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مجلس التخطيط العمراني
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GENERAL URBAN POLICY STUDY

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INDUSTRIAL DEVELOPMENT

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High Dam

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NATIONAL URBAN POLICY STUDY

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May 30th, 1982

Engineer Soliman Abdel Hai
Chairman
Advisory Committee for Reconstruction
Ministry of Development
Cairo - A.R.E.

Dear Engineer Abdel Hai,

The National Urban Policy Study is pleased to submit the final report on the Tanta and Qena-Naga Hamadi Illustrative Development Projects. This report is considered by NUPS to be extremely important in illustrating the special problems which will be encountered in implementing the national urban policy in two different regions in Egypt where different development issues exist. These two different sets of development issues are:

a) how to manage urban growth in the Delta settlements where strong economic advantages exist but further urban growth is likely to be at the expense of continued loss of arable land;

and the other is:

b) how to encourage urban growth in selected South Upper Egypt settlements where economic advantages are not as strong, but where growth can occur on non-arable land.

PADCO INC
In Association with
ECG ENGINEERING CONSULTANTS GROUP
&
SHERIF EL-HAKIM & ASSOCIATES

بادكو انك
بالاشتراك مع
جماعة المهندسين الاستشاريين
&
شريف الحكيم ومشاركوه

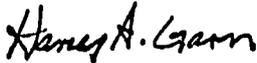
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May 30th, 1982

To better illustrate these two components of national urban policy, i.e. growth management and growth inducement, the two project reports are jointly bound in a single volume. This joint volume is organized in three main parts:

- PART I An introduction describing the two projects in the broader contexts of national urban policy, followed by the Tanta Illustrative Development Project describing growth management in the Delta,
- PART II The Qena-Naga Hamadi Illustrative Project describing growth inducement issues in South Upper Egypt settlements, and
- PART III The Appendices, five in number, for the two projects.

Sincerely,


Harvey A. Garn
Team Leader

ES/ek

FOREWARD

The two Illustrative Development Projects for Tanta and Qena-Naga Hamadi were designed to accomplish several major purposes:

- To illustrate the needed links between a strategy for development of the national urban system (i.e., the National Urban Policy) and the strategies to be followed in individual settlements which have key roles to play in the national strategy.
- To provide an illustrative example of the kind of strategic concept plan needed for many Egyptian cities that can be developed in a limited time, provide guidance for important near-term decisions, and produce specific recommendations for future development.
- To define these key roles for individual settlements and trace their implications for site-specific actions.
- To present recommendations for implementing a local strategy which is consistent with the characteristics and current development of two very different settlement areas within the settlement system (Tanta in the Delta and Qena-Naga Hamadi in Upper Egypt) and are consistent with the broader strategies of National Urban Policy.

These two studies are considered important by the National Urban Policy Study Team because they illustrate two very different sets of urban problems for which special strategies must be developed within the broader national urban policy framework. These two sets of problems are:

- i) managing the future growth of the Delta's settlements where the Government's desire to increase agricultural production and maintain arable land for agriculture in many ways competes with its desire to expand economic growth through increased industrialization, and
- ii) encouraging growth in south Upper Egypt settlements where growth has lagged behind other settlements in the urban system, but where untapped economic potential still exists, and where the Government's desire for improved inter-regional equity might be achieved.

Control of land use is difficult because of the strong competing demands for land for housing, industry, both urban and regional infrastructure and agriculture. In particular, controlling land in the Delta around its settlements is difficult because of high demand for urbanization of arable land to accommodate the very rapid growth of Delta settlements. As a consequence, as is indicated in Part I of this report the growth of Delta settlements has been haphazard and has led to wasteful use of land, both from the point of view of the Government and of the resident population. It is hoped that this study of Tanta will re-emphasize the seriousness of the development problems of the Delta settlements and contribute through implementation of its recommendations (in conjunction with the recommended national urban policy) to their amelioration. The Study Team also hopes that this study of Tanta can provide a basis for a much needed, broader study of urban management issues in the Delta as a whole.

The central issue for the future regional development of Upper Egypt (in a period of rapid urbanization and increased industrialization) is the expansion of the industrial base of Upper Egypt cities. However, in contrast to Delta settlements, industrialization in Upper Egypt settlements is severely constrained by their location, distance from major markets, and many sources of industrial inputs. The expansion of their industrial base will be a major challenge. In the context of the NUPS overall effort, it was not possible to develop for each city a detailed industrial investment plan. The basic industrial strategy which we recommend, however, is an emphasis on the production of goods for the growth regional market as population expands to reduce regional imports, and an attempt to tie new production units to existing (although limited) industry and additional uses of locally available resources.

A principal conclusion of the Qena-Naga Hamadi Study is that with sustained support for regional and urban development, a high chance exists for greater population growth than is indicated by past trends and decentralization. Furthermore, the study concludes that opportunities for desert expansion exist for absorption of nearly all of the projected population.

Harvey A. Garn
Team Leader

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ILLUSTRATIVE DEVELOPMENT PROJECTS

PART I

I. INTRODUCTION TO NATIONAL URBAN POLICY STUDY RECOMMENDATIONS AND ILLUSTRATIVE DEVELOPMENT PROJECTS

As part of the overall National Urban Policy Study, two illustrative development projects were conducted: Tanta and Qena/Naga Hamadi. The purpose of these two studies was to:

- illustrate how the implementation of national spatial and sectoral strategies for different regions of the country would effect specific settlements, and
- make recommendations for local economic, physical and administrative development that are consistent with national urban policy.

