of the implementation of the new communities.

For these reasons, a scenario approach is taken to ensure that all possibilities are taken into account. Two types of scenario are developed and outlined in this section. Firstly, economic growth scenarios are developed and these will have an impact on future household income and future levels of employment. Secondly, growth scenarios for the new communities are developed. This will have an impact on the distribution of the future population within the Study Area.

The same forecasts of population for the entire Study Area are assumed for each scenario developed.

2.4.2 Economy

(1) National Economic Performance Comparison

As stated in the introduction to this chapter, historic growth trends form the best guide for a reasonable forecast for the growth of the economy over the next twenty years. Figure 2.4.1 shows annual GDP growth for the period 1994-2001 for Egypt. Also shown, as a comparison, are the Middle East and Turkey, Africa and the Western Hemisphere (Caribbean and South America). Table 2.4.1 shows GDP growth data for two periods, 1984-93 and 1994-2001.

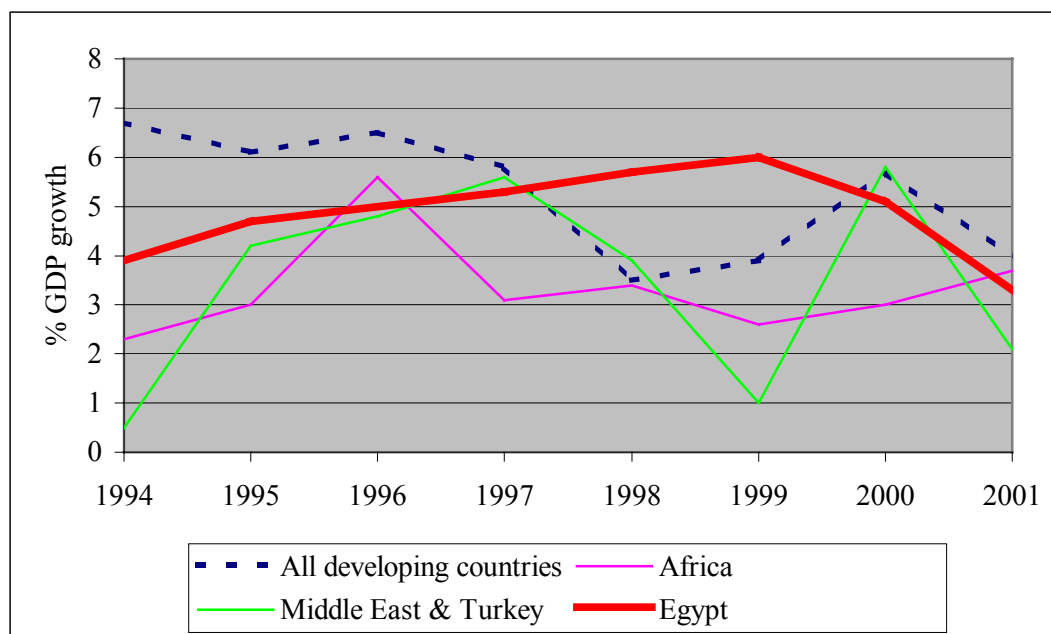


Figure 2.4.1 GDP Growth, Egypt and Other Developing Regions, 1994-2001

Table 2.4.1 Average GDP Growth, Egypt and Other Developing Regions, 1983-2001

Country/ Area	1984-93	1994-2001
All developing countries	5.1%	5.3%
Egypt	3.9%	4.9%
Middle East & Turkey	3.4%	3.5%
Developing Asia	7.6%	7.0%
Africa	2.0%	3.3%
Western Hemisphere	2.9%	2.9%

Source: World Economic Outlook, 2002, International Monetary Fund

For the developing countries as a whole, the effect of the financial crisis in Asia, 1998-99, can be clearly seen in Figure 2.4.1, followed by some evidence of a recovery. For the two periods, 1984-93 and 1994-2001, all developing countries are above 5% for both periods but this is heavily weighted by China, India and other Asian countries. Egypt has, however, out-performed other developing regions and averages of 4% and 5% indicate a good overall economic performance.

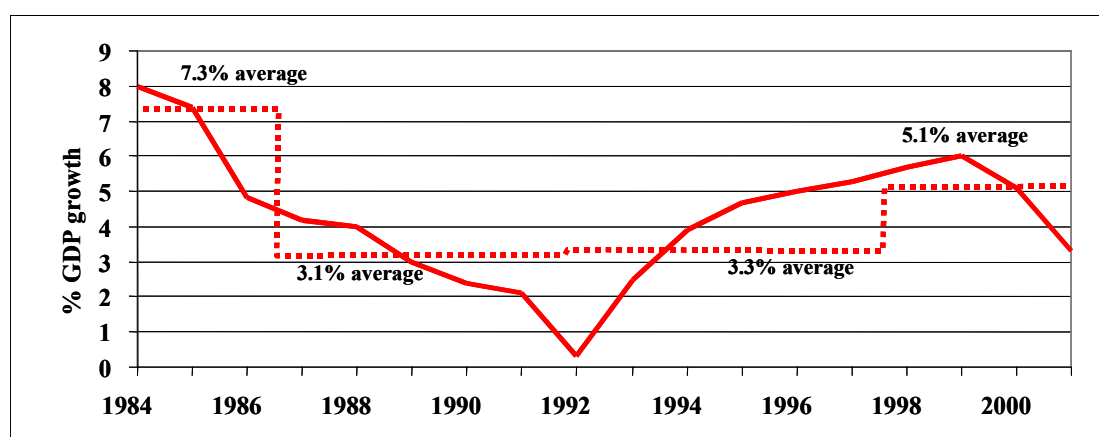
(2) The National Economy, 1982-2002

Growth trends over the last twenty years have shown a variation in the way that the national economy has performed. From impressive growth rates during the 1982-86 period (average 7.3%) the following decade saw growth more than halved i.e. 3.1% for the period 1987-91. This lower growth continued during the early part of the

1990's, 3.3% for the period 1992-97, with economic growth being particularly affected by the 1991 Gulf War. (0.2% growth in the year 1992). The government's stabilization program resulted in higher average growth rates of 5.1% for the period 1997-2001. There is evidence, however, that this economic growth has been slowing over the past two years. GDP growth decreased in the year 2001 to 3.3% and this is caused by several major reasons, as follows:

- It is understood that the privatization program is slowing down
- A general world-wide recession which is only just beginning to improve
- The effects of Sept 11th, particularly on foreign travel and tourism

Growth rates, for the Egyptian economy, for the period 1984-2001 are shown below in Figure 2.4.2. Averages for five year periods are also shown. These periods correspond reasonably with the government's five year plan periods.



Source: World Economic Outlook, 2002, International Monetary Fund

Figure 2.4.2 Annual GDP Growth Rate of National Economy, 1984-2001

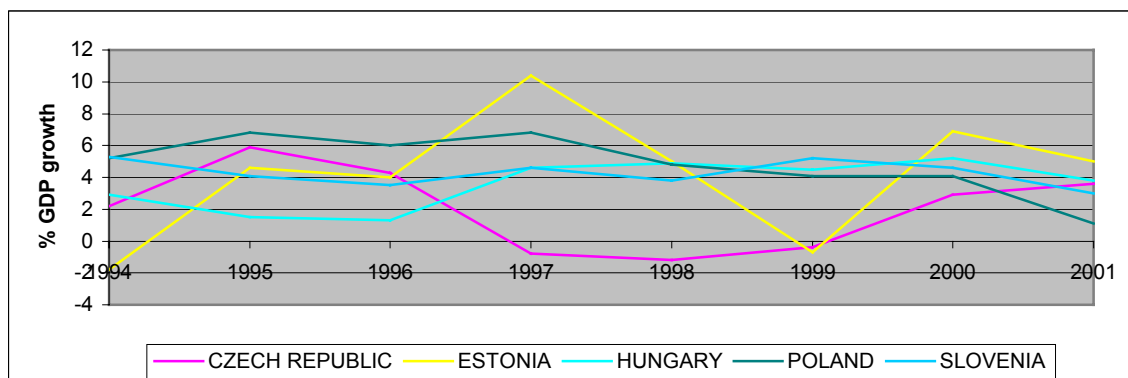
The IMF anticipate that this most recent decline in growth will continue in the year 2002 (1.7%) followed by some recovery in the year 2003 (3.5%).

(3) Growth Prospects

Regarding the national economic performance over the last twenty years, it is clear that there is no consistent growth trend for the country as a whole. There have been periods where growth has been high (7%), low (just above 3%) and, more recently, a medium growth rate of around 5%.

As stated previously, the government's stabilization program has been reasonably successful with higher GDP growth in the last part of the 1990's and the beginning of the twenty-first century. A big question remains as to whether these growth rates can be sustained. Privatization programs conducted elsewhere in the world, most notably in Eastern Europe, indicate that there are limitations to the sustainability of high

growth achievements in the long-term. Figure 2.4.3 shows the growth rates of the major East European countries who are currently preparing for accession to the European Union.