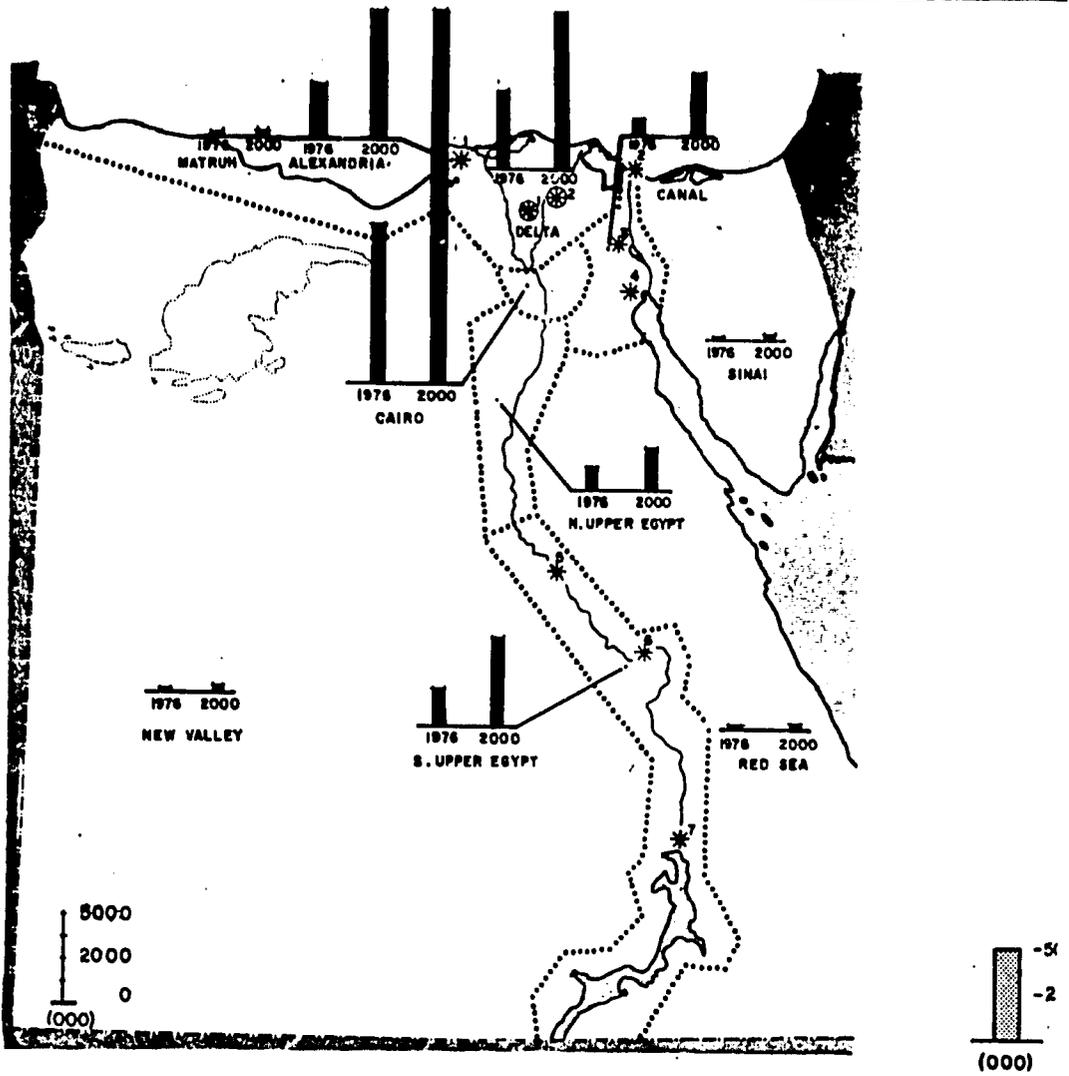
The regions represented in the two Illustrative Development Projects -- the Delta and south Upper Egypt -- have different characteristics and the National Urban Policy Study has proposed different strategies for their future development: an attempt to manage and reduce the growth rates in the Delta and an attempt to induce more rapid economic and population growth in south Upper Egypt.

A. Basic Dimensions (See Figures 1.a-c)

A review of the overall NUPS recommendations will help put the contrasting recommendations in the Delta and Upper Egypt into perspective. The basic dimensions of the NUPS national recommended strategy are these:

1. The exploitation of strong economic advantages of the Cairo and Alexandria metropolitan regions to absorb a major portion of the expected growth in urban population while deconcentrating the core areas of these cities through development of fringe areas, close-in satellites and New Towns on desert or low productivity land. (Plans for Cairo 2000 population of 16 to 16.5 million, including 10th of Ramadan and Sadat City, and for Alexandria 2000 population of 5 to 5.5 million, including New Ameriyah).
2. A concentrated effort to support growth possibilities of the Suez Canal Zone with a focus on Suez City (year 2000 population targets of 750 to 850 thousand in Suez, 400 to 500 in Ismailia and 550 to 650 in Port Said).

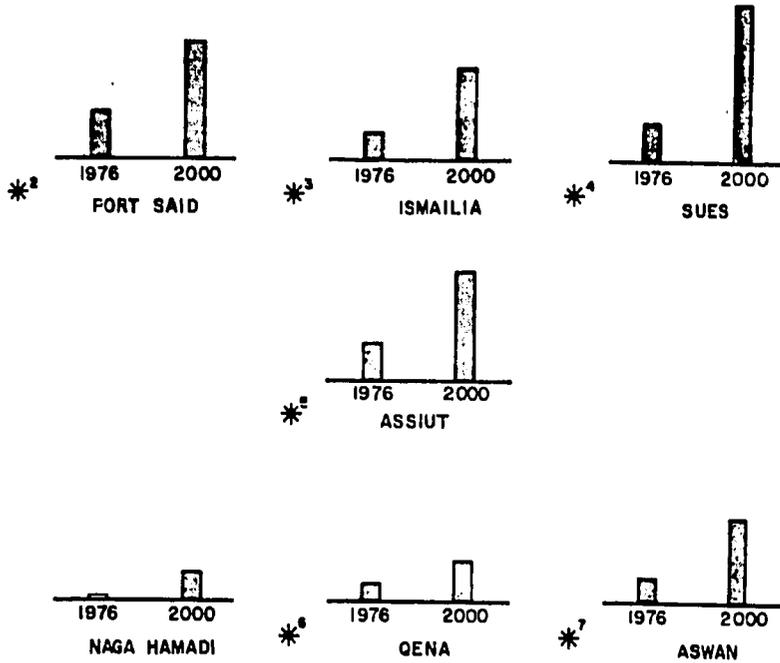
BASIC DIMENSIONS OF SPATIA



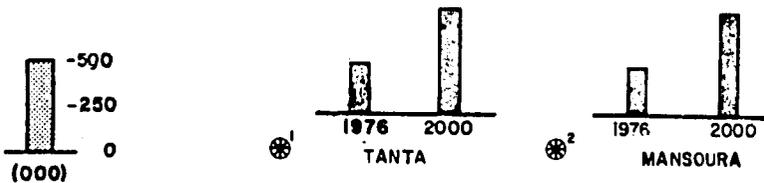
SETTLEMENT ZONE	TOTAL URBAN 1976	TOTAL URBAN 2000	URBAN CHANGE 1976 - 2000
CAIRO	8,843,000	16,800,000	9,657,000
ALEXANDRIA	2,319,000	5,500,000	3,181,000
CANAL	830,000	2,089,000	1,459,000
DELTA	3,668,000	6,952,000	3,284,000
NORTHERN UPPER EGYPT	983,000	1,821,000	838,000
SOUTHERN UPPER EGYPT	1,488,000	3,748,000	2,260,000
REMOTE AREAS			
RED SEA	56,400	110,000	53,600
NEW VALLEY	34,400	100,000	65,600
SINAÏ	10,000	100,000	90,000
MATRUM	51,000	90,000	39,000
REMOTE AREAS TOTAL	151,800	400,000	248,200
TOTAL URBAN	18,082,800	37,010,000	20,927,200

F SPATIAL RECOMMENDATIONS

* SPECIAL EMPHASIS CITIES FOR GROWTH EMPHASIS



* SPECIAL EMPHASIS CITIES FOR GROWTH MANAGEMENT



SPECIAL EMPHASIS CITIES (POPULATION 1976 - 2000)

SETTLEMENT ZONE	URBAN POP. 1976	URBAN POP. 2000	CHANGE 1976 - 2000
SPECIAL EMPHASIS FOR GROWTH ENCOURAGEMENT (EXCLUDING ALEX .)			
* ² PORT SAID	262,000	660,000	397,000
* ³ ISMAILIA	147,000	500,000	353,000
* ⁴ SUEZ	190,200	550,000	359,800
* ⁵ ASSIUT	213,900	600,000	386,100
* ⁶ NAGA HAMADI	19,800	175,000	155,200
* ⁷ QENA	93,800	225,000	131,200
* ⁷ ASWAN	142,400	450,000	307,600
SPECIAL EMPHASIS FOR GROWTH MANAGEMENT			
* ¹ TANTA	285,000	575,000	290,000
* ² MANSOURA	256,000	550,000	292,000

LEGEND

START →

2000
POPULATIONS
(000's)

1976
POPULATIONS
(000's)

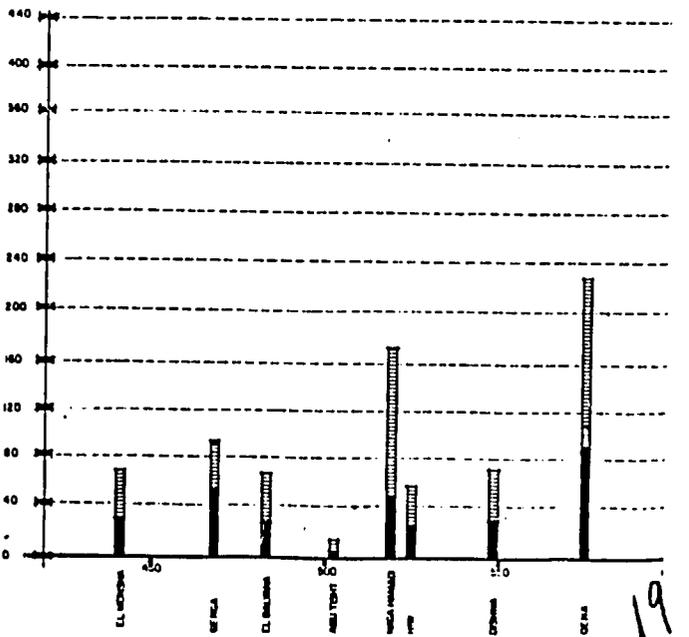
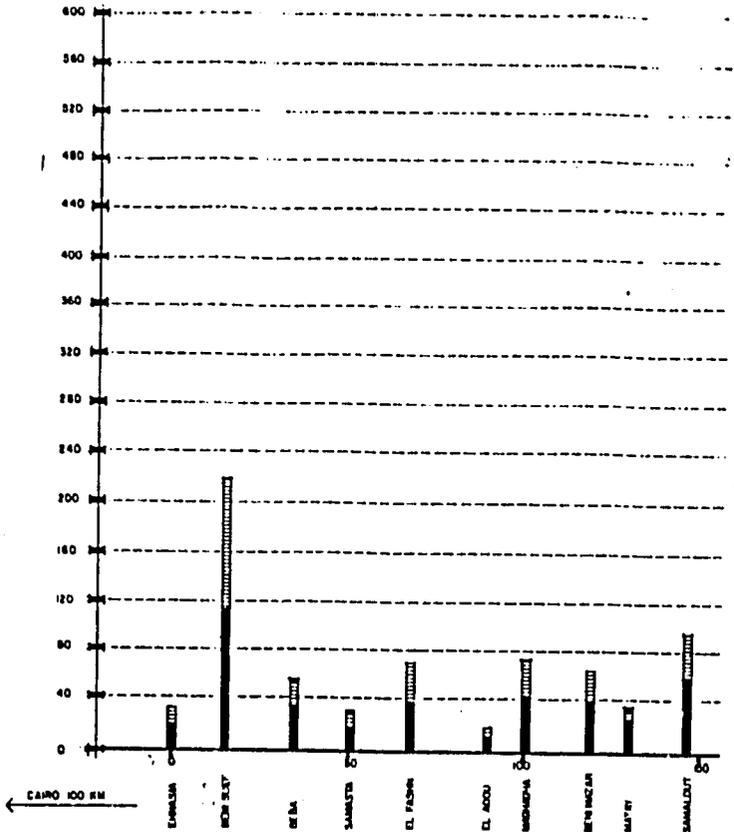
DISTANCE
BETWEEN
SETTLEMENTS →