Source: World Economic Outlook, 2002, International Monetary Fund

Figure 2.4.3 Impact of Privatization, Eastern Europe, 1994-2001

The main thrust of the privatization programs in the countries shown in Figure 2.4.3 took place in the period 1990-95. During the transition from a centrally planned economy to a market economy, a period of negative growth, prior to 1994, was experienced before the benefits of privatization and liberalization were seen. These benefits extended to growth rates as high as 10% (Estonia, 1997) but more recently this growth, for all the countries, has stabilized at rates closer to 4%. The European bank for Reconstruction and development (EBRD) has estimated that there will lower growth in the year 2002 i.e. Hungary, 4%; Czech Republic, 3.5%; Slovenia, 3.2%; and Poland, 2%. Although there are still further privatization measures to be taken in these countries and, undoubtedly, accession to the European Union will have significant effect, other effects are now becoming more prominent. In particular, the greater openness to trade has meant that these countries have been more heavily affected by the global slow-down than would otherwise have been the case. Similarly, higher growth has brought other effects such as increased workers wages, making exports more expensive, and higher unemployment, as privatized firms are forced to compete in market conditions. In summary, although privatization does clearly bring benefits, it is difficult to expect high long-term growth because the transformation of such economies tends to create newer problems, such as higher unemployment, wage inflation and exposure to world economic problems. For the example of Egypt, the argument demonstrated above indicates that, although the economy has achieved good results for the period 1997-2001, this growth cannot be expected to be sustained over long-periods of time i.e. the study forecast period of twenty years.

(4) Egypt and the Greater Cairo Region

A further question to consider is whether there is some consistency between national growth rates and those possible for the Greater Cairo Region? On balance, there is some consistency between the two and that what is seen in terms of the national economy is mirrored in the city's growth. It must be said, however, that there is little

available evidence to be able to calculate regional Gross Domestic Product for the capital. On the basis of assumptions regarding the greater productive capital for some individual sectors, it was calculated that the GDP per capita for the capital is about 40% higher than that of the rest of the country. However, population growth rates are broadly similar (see also sub-section 2.4.3) and employment in the capital has increased at a slightly lesser rate (see also sub-section 2.4.5). Therefore it is to be expected that growth rates for the capital and the country will only differ slightly because agricultural production as a share of total production in the capital will decrease whilst manufacturing and services will increase. Because of the higher productive value of some sectors this would marginally increase the growth rate in the capital. However, because assumptions have already been made regarding the level of GRDP and the growth of the national economy and there is no available and accurate data regarding wages in the different sectors, it has been assumed that percentage changes in national income will have the same effect at the regional level.

It should also be noted that, because the calculations are in real terms, the expected differential between the country as whole and the capital will not be significant. However, in the future, because of the likelihood of wage inflation outstripping price inflation incomes will be higher than the rest of the country but this will be offset by higher prices.

(5) Economic Growth Scenarios

Because of uncertainties regarding the long-term growth, it is considered necessary to present three economic growth scenarios: high, medium and low. This should reflect all possibilities for the way in which the economy will develop in the future

High economic Growth Scenario

The previous section 2.3 reported on the government's vision for the period until 2017. This required growth rates of 6.8% during the period 1997-2002, and 7.6% during the years 2003-17. These are very high rates and difficult to sustain over a period of 20 years. No country has achieved this in recent history although both China and India have recorded some impressive performance. As can be seen from the earlier discussion on recent national growth rates, this target is unlikely to be met for the year ending 2002. Recent press statements¹³ from the government indicate that the government expects to achieve average growth rates of 6.5% for the period 2002-2007. It is, however, important to retain this growth strategy as one of the scenarios, particularly because the investment strategy of the government will be based on trying to achieve these high growth figures. However, and in order to reflect recent past performance and the still unstable world economy, it is proposed that growth would be less over the period 2002-12, rising from 4.6% in the first part to 6.1% in the years leading up to 2012. Thereafter, higher 5 year annual growth rates are postulated, 6.5% and 7% respectively.

¹³ Egyptian Gazette, 22 May 2002

This scenario would require both high public and private sector spending, a stable exchange rate regime and no major world economic downturns. The overall growth rate over the period would be a highly respectable 6.1% per annum.

Medium Economic Growth Scenario

The medium economic growth scenario assumes lower growth over the next couple of years but also assumes that the effects of the privatization program will form the foundation of further economic growth for later years. As the evidence in Eastern Europe suggested, the benefits of such a policy cannot continue forever. Because the privatization program is not so dramatic in Egypt, it is assumed that this slowing economic growth will take place at a later date. Therefore five year growth rates of 4%, 5%, 4.5% and 4.5% respectively have been assumed. Nevertheless, economic growth over the entire forecast period is still a reasonable 4.6% and is only just lower than growth seen in the last five years. Because of the events of September 11th, the World Bank has been revising their long-term forecasts for the country. Conversations with World Bank staff have indicated that medium economic growth scenario, proposed for this JICA study, is broadly in line with the Bank's forecasts.

Low Economic Growth Scenario

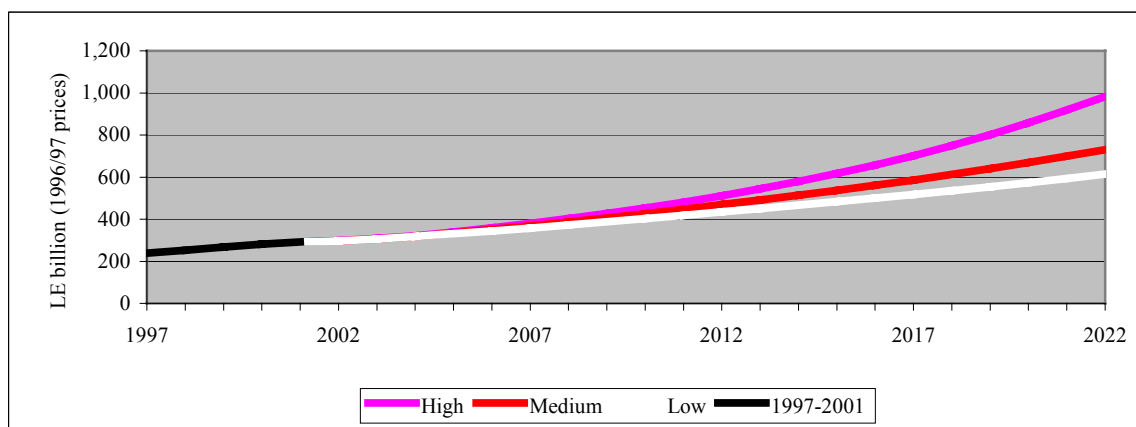
This growth scenario takes the assumptions that recovery will come later and that the privatization program, and its effects, will be much less significant. It is also assumed that these effects will decrease over time. This leads to growth rates of 3.5%, 4%, 3.5% and 3.5%. The overall growth rate is 3.7%. These are just above the growth rates seen between the mid 1980's and 90's.

Table 3.2.2 summarizes the forecast growth rates for each of the scenarios. Based on 1996/97 prices, the effect of each of the scenarios on GDP is shown diagrammatically in Figure 2.4.4.

Table 2.4.2 GDP Growth Rates, Economic Growth Scenarios, 2002-2022

Growth scenario	2002-2007	2008-2012	2013-2017	2018-2022	2002-2022
High	4.6%	6.1%	6.5%	7.0%	<u>6.1%</u>
Medium	4.0%	5.0%	4.5%	4.5%	<u>4.6%</u>
Low	3.5%	4.0%	3.5%	3.5%	<u>3.7%</u>

Source: JICA study team estimates



Source: JICA Study Team estimates

Figure 2.4.4 Gross Domestic Product, Egypt, Economic Scenarios

2.4.3 Future Population

As stated in section 2.3, there is a decreasing, but still positive rate of population growth in the Study Area. Population forecasts for the country as a whole also demonstrate this declining trend.

(1) The Study Area

Population forecasts for the Greater Cairo Region have been prepared by two organizations, the Cairo Demographic Center (CDC) and the Ministry of Planning. These forecasts are described below.

Cairo Demographic Center

The Cairo Demographic Center was founded by the United Nations and the Egyptian government. It is currently funded by the Egyptian government. This center for population research has published forecast data¹⁴ by governorate until the year 2021. The basis for its forecasts are past population data from CAPMAS. Three fertility variants were developed by the center. No specific analysis was made of the impact of the new communities.