CONTINUATION →

2000
POPULATIONS
(000's)

1976
POPULATIONS
(000's)

DISTANCE
BETWEEN
SETTLEMENTS →



UPPER EGYPT SETTLEMENT HIERARCHY
DISTRIBUTION OF SETTLEMENTS AND POPULATION

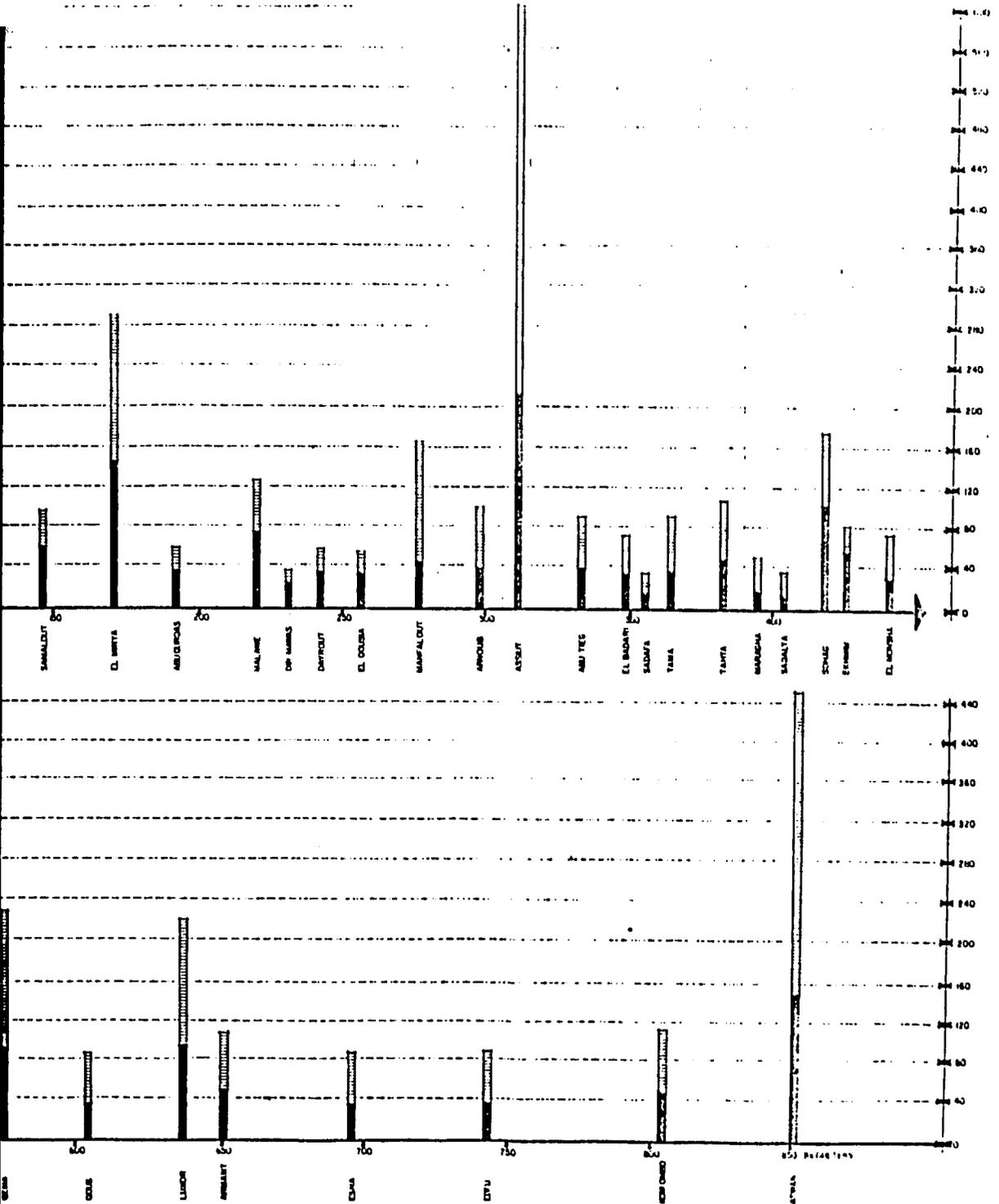


FIGURE 1C
- l.c - 20

3. A strategy for managing the expected spontaneous growth in Delta cities which aims at limiting unnecessary intrusions on arable land while providing additional urban employment (special emphasis on Tanta and Mansoura with year 2000 population targets of 525 to 575 and 500 to 550 thousand, respectively).
4. An effort to induce additional growth in an initially limited number of Upper Egypt cities to develop both an economic basis and a knowledge base for more decentralization in later time periods than the planning horizon of this study (special emphasis on Assiut, Qena-Naga Hamad and Aswan with year 2000 population targets of 550 to 600, 325 to 400 and 400 to 450 thousand respectively).
5. An approach to the settlement problems of the remote areas to find innovative ways to utilize emerging technologies and establish implementing institutions to increase the attraction of these areas for human settlement (no major urban projection increases are anticipated, year 2000 population targets for existing main settlements of 400 thousand).
6. The choice of standards for housing and infrastructure service levels that are affordable by a wider range of the population and mechanisms that will increase the proportion of public cost recovery.
7. Increased emphasis on the industrial sector in economic planning, encouragement of private investment to conserve public funds, and integration of spatial and sectoral planning through selective use of direct investments, tax and non-tax location instruments.

Major elements of the reasoning behind these recommendations are reported in the NUPS Interim Action Report, the Working Paper on First Round Alternatives and the series of occasional Working Papers prepared by the Study Team. Chapters II, III, and IV of this report provide information on the basis for the recommendations, spatial elements and sectoral elements of the strategy respectively.

A schematic summary of major factors affecting urban policy choices, principles for policy choice and recommendations is provided in Figure 2.

B. Delta Growth Management

The Delta (as a result of its favorable location, arable land resources and agricultural output, past development of industry and accessibility to the major internal markets and to a slightly lesser degree, international markets) has

**ELEMENTS OF
NATIONAL URBAN POLICY
FOR EGYPT
DEVELOPMENT CONSTRAINTS**

POPULATION :

- High Rate of Growth
- Decreasing External Demand for Labor

ECONOMY :

- Difficulty in Sustaining High Growth Pace
- Insufficient Domestic Saving

SETTLEMENT DISTRIBUTION :

- Rapid Urban Growth
- Increased Migration
 - Rural to Urban
 - Small to Larger City

INDUSTRY :

- Weakness in Domestic Economy
- Low Productivity Public Sector
- Non-Selective Use of Incentives
 - Sectoral
 - Location

INFRASTRUCTURE / SERVICES :

- Large Current Deficits
- Large Future Needs

POTENTIAL RESOURCE SHORTFALLS :

- Domestic Investment Finance
- Agricultural Lands
- Water

POLICY ADMINISTRATION :

- Overlapping and Dispersed Authority Nationally
- Uncertain Relationship National to Local

EMPLOYMENT :

- Over-Expansion of Service Employment
- Slow Growth in Farm Employment

DEVELOPMENT PRINCIPLES

- Efficiency Orientation in Settlement System

- Conservation of Public Investment Funds

MAJOR METROPOLITAN GROWTH :

- Cairo Region
- Alexandria Region
- Suez

METROPOLITAN GROWTH MANAGEMENT :

- Core Deconcentration
- Increased Density-Peripheral Kisms
- Fringe Sites and Close-in Satellites

DELTA GROWTH MANAGEMENT

- Migration Inducement to Major Metros
- Sectoral/Location Control Industry
- Focus Expansion Service Centers

INDUSTRY and REGIONAL INFRASTRUCTURE :

- Emphasize Industrial Sector in Investment
- Integrate Sectoral and Location Policies with Spatial Strategy
- Infrastructure Support for Spatial Strategy

DECENTRALIZATION :

- No More than Three Upper Egypt Sites
- Finance only High Pay-off Projects in other Areas

URBAN INFRASTRUCTURE and SERVICES :

- Affordable Service Standards
- Improved Cost Recovery
- Standards/Recovery Related to Spatial Targets

DEVELOPMENT STRATEGY

a high potential for attracting future economic activities. While this is desirable from a local employment perspective, it poses a serious national problem relating to the preservation of arable land; since almost all Delta cities can only expand horizontally on arable land. Thus, the local economic gains (associated with increased industrialization and urbanization) are offset by long-term loss of agricultural output due to loss of arable land. Consequently, NUPS has proposed a Growth Management Strategy for the Delta. The strategy is designed to reduce arable land loss in the Delta compared to the loss that would occur if current trends continue to 2000 and compared to the loss that would occur if industrialization and Delta urbanization were to be unconstrained. Table 1 shows this comparison.

The achievement of this saving is possible (for the Delta as a whole) only if:

1. Out-migration from the Delta is encouraged.
2. Industrial investment is limited to activities which must be located in the Delta for economic feasibility.
3. Regional service activities are concentrated in two or three centers (of which Tanta is one), and
4. Within-city growth is controlled to obtain higher densities.

Outmigration is encouraged in the Preferred Strategy and is likely to occur if the expansion of the Greater Cairo and Alexandria Metropolitan Regions on desert fringe land, low-density *kisra*, and close-in desert satellites is encouraged along with substantial growth encouragement in Suez Canal cities.

Since the growth would provide job opportunities for Delta migrants, it would be possible to reduce the share of new industrial investment in the Delta below historical and 1980-1984 Industrial Plan levels without sustaining high unemployment rates in the Delta. Table 2 below shows our proposed industrial investment compared to these levels and the level of investment that would be recommended on a least-cost economic basis (Alternative A).

TABLE 1

ARABLE LAND SAVINGS IN DELTA UNDER THE PREFERRED STRATEGY

	1976 URBAN POPULATION (000's)	1985 URBAN POPULATION (000's)	2000 URBAN POPULATION (000's)	ARABLE LAND CONSUMED (HECTARES) (FEDDANS)	
I. Arable Land Loss if Trend					
Population Growth Occurs <u>1/</u>	3,668	5,023	8,014	20,079	47,806 <u>1/</u>
II. NUPS Preferred Strategy					
1. Land Loss if Density Patterns Observed Through Landsat Analysis Occur	3,668	5,023	6,952	15,172	36,124 <u>2/</u>
2. Land Loss if NUPS Recom- mended Densities are achieved <u>3/</u> (1976-1985)	3,668	5,023		6,260	14,905
(1986-2000)		5,023	6,952	926	7,204
TOTALS				7,186	17,109
Savings of Arable Land (I - II.2)				12,893	30,697

SOURCE: NUPS analysis and Landsat interpretation

- 1/ Population projected using growth rates experienced between 1960 and 1976.
- 2/ Land consumption based on rates of arable land consumed in Delta settlements between 1972 and 1978 noted from Landsat analysis (i.e. roughly 11 feddans consumed per 1,000 additional urban population).
- 3/ Land consumption assumes that trends noted in Footnote 2 above will continue up until 1985, after that time it is assumed that a program to encourage vertical expansion of existing built areas can absorb 60 percent of the new urban population and that the remaining 40 percent will be accommodated in planned settlements having urban gross densities of 350 persons per hectare (147 persons per feddan). See Table A.5, for full analysis of this assumption.

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TABLE 2

INDUSTRIAL INVESTMENT IN THE DELTA

<u>INDUSTRIAL INVESTMENT</u>	1975	1980	1980-84	ALTERNATIVE A	NUPS
			PLAN	1986 - 2000	PREFERRED
Amount (L.E. Million)	25.8	142.4	575.4	653.3	STRATEGY
Percent of National Investment	15.3 %	18.6 %	14.3 %	14.6	1986-2000
					370.3
					8.4

SOURCE: NUPS (Alternative A and Preferred Strategy) and the Ministry of Planning (1975, 1980 and 1980-84 Plan data).