Forecast population and growth rates for the governorates of Cairo, Giza and Qalyobeya, prepared by the Cairo Demographic Center, are shown below in Table 2.4.3

¹⁴ 'Population Projections by Sex and Age for Total Egypt and Governorates, 2001-2021', Cairo Demographic Center, September 2000

Table 2.4.3 Governorate Population Forecasts, CDC, 2001-21

Governorates	Estimated population ('000s)				
	2001	2006	2011	2016	2021
Cairo	7,202	7,739	8,347	9,033	9,790
Giza	5,404	6,084	6,756	7,392	7,952
Qalyobeya	3,757	4,203	4,679	5,105	5,491
Total	16,363	18,026	19,782	21,530	23,233
	Annual growth rates, 5 Year Periods				Annual growth rate, total period
	2001-06	2006-11	2011-16	2016-21	2001-21
Cairo	1.45%	1.52%	1.59%	1.62%	1.55%
Giza	2.40%	2.12%	1.82%	1.47%	1.95%
Qalyobeya	2.27%	2.17%	1.76%	1.47%	1.92%
Total	1.95%	1.88%	1.71%	1.53%	1.77%

Source: Cairo Demographic Center

Ministry of Planning

As part of its future strategy¹⁵ for developing the Greater Cairo Region, the Ministry of Planning have developed population forecasts for the year 2017. These forecasts are shown below in Table 2.4.4.

Table 2.4.4 Governorate Population Forecasts, Ministry of Planning, 2017

Governorate	Population 1996 ('000s)	Population 2017 ('000s)
Cairo*	6,809	9,500
Giza	4,779	6,300
Qalyobeya	3,292	4,400
Total	14,880	20,200

Source: Ministry of Planning. * includes 10th of Ramadan city

The total forecast for the three Governorates by the CDC is within 3% of the population forecast of Ministry of Planning, which also includes the 10th of Ramadan city. It is believed that the forecast data from the CDC forms a source for the ministry's population projections.

However, it is believed that there are differences regarding net reproduction rates (NRR)¹⁶ i.e. the two organizations use different years at which the NRR equals one. However, there has been a decrease in funding available for family planning since that time and the CDC's forecasts more accurately reflect that i.e. that the slowing of the birth rate will not be so successful and the NRR will be at a later date.

¹⁵ 'National Project for Developing the Cairo Region', Ministry of Planning, 1997

¹⁶ According to the United Nations Population Division, the **Net Reproduction Rate** is 'The average number of daughters a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates and the mortality rates of a given period. It is expressed as number of daughters per woman.'

Adjustments for Study Area and for traffic model forecast years

Based on the CDC forecasts, modifications have been made to the projected population data in order to take account of the Study Area boundaries and for the traffic model forecast years. These modifications are shown below in Table 2.4.5 and in Figure 2.4.5

Table 2.4.5 Forecast Population, JICA Study Area, 2007-2022

<i>Forecast Population</i>					
Governorate	2001	2007	2012	2017	2022
Cairo	7,364	8,082	8,730	9,452	10,241
Giza	4,385	4,766	5,276	5,753	6,189
Qalyobeya	2,642	3,294	3,652	3,973	4,274
Total	14,391	16,141	17,658	19,178	20,704
<i>Annual growth rates</i>					
Governorate	2001-07	2007-12	2012-17	2017-22	2001-22
Cairo	1.56%	1.55%	1.60%	1.62%	1.58%
Giza	1.40%	2.06%	1.75%	1.47%	1.65%
Qalyobeya	3.74%	2.09%	1.70%	1.47%	2.32%
Total	1.93%	1.81%	1.67%	1.54%	1.75%

*Source: JICA study team calculations, based on CDC forecasts. * includes 10th of Ramadan city*

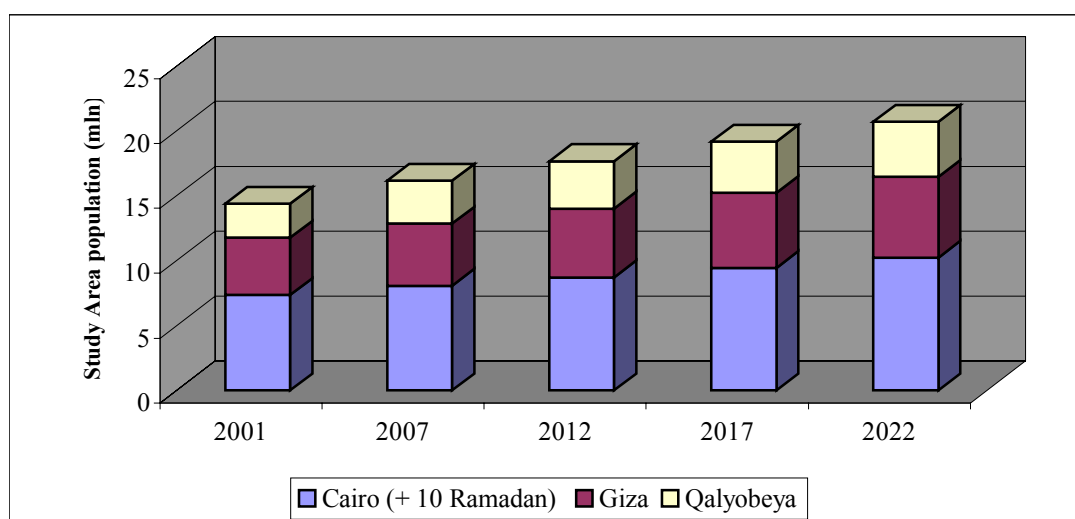


Figure 2.4.5 Forecast Population, JICA Study Area, 2001-2022
National Forecasts

The CDC has also prepared population forecasts for the country as a whole. These are shown below in Table 2.4.6.

Table 2.4.6 Population Forecasts, Egypt, 2001-2021

	2001	2007	2012	2017	2021
CDC (Low)	64.66	71.77	77.66	83.28	87.47
CDC (Medium)	65.07	72.87	79.58	85.95	90.88
CDC (High)	65.30	73.64	80.86	87.93	93.46
<i>Growth rates, 5yr periods</i>					
	2001-07	2007-12	2012-17	2017-21	2001-21
CDC (Low)	1.75%	1.59%	1.41%	0.99%	1.52%
CDC (Medium)	1.90%	1.78%	1.55%	1.12%	1.68%
CDC (High)	2.02%	1.89%	1.69%	1.23%	1.81%

Source: Cairo Demographic Center

As a comparison with the average annual growth rates for the JICA Study Area, the national growth rate for the medium variant (1.68% over the period 2001-2021) is marginally lower than the forecast for the Study Area (1.75% for the period 2001-2022).

(2) The New Communities

In section 2.3, nine new communities were identified within the JICA Study Area. Of these communities, two (Sheikh Zayed City and New Communities No. 7) are at very early stages of development and have been included with 6th of October. The 15th of May is considered as an established city and very little analysis has been undertaken for this community. The locations of the six new communities that have been investigated are shown below in Figure 2.4.6.

During the course of this study, site visits have been made to almost all of these communities. From observations made during these visits, it is clear that some have been more successful in their establishment than others. Another important point is that it has been difficult to establish the actual, current residential population of these new communities. Representatives spoken to were often unsure of the exact numbers of those who had come to live there although it was easier to ascertain progress in terms of the number of residential houses and apartments that had been constructed.

Certain key factors could be considered as being instrumental in the success of the new communities. These are as follows:

- State investment in housing, infrastructure/utilities (roads, telecommunications, water treatment plants etc)
- Private investment in housing, commercial facilities (banks etc) and employment
- Provision of transport facilities

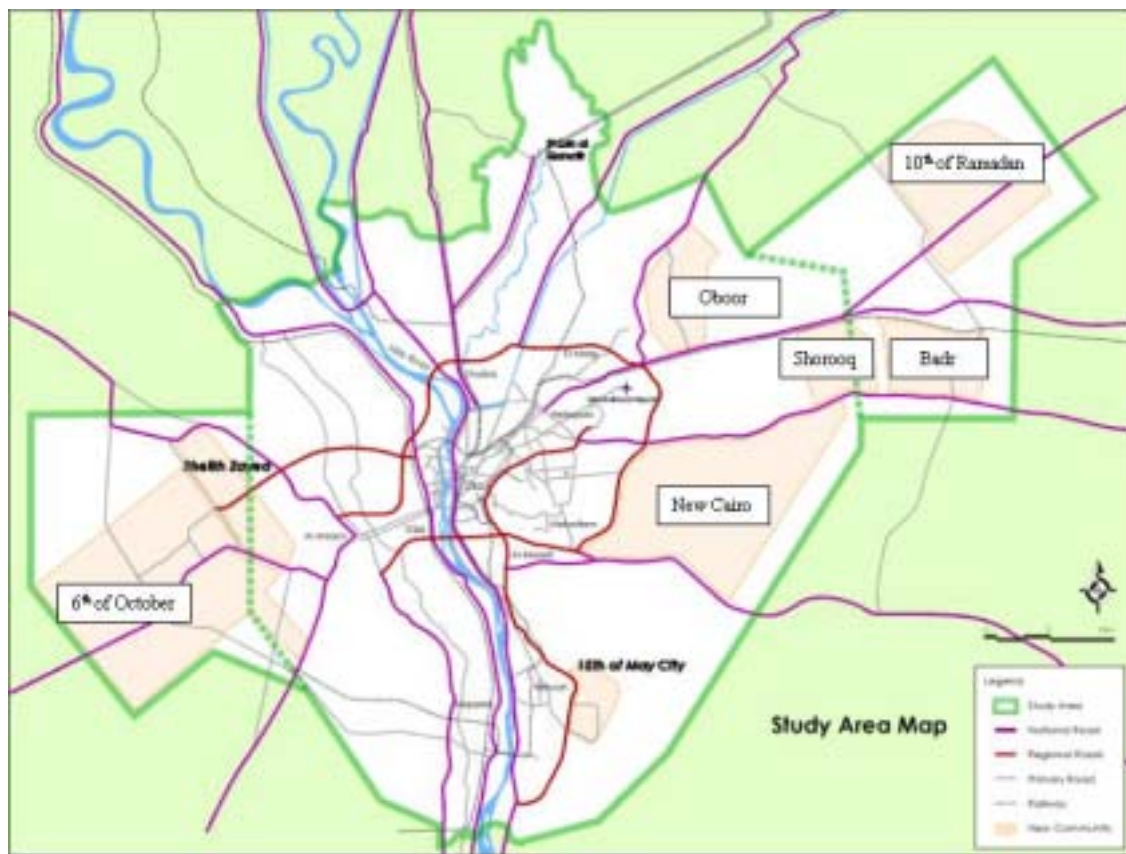


Figure 2.4.6 New Communities within the JICA Study Area

In all the new communities visited, there had been considerable state investment in certain forms of housing (Moubarak youth program and economic housing). When traveling through the communities, however, it was not immediately obvious that there had been a significant take-up of residents. From talking to new community representatives, it was clear that investment by the state in housing was slowing and that more recent construction was being undertaken by the private sector. A considerable volume of private sector housing has been constructed. However, it was again observed that, in many new communities, very few houses and apartments were occupied. With regard to transport links, in several of the new communities (which were particularly far away from the center of Cairo), representatives voiced concern over the volume of existing public bus service provision.

Target populations for the new communities are as given in the revised 1997 Greater Cairo Master Plan. Table 2.4.7 shows these target populations and the estimated current populations.

Table 2.4.7 Current and Target Populations, New Communities

New Community	Current estimated population	Target population, 2017
Oboor	42,000	500,000
Shorooq	25,000	500,000
New Cairo	120,000	750,000
Badr	25,000	430,000
6th October	200,000	1,500,000
10th Ramadan	196,000	500,000
Total	608,000	4,180,000

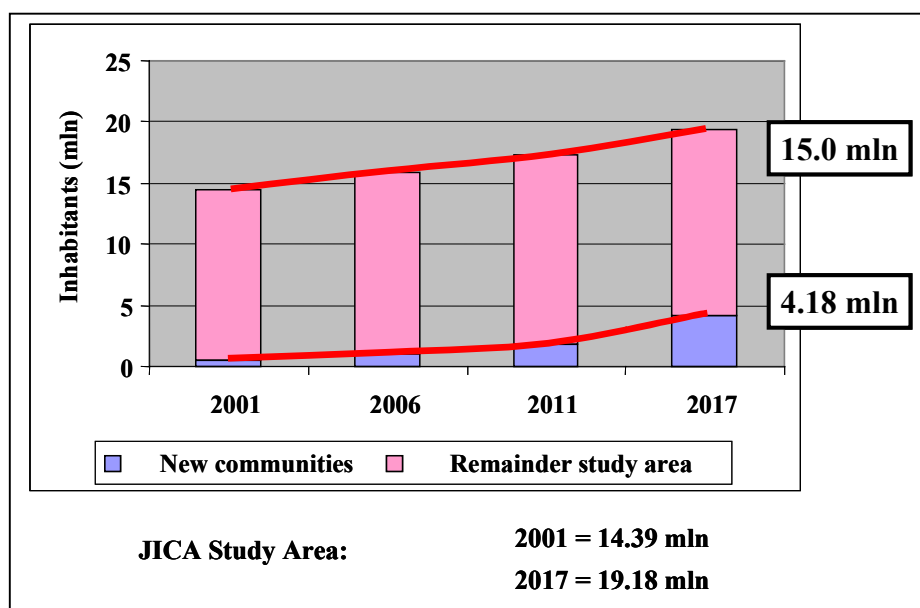
Source: Existing pop: from new community representatives. Target pop: Revised Greater Cairo Masterplan, 1997

Recent discussions with the GOPP have indicated that further locations are to be established as new communities including New Heliopolis and El Amal. The target population for all the new communities would then be in the region of 6 mln inhabitants. However, it is believed that the dates for achieving these targets have not yet been defined. Because of these new communities are still in the planning stage, no further detailed analysis has been carried out for these latest communities.

(3) Implementation of the New Communities

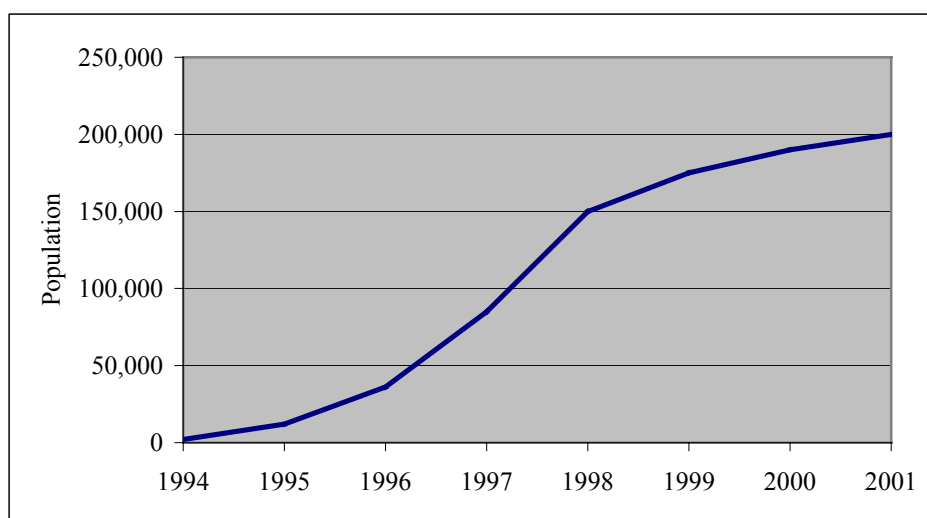
For the forecasting of the distribution of the population with the JICA Study Area, it is clearly very important to be able to estimate the population of the new communities for each of the traffic model forecast years. As stated previously, however, it is not certain whether the target populations can be achieved. It should be further noted that, under the population projections described above, if the new communities were to be successfully implemented within the target period then this would mean that virtually all of the projected population increase, over the twenty year forecast period, would be in the new communities rather than in the Greater Cairo Region. Figure 2.4.7 illustrates this point.

In order to estimate possible realistic implementation scenarios for the new communities, the Consultants have investigated at growth in one of the new communities, 6th of October, and have conducted a regression analysis based on government investment in infrastructure, the share of the private sector in GDP and real GDP, for the period 1994-2001. These three variables reflect the discussion above on the key factors required for the success of the new communities. As also stated above, it is very difficult to obtain precise estimates of population for the new communities. Population for the year 2001 (200,000 inhabitants) and 1998 (150,000) was obtained from the public relations office of the 6th October. Population for the year 1996 (36,000) was obtained from CAPMAS. It was known that, prior to 1996, population was very small and nominal population estimates were taken for that period. Similarly, population was estimated by the Consultant for the years 1999 and 2000. The estimated population for the 6th October, for the period 1994-2001, is shown below in Figure 2.4.8



Source: Population projections from CDC; new communities target population from Revised Greater Cairo Masterplan, 1997

Figure 2.4.7 Distribution of Future Population if New Communities Successfully Implemented



Source: 2001 & 1998, PR office, 6th October; 1996, CAPMAS; remaining years, JICA study team estimates

Figure 2.4.8 Estimated Population of 6th October, 1994-2001

A further estimate made by the Consultants was regarding the share of private sector as a percentage of GDP for the year 2000. These were made on the reasonable basis that GDP growth was a little lower than the previous year, 5.1% against 6.0%. Because growth in the year 2001 was much lower, 3.3%, it was more difficult to estimate these variables and this year was omitted from the regression. Table 2.4.8 shows the input variables for the regression analysis.