Spatial Strategy which would result if new industrial employment is located in places where the "least costs" are incurred, i.e. a major expansion of industrial growth in the Delta would occur.

The Illustrative Project: Tanta discusses thoroughly our particular recommendations for Tanta in this overall strategy regarding its regional service center role and a future physical and economic development concept plan.

NUPS recommended national urban strategy emphasizes the special growth management problems of the Delta -- a zone which has been seriously neglected in planning and overt urban policy design. Significant choices need to be made in the very near future regarding urbanization of the Delta. The overwhelming size of Cairo and its associated service and management problems have diverted attention from the relatively uncontrolled growth of Delta cities and the substantial build-up of the corridors of Cairo-Benha; Tanta-Damanhour; Kafr El Dawar-Alexandria. The whole set of urban and rural development issues; industrialization and agricultural growth; and orderly use of both urban and arable land find expression in the Delta. It is not an exaggeration to say that the ability to manage urban and rural growth effectively in the Delta may be the key to the long-term development path of Egypt.

The major elements of our proposed growth management strategy for the Delta are:

- Encouragement of migration from the Delta (where most growth is necessarily on arable land) to the major metropolitan regions of Cairo and Alexandria and the growing region of the Suez Canal (where growth is possible on desert land, if properly managed).
- Consolidation of regional service center functions (such as major medical facilities, warehousing, service

facilities for agricultural equipment) in two to three Delta cities, rather than their duplication in all governorate capitals and other relatively large cities.

- Formal recognition of the entire Delta as a region for regional planning purposes and the development of an integrated economic and physical development plan for the region.
- Immediate development of information and analysis (of the kind provided in these NUPS Illustrative Development Projects for Tanta and Qena-Naga Hamadi) to support near-term physical development and land use planning.
- Establishment of a formal, publicly recognized, procedure for defining and adjusting city boundaries when necessary.
- A moratorium on all industrial, institutional and housing projects outside existing city boundaries; until any such projects have been determined to be consistent with both national urban policy and the proposed integrated economic and physical regional plan.
- Initiation of a requirement that proposals for sectoral projects, which are the responsibility of national ministries (e.g. Transportation, Industry, and Health) be reviewed for consistency with the regional plan before implementation.
- Initiation of a requirement that all proposed industrial projects for the Delta be examined to determine the possibility of their being located outside the Delta without serious loss of profitability relative to a Delta location.
- Development of broad zoning classifications in which desirable vertical expansion is encouraged through a combination of development controls and financial incentives in existing built areas and planned horizontal expansion areas in which populations which cannot be accommodated in existing built areas can be housed in high density settlements which minimize arable land loss.

During the 1960-76 period, Delta cities with over 50,000 population in 1976 grew more rapidly even than the Cairo Metropolitan Region (3.74 percent a year versus 3.67 percent a year). If this rate of growth for Delta cities were to be maintained to the year 2000, their population in the year 2000 would be almost two and a half times their 1976 population. NUPS growth management strategy for the Delta is designed to hold growth in the urban areas of the Delta to about 2.25 percent a year, will show below the national urban average growth rate.

As shown in the NUPS Interim Action Report, Delta cities, in general, have no horizontal expansion possibilities except on arable land. Thus, it is essential to emphasize that the danger of losing prime agricultural land is especially severe in the Delta. The problem is amply illustrated in this special Illustrative Development Project on Tanta which shows that while Tanta's population grew by 39.6 thousand between 1972 and 1978, 446.5 feddans of agricultural land became built up. That is, for every 1,000 new people in Tanta, 11.28 feddans were lost. Although it must be interpreted with caution, available Landsat data for eight Delta cities showed an average loss of 10.7 feddans per 1,000 new population, indicating that Tanta's experience is fairly representative of the Delta generally.

As indicated above, the danger of prime land loss is exacerbated by the fact that the existing industry base and location of Delta cities is such that they have substantial economic potential and, as is evident by the build-up along the Cairo-Alexandria agricultural road, are likely to be attractive as locations for industry unless such location is controlled. A major part of the solution to the Delta growth management problem, if there is to be one, must lie in encouraging outmigration of people from the Delta and finding alternative locations for types of industry which do not require a Delta location. Cairo and Alexandria Metropolitan Regions and Suez provide such alternative locations where there are opportunities to encourage growth on non-arable land. Thus NUPS recommendations for major metropolitan growth should be seen as an essential element of a growth management strategy for the Delta.

This element of the strategy, however, needs to be supplemented by other Delta-specific elements. The NUPS Team sees a need for greater consolidation of regional service center activities in two or, at most three, Delta cities rather than their duplication in all governorate capitals and other relatively large cities as a means of managing Delta growth. This is more likely to occur if the entire Delta is treated as a region for economic and physical development planning, which we also recommend. Such consolidation would tend to lead to greater scale economies in the provision of regional services and reduce population pressure in other Delta cities.

Since the Delta has been relatively neglected in national urban planning, there is an immediate need to develop for each of the Delta cities the kind of data and analysis for land use and physical development planning that NUPS has undertaken for Tanta, with the assistance of the governorate and local planners, which is the subject of this report.

Given the urgency of the problem of arable land conversion, NUPS recommends a moratorium on all industrial, institutional and housing projects outside city boundaries. Exceptions should only be allowed if such projects are consistent with the recommended integrated economic and physical development regional plan. Industrial projects proposed for the Delta (even within city boundaries) should be examined to determine if there are alternative sites outside the Delta where they might be located without severe loss of profitability relative to a Delta location.

2. Upper Egypt Growth Inducement Strategy

Unlike Delta cities, such as Tanta and Mansoura, which have a strong potential for economic growth in a setting where any physical expansion threatens arable land and, therefore, must manage growth carefully; the cities selected for growth emphasis will require inducement to stimulate economic growth to support increased populations during the planning period. These include the Canal cities of Suez, Ismailia and Port Said, and the Upper Egypt settlements of Assiut, Qena Naga/Hamadi and Asswan. Qena/Naga Hamadi is the Illustrative Development Project which discusses our growth inducement strategy in the context of a particular settlement area.

Upper Egypt presents a category of settlements, which through regional investment and improvements in the administrative capacity at the local level, could be developed over time into growth centers. Severe development constraints presently exist, however. The industrial bases of the cities of Assiut, Qena and Asswan are limited to either a single industry or to largely agro-based industries and small-scale workshops. Naga Hamadi, with its proximity to a major aluminum plant, possesses a potentially strong industrial base which could serve as a basis for future diversification. Location disadvantages vis-a-vis Cairo and the rest of Lower Egypt are exacerbated by the deterioration of inter-regional transportation networks and poor telecommunication links. Rural living conditions are not helped by low service levels for public infrastructure and deficiencies in adequate higher standard housing.

The strategy for growth emphasis in the selected cities is based on phased and selective decentralization. The strategy focuses on a few settlements which are expected to contribute most substantially to national economic growth yet permit a wider geographic distribution of economic activity and population than if current trends were allowed to persist. The strategy is based also on what can feasibly be achieved within the planning horizon without severely depleting scarce development resources.

The diverse nature of the settlements and regions selected for growth inducement will provide a broad foundation of experience and knowledge for future decentralization in the post planning period.

In Upper Egypt it is recommended that no more than three settlement areas initially receive special emphasis for growth encouragement in order to concentrate development resources. In order to ensure that sufficient emphasis is given, it is recommended that public investment in other centers be limited to provision of basic services and very high pay off industry projects only. The selected settlement areas (Qena-Naga Hamadi, Assiut, and Aswan) offer unique economic and locational advantages for growth encouragement. Each of the settlement areas can anchor development in their respective regions. A major concern is to establish appropriate economic bases at reasonable costs which are complementary with policy efforts in other parts of the settlement system.

The nature of the selected settlements, furthermore, will provide the basis for a long term strategy of increased decentralization to the region. According to Richardson, the role of Upper Egypt is likely to remain modest for some years to come due to its distance from national markets, the need to stress short-run economic potential (in other areas) and to cope with investment resource constraints. However, in the long-run (Upper Egypt) will play a greater part in both economic development and population absorption.

The selection of settlements in Upper Egypt was made after a careful review of the economic and population absorption capacities nationwide. Each of the selected settlement areas ranked higher than other Nile Valley settlements in NUPS Matrix of Economic and Population Growth Potential with the exception of those likely to increasingly be affected by the growth of Metropolitan Cairo. Specifically the Qena/Naga Hamadi corridor offers potential as a nucleus for industrial activity and due to its access to the Port of Safage and mineral resources in both the Red Sea and Western Desert. Assiut, as the unofficial capital of, and largest urban and most central, settlement in Upper Egypt, also enjoys reasonable access to the Western Desert and Lower Egypt. As a center with a major university and a governorate capital, it has potential as a social development pole. To date, though, it has limited industrial prospects. Aswan, located at the extreme point of the nation's spinal axis has been the subject of regional development efforts associated with the construction of the High Dam; but, so far, efforts to encourage major development there have failed. Nevertheless, the potential of the area has not been fully realized. It is anticipated that

with increased communications and commitment to the area, as well as to the other selected centers for special emphasis, growth rates exceeding recent trends can be realized.

It is not anticipated, however, that in the early stages of emphasis all industries can or should be induced to locate in these centers. Rather, the focus for economic development should be primarily on domestic import substitution, promotion of agro-based industry appropriate to each region, and private investment in small scale industry and the informal sector. Naga Hamadi presents opportunities for linked metal product industries. Opportunities for feasibly exploited mineral deposits should also be explored. Thus, though large-scale population growth in the selected settlement areas is not anticipated, it is expected that growth rates exceeding the long term trend rate of growth for each of the settlements can be achieved.

Locating new industries in Upper Egypt will require substantial investment support in overcoming the economic development constraints of the region (limited existing industrial base, large actual and time distance from major internal and international markets absence of local industrial inputs. Because the government wishes to make a positive effort to begin substantial decentralization away from Cairo and improve the income and service prospects of currently low income, inadequately served regions, NUPS recommends a focused effort in a few places rather than a more dispersed approach. In this way, decentralization can be seriously attempted without great losses in economic growth resulting from the growth inducement subsidies required. The shares of industrial and intra-urban infrastructure investment recommended for south Upper Egypt to implement this strategy and a comparison with the allocations to the zone under other alternatives is shown in Table 3.

TABLE 3

INDUSTRIAL AND URBAN INFRASTRUCTURE INVESTMENT
FOR SOUTH UPPER EGYPT GROWTH INDUCEMENT CENTERS
(1986-2000)

	<u>PREFERRED STRATEGY</u>	<u>ALTERNATIVE A</u>	<u>ALTERNATIVE C</u>
<u>Industrial Investment</u>			
Amount (L.E. Million)	3,254	1,309	5,152
Percent of Total	7.4	3.0	11.2
Jobs (000's)	436	189	482
Percent of Total	6.4	2.8	10.0
<u>Urban Infrastructure</u>			
Amount (L.E. Million)	5,723	1,443	4,965
Percent of Total	7.6	3.6	8.2

SOURCE: NUPS Analysis

Alternative A allocations are based upon NUPS estimates of where to locate industrial investment at least cost within the national urban system. As can be seen from Table 3, south Upper Egypt would receive a much smaller share of investment on that basis than is necessary to hope to induce the significant aggregation of industry needed for subsequent spontaneous growth to occur (3.0 percent of job investment in Alternative A versus 7.4 percent of job investment in the Preferred Strategy). The Preferred Strategy also calls for a more substantial improvement in urban infrastructure than Alternative A (7.4 percent of the Preferred Strategy infrastructure versus 3.6 percent of A's infrastructure costs). This improvement is necessary also to a strategy growth inducement.

The comparison with Alternative C (a dispersed strategy with multiple growth centers) shows the potential cost savings associated with a focused strategy in a few places relative to a more diffused, and probably less effective, effort to induce growth at too fast a rate and in too many places.