Table 2.4.8 Input Data, 6th October

Year	Population, 6th October	Share private sector /GDP (%)	Government investment expenditure /GDP (%)	Real GDP
1994	2,000	63.30%	6.10%	207.07
1995	12,000	64.30%	5.50%	216.72
1996	36,000	65.50%	5.50%	227.46
1997	85,000	68.80%	5.50%	239.50
1998	150,000	70.70%	5.60%	253.09
1999	175,000	74.90%	8.40%	268.40
2000	190,000	74.00%	8.00%	282.09
2001	200,000			291.40

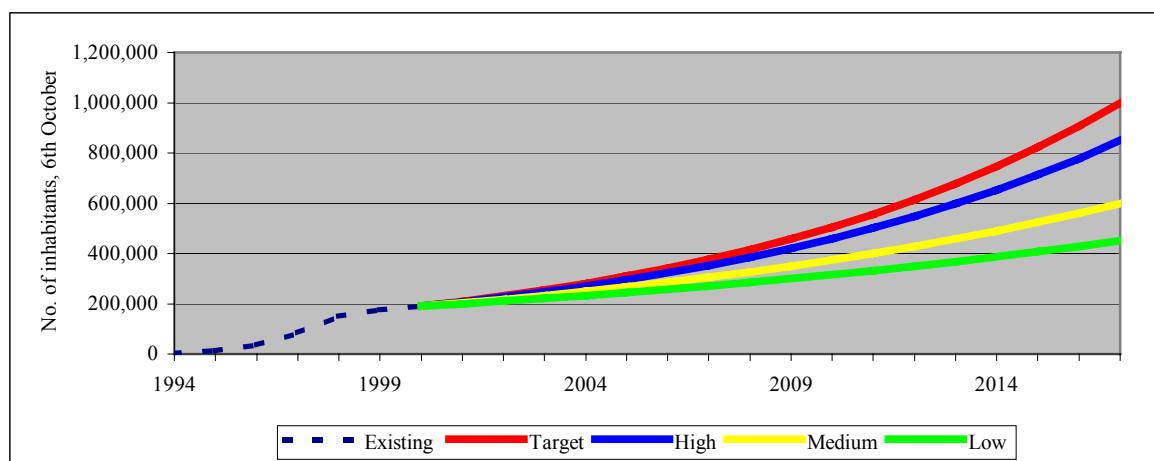
Source: Population, various, economic data: Monthly Economic Digest, Ministry of Economy and Foreign Trade, June 2001.

The resulting regression gives a very high r-squared of 0.965. Against this it must be stated that the number of observations is low i.e. 7 and that several of the variables are interlinked and, therefore, it is not surprising that such a high r-squared has been obtained. Nevertheless, as an indication of how the new communities would develop under the different economic growth scenarios, the analysis forms a reasonable starting point. Using the results of the regression analysis, the population of the 6th of October has been calculated for each of the traffic model forecast years up until the year 2017. For each of the economic growth scenarios, assumptions have been made regarding the private sector share of GDP and government investment expenditure. Given the government's commitment to privatization, higher shares for the private sector are expected under higher economic growth. Similarly, with higher economic growth, it can be expected that there will be a more government investment in infrastructure. The results are shown below in Table 2.4.9. The forecast implementation as a percentage of the target population is also shown. Figure 2.4.9 shows the forecast population for the 6th of October, up until the year 2017, under each of the economic growth scenarios.

Table 2.4.9 Forecast population, 6th of October, 2007-2017

Economic scenario	growth	% GDP growth p.a.	% share private sector/GDP	% investment expenditure /GDP	Real GDP	Estimated population	% of target population
High growth		6.1%					
2007			80%	7%	416	427,709	
2012			80%	7%	559	603,435	
2017			80%	7%	751	839,708	85%
Medium growth		4.6%					
2007			75%	6%	382	336,966	
2012			75%	6%	478	455,039	
2017			75%	6%	598	602,885	60%
Low growth		3.7%					
2007			70%	5%	362	264,325	
2012			70%	5%	435	352,891	
2017			70%	5%	521	459,100	45%
Target growth		7.2%					
2007			80%	7%	441	458,751	
2012			80%	7%	623	681,890	
2017			80%	7%	880	997,054	100%

Source: JICA study team calculations



Source: JICA study team calculations

Figure 2.4.9 Estimated Population of 6th of October, Economic Growth Scenarios

In principle, similar exercises can be undertaken for the remainder of the new communities. Therefore, for example, each of the new communities would reach 60% of the target population by the 2017. However, certain modifications must be considered. Firstly, several of the new communities such as Oboor, Shorroq, Badr and Sheikh Zayed are only at the initial stages of being established. Therefore, for

these cities, it has been assumed that the development stages, as proposed for the 6th of October, are delayed by five years. After that time, the forecast development curves are then introduced. Secondly, 10th Ramadan has already reached a population of 196,000 (in the year 2001) and is currently attracting considerable industrial investment. It is, therefore, assumed that 10th Ramadan will reach its target population of 500,000 by the year 2017. Estimates of population, for each of the new communities, have been made for the year 2022 using reasonable population growth rates. Based on these calculations, the population of the remainder of the Study Area can be calculated i.e. the total populations of the new communities are subtracted from the control totals for the whole of the Study Area (see also Table 2.4.5). The estimated populations are shown below in Table 2.4.10. The results shown are for the medium economic growth scenario. Populations at the Shiakha level were calculated, with consideration taken of both saturation levels and natural growth rates for individual Shiakhas.

Table 2.4.10 Forecast populations ('000s), adjusted for New Communities, Medium Economic Growth Scenario, 2007-2022

	2007	2012	2022
<i>New Communities:</i>			
Oboor	50	112	300
Shorouq	50	112	300
New Cairo	165	272	699
Badr	38	88	200
6th October	302	426	865
10th Ramadan	278	373	576
Sheik Zayed	30	87	300
Total new communities:	914	1,469	3,241
Remainder study area:	15,228	16,189	17,463
Total, all Study Area	16,098	17,649	20,721

Source: JICA study team calculations

2.4.4 Average Household Income

Based on the economic growth scenarios and the forecast populations, the average monthly household income can be calculated. As shown in section 2.3, there is a good relationship between GDP per capita and household income. Thus, growth rates for future household income are similar to the GDP per capita growth rates given for the three scenarios. It is further assumed, due to the absence of detailed historic data, that income distribution remains the same between zones i.e. zones that are high income now will remain so in the future. The results are shown below in Table 2.4.11. All incomes are in 2001 prices.

Table 2.4.11 Average Household Income (LE per month), 2001-2022, in Constant 2001 Prices

	2001	2007	2012	2017	2022
Average household income (LE per month), high economic growth	672	785	964	1,217	1,579
<i>Factor increase on year 2001</i>		<i>1.17</i>	<i>1.44</i>	<i>1.81</i>	<i>2.35</i>
Average household income (LE per month), medium economic growth	672	754	879	1,006	1,176
<i>Factor increase on year 2001</i>		<i>1.13</i>	<i>1.31</i>	<i>1.50</i>	<i>1.73</i>
Average household income (LE per month), low economic growth	672	736	819	896	985
<i>Factor increase on year 2001</i>		<i>1.10</i>	<i>1.22</i>	<i>1.33</i>	<i>1.47</i>

Source: JICA study team calculations

2.4.5 Future Employment

(1) Historic Trends

Estimates of future employment within the JICA Study Area have been based on several sources. Table 2.4.12 shows employment for the GCR and for Egypt as a whole for the two years, 1986 and 1996. Source data for 1996 was obtained from CAPMAS statistics. For 1986, the total national employment level was based on extrapolated data from employment statistics provided by the International Labor Organization. Employment by sector for Egypt and for the GCR was calculated, based on percentages given in the Ministry of Planning's 'National Project for Developing the Cairo Region, 1997'¹⁷.

Table 2.4.12 Employment ('000s), GCR and Egypt, 1986 and 1996

	Cairo				Egypt			
	1986	1996	% increase	% p.a.	1986	1996	% increase	% p.a.
Primary	287	220	-23.4%	-2.63%	1986	1996	+14.1%	+1.33%
Secondary	1367	1685	+23.3%	+2.11%	4278	4881	+27.9%	+2.49%
Tertiary	1496	1862	+24.5%	+2.21%	3596	4600	+26.6%	+2.38%
Total	3150	3767	+19.6%	+1.80%	12842	15678	+22.8%	+2.07%

Source: 1986 (total national employment, ILO; percentage distribution, Ministry of Planning), 1996 (CAPMAS)

Average annual GDP growth over the same period was 3.35%. As a reasonable estimate, therefore, it can be assumed that a 1% growth in GDP leads to an increase in total employment of between 0.53% (Cairo) and 0.62% (Egypt). For the three economic scenarios, an expected annual increase in total employment would be:

¹⁷ Table 1-14 of 1997 document

Low economic growth (3.7%)	1.96% - 2.29%
Medium economic growth (4.6%)	2.4% - 2.85%
High economic growth (6.1%)	3.23% - 3.78%

As can be seen, from Table 2.4.12, there was a negative growth in the number of workers employed in the primary sector (farming, fishing and quarrying), in the GCR, and on this basis it can be reasonably inferred that it is unlikely that there will be considerable future growth within this sector. However, given the anticipated growth in population over the 20 year forecast period, some employment in the primary sector is anticipated. For this study, a nominal growth rate of 0.5% per year has been used.

As can be seen from the above Table 2.4.12, the total increase in employment in the GCR has been smaller in the GCR than for the rest of Egypt, although the main reason for this is because of the observed reduction in the number of primary sector workers which was a different trend than the rest of the country. Employment growth in the secondary and tertiary sectors have been marginally less in the GCR than in the rest of the country. Given the government's commitment to spread development throughout the country, this result is not surprising. Where the GCR has recorded greater growth has been in the tertiary (public administration/trade/tourism/finance sectors) i.e. an annual increase of 4.8%, which could be expected in a capital city.

Table 2.4.12 shows data for two years only. To obtain a clearer picture of data over a period, total employment for the country as a whole was compared with annual GDP growth over the period 1991-2001. Total national employment and GDP growth is shown below in Table 2.4.13

Table 2.4.13 National Employment and GDP Growth, 1991-2001

Year	Employment (in thousands)				% growth				GDP growth
	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary	Total	
1990/91	4,579	2,738	6,104	13,421					
1991/92	4,604	2,651	6,487	13,742	0.53%	-3.16%	6.27%	2.39%	1.90%
1992/93	4,681	2,885	6,445	14,011	1.68%	8.81%	-0.65%	1.96%	2.50%
1993/94	4,741	3,025	6,670	14,436	1.28%	4.86%	3.49%	3.03%	3.90%
1994/95	4,805	3,163	6,911	14,879	1.35%	4.56%	3.61%	3.07%	4.70%
1995/96	4,875	3,296	7,169	15,340	1.45%	4.21%	3.73%	3.10%	5.00%
1996/97	4,809	3,279	7,737	15,825	-1.35%	-0.52%	7.92%	3.16%	5.30%
1997/98	4,886	3,499	7,959	16,344	1.59%	6.73%	2.87%	3.28%	5.70%
1998/99	4,973	3,697	8,204	16,874	1.79%	5.65%	3.08%	3.24%	6.10%
1999/2000	5,058	3,895	8,466	17,419	1.71%	5.36%	3.19%	3.23%	6.50%
2000/01	5,146	4,104	8,734	17,984	1.75%	5.35%	3.17%	3.24%	3.30%

Source: Employment data: *Quarterly Economic Digest, Oct-Dec 2000, Ministry of Economy and Foreign Trade.*
GDP data: *World Economic Outlook 2002, IMF*

From Table 2.4.13, it can be seen that total employment growth changes very little with regard to changes in GDP. In particular, for the period 1993/94 – 2000/01,

employment growth increased in the range 3.0% to 3.3% whilst GDP growth was between 3.3% and 6.1%. For the three economic scenarios it would be expected that the total annual employment would be as follows:

% GDP growth	Annual employment growth
3.7%	3.0%
4.6%	3.1%
6.1%	3.25%

Given the lower employment growth observed in the GCR, this would imply that total employment growth would be lower i.e. 87% (=1.8%/2.07%). It is furthermore assumed that growth in the tertiary sector would be slightly higher than that foreseen for the secondary sector. Under the medium economic growth scenario, therefore, the following average annual employment growth rates, by sector and for the JICA Study Area, are anticipated to be as follows:

GDP growth (medium growth scenario)	4.6%
Primary sector, average annual employment growth	0.5%
Secondary sector, average annual employment growth	2.7%
Tertiary sector, average annual employment growth	2.8%
Total, all sectors, average annual employment growth	2.7%

Based on these growth percentages, employment by sector, for the traffic model years, is shown below in Table 2.4.14. Information for the year 2001 is for employment by location and is based on the Consultant's HIS data. The factors shown above have been applied to calculate employment by location for the traffic model years. It should be noted that Tables 2.4.16 are also employment data.

Table 2.4.14 Forecast Employment, 2007-2022, Medium Economic Growth Scenario

	2001	2007	2012	2022
Total pop	14,391,987	16,097,708	17,649,144	20,721,173
Primary employed	154,762	159,463	163,490	171,851
Secondary employed	1,382,324	1,621,932	1,853,040	2,418,741
Tertiary employed	2,449,890	2,891,381	3,319,486	4,375,241
Total employed	3,986,977	4,672,776	5,336,016	6,965,833

Source: JICA study team calculations

It could be considered that this forecast employment data is conservative in estimation. Higher rates of growth, particularly in the secondary sector, have been observed in the country as a whole. In the previous section 2.3, it was calculated that the labor force participation rate, in 1996, was almost 50% i.e. total population in the age range 15-60 years (8 mln) divided by a potential labor force (3.93 mln). The potential labor force was calculated from employment by residence data.

From the forecast population data, in section 2.4.3, the number of persons in the 15-60 years age range has been calculated. Given a labor force participation rate of 50%, the potential labor force for the traffic model forecast years can be calculated and compared the employment forecast totals. The results of this exercise are shown below in Table 2.4.15.

Table 2.4.15 Labor Partic. Rate and Forecast Employment, 2001-2022 ('000s)

	2001	2007	2012	2022
1. Population, 15-60 yrs, ('000s)	8,982	10,396	11,453	13,641
2. Estimated labor force ('000s)	4,491	5,198	5,727	6,821
3. Forecast employment (000s)	3,987	4,673	5,336	6,967
4. % difference 2 & 3	11.22%	10.10%	6.82%	-2.14%

Source: Population data: CDC, adjusted for JICA Study Area; Employment data, JICA study team calculations

As can be seen from the above data, given the decreasing rate of population growth within the Study Area, by the year 2022, the forecast employment levels are slightly less than the available estimated labor force, although it is anticipated that some labor would need to be drawn from outside the JICA Study Area. This would suggest that higher employment growth may be difficult to attain, given also that the government is actively spreading investment throughout the rest of the country and, hence, reducing the availability of labor from other parts of the country.

(2) Distribution of Employment within Study Area

Given the estimated future employment levels calculated above, these forecasts must then be distributed within the Study Area. In general, it is reasonable to infer that employment growth within individual traffic zones will be similar. This is particularly relevant for the primary and tertiary employment sectors. The exception, however, is that of manufacturing within the secondary employment sector. Future manufacturing activity decisions are influenced by the incentives that are made available by the state. Manufacturing jobs are estimated to make up 62% of secondary sector jobs¹⁸. The estimated manufacturing and non-manufacturing jobs for the traffic model forecast years is shown below in Table 2.4.16.

Of the proposed new communities, three (Oboor, 6th October, 10th Ramadan) are designated as industrial cities. Of the anticipated increase in manufacturing jobs, it is assumed that 50% of all new employment will be taken up in these new industrial cities, with the remainder spread over the rest of the Study Area and increased proportionally with the year 2001 estimates

Table 2.4.16 Estimated Manufacturing/Non-manufacturing Jobs ('000s), Secondary Sector, 2001-2022

	2001	2007	2012	2022
Manufacturing ('000s)	857.0	1,005.6	1,148.9	1,499.6
Non-manufacturing ('000s)	525.3	616.3	704.2	919.1
Total secondary sector	1,382.3	1,621.9	1,853.0	2,418.7

Source: JICA study team calculations. N.B. some differences due to rounding

2.4.6 Future Education

Estimates of student numbers, pre-university and university, for the traffic model forecast years were calculated on the basis of the CDC population projections and adjusted for the Study Area boundaries. It is believed that the country has a relatively high proportion of students in tertiary education in comparison to its relative wealth.

¹⁸ See section 2.3.

This would indicate that the projected increases in GDP, under the three economic scenarios, would not necessarily lead to more students entering higher education as a proportion of the population. For this study, student numbers are assumed to increase in line with population growth. For pre-university students, future levels are based on population increase by Governorate. For university students, future levels are based on population increases within the Study Area as a whole, based on the assumption of greater student mobility. On this basis, initial calculations were made in order to calculate control totals. These are shown below in Table 2.4.17.

Table 2.4.17 Initial Estimates of Future Student Numbers, 2007-2022

<i>Pre-university students</i>	2001	2007	2012	2022
Cairo + 10 th Ramadan	2,128,665	2,024,340	2,008,701	2,106,418
Giza	1,293,845	1,369,649	1,436,578	1,567,534
Qalyobeya	787,560	831,339	867,571	946,495
Total	4,210,070	4,225,329	4,312,850	4,620,446
<i>University students</i>				
Cairo + 10 th Ramadan	540,007	614,637	599,632	636,945
Giza	253,908	293,176	284,983	301,602
Qalyobeya	8,858	10,233	9,936	10,522
Total	802,773	918,046	894,551	949,069

Source: JICA study team estimates. Based on CDC population projections and adjusted for Study Area.

Because of the anticipated larger increases of population in the new communities, the number of pre-university students was re-calculated based on proposed future populations for each of the new communities.

Because of the projected decreased population growth rates, it can be seen from Table 2.4.17 that there the projected absolute number of university students is actually estimated to decrease in the years 2012 and 2017. In practice, this is believed unlikely to happen, given the prominence and reputation of the universities of Cairo. Therefore, for these years, a straight line increase is taken between the years 2007 and 2022. Small adjustments were made to the anticipated number of students in the 10th of Ramadan.

The adjusted and final estimates of the future students in the Study Area, for the traffic model forecast years, are shown below in Table 2.4.18.

Table 2.4.18 Final, Adjusted Estimates of Student Numbers, JICA Study Area

<i>Pre-university students:</i>	2001	2007	2012	2022
Total Study Area	4,210,071	4,222,010	4,312,859	4,621,905
Of which new communities		209,294	313,383	631,474
<i>University students:</i>				
Total Study Area	802,774	920,396	938,046	966,325

Source: JICA study team estimates

Finally estimated socio-economic frameworks of the Study are shown in Tables 2.4.19 to 2.4.21 in 2007, 2012 and 2022, respectively. Maps, which illustrate the socio-economic frameworks in 2022, are also shown in Figure 2.4.10 to 2.4.12.

Table 2.4.19 Socio-economic Framework – Year 2007 -

Sector	Population	No. of HH	HH size	Montly Income (LE per Month)	Employment			Students		Vehicle Availiavity (%)	
					Primary	Secondary	Tertiary	Non-Univ.	Univ.		
1	6 th of October City	331,961	88,053	3.77	986	3,844	123,962	55,591	127,617	41,103	44.7
2	Imbaba Markaz	1,386,580	321,857	4.31	505	27,383	46,912	101,143	365,122	0	22.9
3	Doqy	1,261,533	314,212	4.01	968	10,336	142,447	307,631	354,753	10,242	43.3
4	Giza	1,326,850	331,677	4.00	809	16,517	77,109	228,800	388,625	241,831	36.5
5	South Giza	476,531	106,401	4.48	620	9,388	21,717	43,568	152,700	0	29.1
6	Helwan	831,644	193,082	4.31	716	3,869	141,361	86,310	212,644	97,426	33.0
7	Maadi	909,902	223,723	4.07	914	8,626	66,019	110,573	196,931	10,941	38.6
8	Khaleefa	778,842	212,484	3.67	664	3,459	59,009	161,434	206,696	40,607	30.1
9	CBD	432,735	126,790	3.41	821	6,819	231,892	491,531	147,080	25,469	36.8
10	Shobra	1,121,253	284,509	3.94	661	2,156	54,538	150,929	250,751	10,371	31.1
11	Masr El Gedeeda	921,582	239,164	3.85	1,093	9,184	136,698	337,448	275,763	323,284	48.5
12	Nasr City	860,758	226,312	3.80	1,423	10,740	139,660	285,768	250,762	91,368	56.6
13	Ain Shams	1,027,162	244,237	4.21	677	2,848	35,726	105,243	246,229	12,522	31.5
14	Salam City	842,540	204,896	4.11	642	2,469	34,904	78,606	175,868	0	29.6
15	Shobra El-Kheima	1,159,090	262,896	4.41	541	7,811	68,837	89,771	286,917	8,755	25.3
16	Qalyob	938,387	201,977	4.65	508	17,431	44,142	89,444	225,623	0	22.4
17	Qanater	1,211,890	278,570	4.35	470	12,744	62,997	102,605	294,150	1,478	20.4
18	10 th of Ramadan City	278,467	69,270	4.02	631	3,839	134,003	64,985	63,779	5,000	30.9
	Total	16,097,708	3,930,111	4.10	754	159,463	1,621,932	2,891,381	4,222,010	920,396	33.6

Source: JICA Study Team

Table 2.4.20 Socio-economic Framework – Year 2012 -

Sector	Population	No. of HH	HH size	Montly Income (LE per Month)	Employment			Students		Vehicle Availiavity (%)	
					Primary	Secondary	Tertiary	Non-Univ.	Univ.		
1	6 th of October City	512,251	135,876	3.77	1,150	3,941	166,749	63,822	109,263	41,552	52.3
2	Imbaba Markaz	1,502,897	348,849	4.31	588	28,075	52,041	116,119	378,975	0	27.3
3	Doqy	1,336,321	333,417	4.01	1,133	10,597	158,020	353,180	368,212	10,354	47.8
4	Giza	1,423,211	355,751	4.00	945	16,934	85,539	262,677	403,370	244,476	42.5
5	South Giza	519,046	115,893	4.48	723	9,625	24,092	50,018	158,493	0	33.7
6	Helwan	917,952	212,861	4.31	837	3,967	156,816	99,089	208,679	98,850	38.7
7	Maadi	941,248	231,559	4.06	1,068	8,844	73,237	126,945	193,259	11,100	44.7
8	Khaleefa	814,296	222,334	3.66	776	3,546	65,460	185,337	202,842	41,201	36.0
9	CBD	455,553	133,528	3.41	960	6,991	257,244	564,308	144,338	25,841	42.0
10	Shobra	1,152,744	292,641	3.94	771	2,210	60,500	173,277	246,075	10,523	36.7
11	Masr El Gedeeda	968,265	251,366	3.85	1,279	9,416	151,643	387,412	270,621	328,008	55.0
12	Nasr City	1,116,934	293,097	3.81	1,516	11,012	154,929	328,080	289,818	92,703	58.5
13	Ain Shams	1,053,582	250,651	4.20	790	2,920	39,631	120,825	241,637	12,705	37.5
14	Salam City	894,597	217,555	4.11	749	2,531	38,720	90,245	172,588	0	35.0
15	Shobra El-Kheima	1,264,331	286,766	4.41	631	8,008	76,363	103,062	296,302	8,841	30.1
16	Qalyob	1,023,589	220,315	4.65	592	17,872	48,968	102,687	233,003	0	27.2
17	Qanater	1,379,188	317,433	4.34	548	13,066	79,682	117,797	315,793	1,493	25.5
18	10 th of Ramadan City	373,140	92,821	4.02	736	3,936	163,407	74,607	79,591	10,400	35.9
	Total	17,649,144	4,312,714	4.09	879	163,490	1,853,040	3,319,486	4,312,859	938,046	39.1

Source: JICA Study Team

Table 2.4.21 Socio-economic Framework – Year 2022 -

Sector	Population	No. of HH	HH size	Montly Income (LE per Month)	Employment			Students		
					Primary	Secondary	Tertiary	Non-Univ.	Univ.	
1	6 th of October City	1,165,350	309,111	3.77	1,522	4,143	297,269	84,120	227,077	42,284
2	Imbaba Markaz	1,655,902	384,356	4.31	776	29,510	64,595	153,050	385,228	0
3	Doqy	1,434,266	358,580	4.00	1,507	11,139	196,141	465,508	374,287	10,537
4	Giza	1,553,754	388,374	4.00	1,253	17,800	106,174	346,221	410,025	248,782
5	South Giza	575,006	128,388	4.48	957	10,117	29,903	65,927	161,108	0
6	Helwan	1,134,251	262,183	4.33	1,117	4,169	194,646	130,605	203,761	100,963
7	Maadi	994,585	244,894	4.06	1,404	9,296	90,904	167,320	188,704	11,338
8	Khaleefa	877,262	239,697	3.66	1,032	3,727	81,252	244,283	198,062	42,081
9	CBD	498,015	146,098	3.41	1,274	7,349	319,301	743,785	140,936	26,393
10	Shobra	1,218,025	309,357	3.94	1,023	2,323	75,095	228,387	240,275	10,747
11	Masr El Gedeeda	1,051,815	273,183	3.85	1,703	9,898	188,224	510,627	264,243	335,018
12	Nasr City	1,913,682	501,324	3.82	1,727	11,575	192,303	432,425	418,337	94,684
13	Ain Shams	1,103,589	262,782	4.20	1,047	3,069	49,192	159,253	235,942	12,976
14	Salam City	991,200	241,048	4.11	991	2,661	48,061	118,947	168,521	0
15	Shobra El-Kheima	1,262,074	285,981	4.41	834	8,417	94,784	135,841	301,140	9,002
16	Qalyob	1,115,550	239,550	4.66	784	18,786	60,781	135,347	236,807	0
17	Qanater	1,600,622	368,919	4.34	725	13,734	110,977	155,262	355,169	1,520
18	10 th of Ramadan City	576,225	143,339	4.02	974	4,137	219,139	98,335	112,281	20,000
	Total	20,721,173	5,087,164	4.07	1,176	171,851	2,418,741	4,375,241	4,621,905	966,325

Source: JICA Study Team

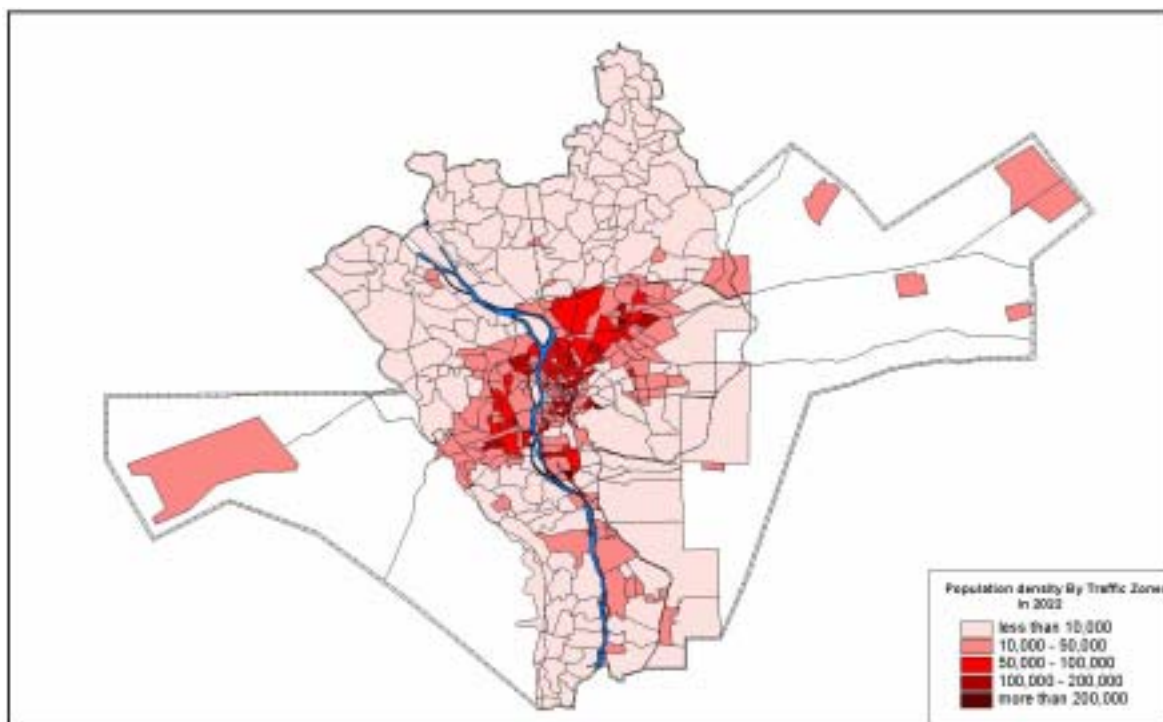


Figure 2.4.10 Population Density Map – Year 2022 –

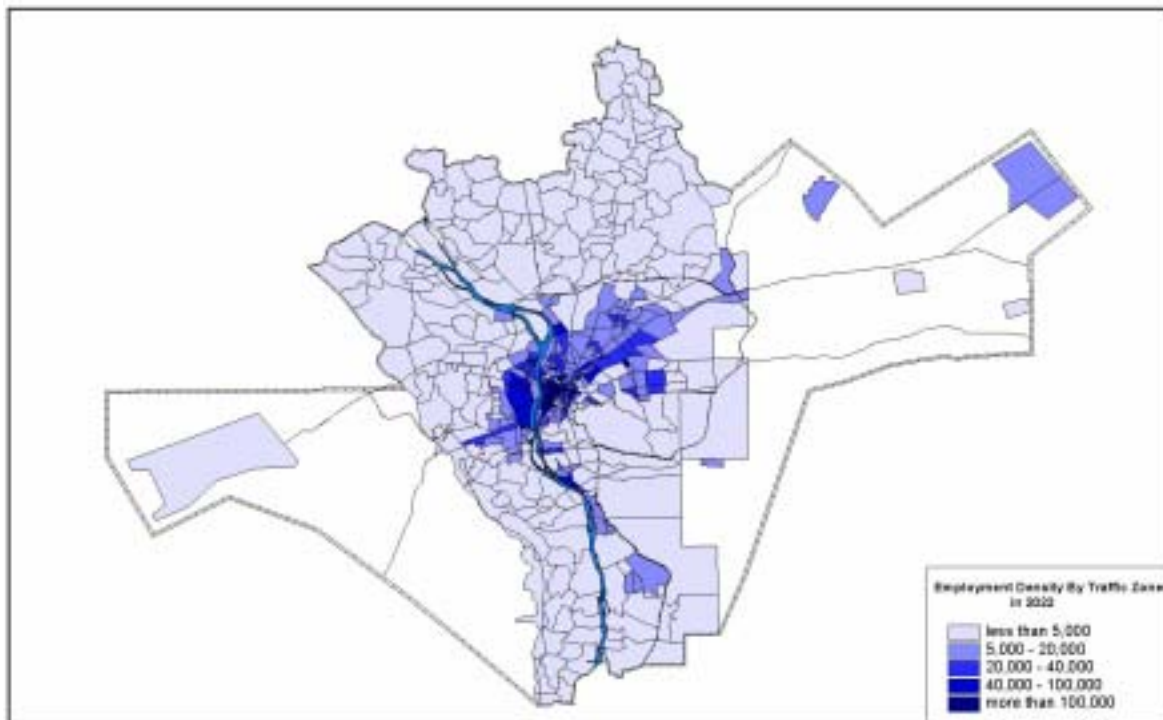


Figure 2.4.11 Work Place Employment Density Map – Year 2022 –

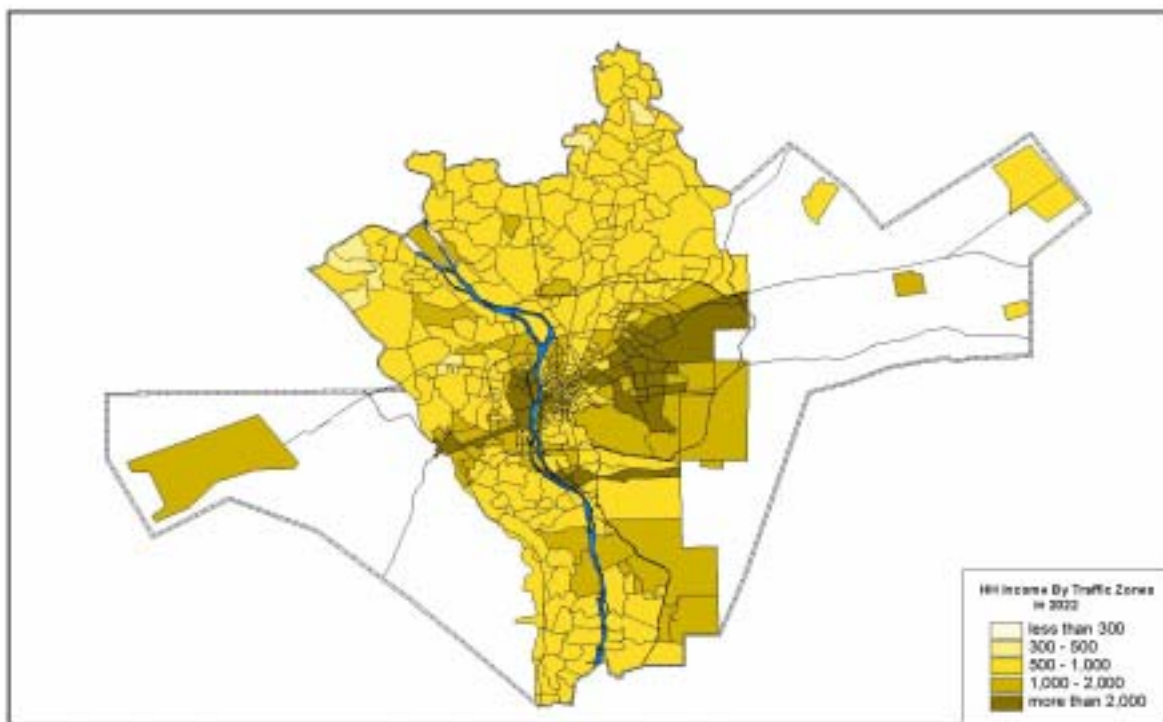


Figure 2.4.12 Household Income Distribution – Year 2022 –