The Illustrative Development Project: Qena/Naga Hamadi traces out, in considerable detail, the current development constraints as well as recommended physical, economic, and administrative efforts in cities selected for growth inducement over the NUPS planning period (1986-2000) in order to set the stage for their spontaneous growth in later period.

II. INTRODUCTION: TANTA

A. Historical Development of the Tanta Region

Tanta's development has always been influenced by its strategic location within the Delta, which has made it susceptible to actions and decisions taken elsewhere in the country. Diverse civilizations have existed in Tanta since ancient times. The Pharaonic, Christian and Islamic civilizations are all represented by magnificent monuments which are sprinkled throughout the region.

The Pharaonic civilization is best represented in monuments found in Sal-Hagar and Bihbit El-Higara. Sal-Hagar is to be found on the eastern side of the Rosetta Branch. It is about 40 kilometers from Tanta and once served as capital of one of the Delta provinces during the 28th Dynasty. Bihbit El-Higara dates from the Ptolemaic Age and is located about five kilometers from Samannoud. The early Christian era can be seen in the Coptic churches of Sagha, Tanta, and particularly, Mar Guirguis Church in Mahalla El Kubra. The Islamic influence in Tanta dates from the founding of the Sidi Ahmed-El Badawi Mosque which today forms the center-piece of the downtown area. The mosque has developed through the ages and is today undergoing restoration.

With this diverse historical past, Tanta entered the nineteenth century as a small rural village with an estimated maximum population of several thousand. The first half of the nineteenth century saw little population growth in Tanta. This period was characterized mainly by the tremendous growth of Alexandria, drawing migrants from the Delta due to government fiscal policies.

The period between 1846 and 1882 was a time of rapid population growth in the Delta. This was mainly due to tremendous agricultural development which in turn furthered the development of small agricultural mercantile centers. The mercantile centers which grew considerably during the period were Tanta, Mansoura, Damanhour, and the newly created town of Zagazig. Tanta became the principal market of a large area of cotton plantations. The area of the town itself grew from 73 feddans in 1854-1855 to 180 feddans in 1885, mainly due to the breaking up of family estates. In 1856, Tanta was connected to the railway network. Tanta eventually became the capital of Gharbia province, a position occupied in the days of Mohamed Aly by Mahalla. The transfer of administrative functions led to the decline of Mahalla for a time, which was reinforced by the stagnation or even decline of its industry. Although these mercantile centers of agricultural areas experienced

considerable relative growth over this period, the absolute size of their populations remained quite low, Tanta's population by the 1882 Census was only slightly over 30 thousand (See Table 4).

Between 1897 and 1907, the Tanta region experienced rapid development in the agricultural sector, but lacked industrial development. It is believed that this led to an actual decrease in population of -0.5 percent per annum. A traveller to the region notes the decline in the importance of the Tanta fair, stating that for most of the years of the period, the fair was not held at all for sanitary and other reasons. 1/

The period from before World War I until the onset of rapid industrialization of the 1930's saw limited population growth for Tanta. Between 1907 and 1939, the population grew at an annual rate of 1.86 percent.

Between 1937 and 1960, considerable industrial development took place in the Delta with the establishment of spinning, weaving and dyeing plants in Kafr El Dawar, Mahmoudia, Shebin El Kom, Mit Ghamr and Tanta. Oil and soap plants were also established in Tanta and Kafr El Zayat. Considerable industrial expansion also took place at Mahalla, with worker housing being constructed there and in Tanta. However, the most rapid growth in employment was in the tertiary sector of the economies of these towns, particularly in banking, finance and retail activities that were generated by the growth in industry as well as agricultural production and processing. Population over the period increased at an annual rate of 2.94 percent.

Since 1960, Tanta has continued to experience relatively rapid population growth (2.75 percent annual growth between 1960 and 1976) due mainly to continued industrial growth and ever expanding role as a major service center in the Delta.

With the exception of Qalyubia which contains part of the Cairo Metropolitan Area (Shoubra El Kheima), Gharbia Governorate has the highest percentage of urban to total population in the Delta (See Table 5). Based on 1976 Census of Population figures, 33.4 percent of Gharbia's population of 2,294 thousand was defined as urban.

TABLE 4

POPULATION OF GHARBIA GOVERNORATE AND TANTA CITY

1882-1980

YEAR	POPULATION (000' S)		ANNUAL GROWTH RATE (%)	
	GHARBIA GOVERNORATE	TANTA CITY	GHARBIA GOVERNORATE	TANTA CITY
1882	N.A.	33.8		
1897	N.A.	57.3	N.A.	3.58
1907	1107	54.4	N.A.	- 0.52
1917	1252	74.2	1.24	3.15
1927	1337	90.0	0.66	1.95
1937	1467	94.6	0.93	0.50
1947	1475 *	139.9	0.05	3.99
1960	1720 *	184.3	1.55	2.79
1966	1900	230.0	1.67	3.76
1976	2294	284.6	1.90	2.15
1980 **	N.A.	317.2	N.A.	2.75

* Governorate population figures should be used with caution due to major boundary changes within the Gharbia and Kafr El Sheikh Governorates during 1937-1947 and 1947-1960 census periods.

** Projected from 1976 census population using growth rates experienced between 1960-1976.

SOURCE: Population censuses 1882-1976.

TABLE 5

DISTRIBUTION OF URBAN/RURAL POPULATIONS
IN DELTA GOVERNORATES, 1976

<u>GOVERNORATE</u>	<u>TOTAL POPULATION</u> <u>(000's)</u>	<u>PERCENTAGE</u> <u>OF URBAN TO</u> <u>TOTAL POPULATION</u> <u>(%)</u>
- Gharbia	2,294.2	33.4
- Menoufia	1,711.0	19.7
- Kafr El Sheikh	1,403.5	20.8
- Damietta	557.1	25.6
- Dakahlia	2,732.8	23.9
- Sharkia	2,621.2	20.2
- Qalyubia	1,674.1	40.9
- Beheira	2,517.3	26.0

SOURCE: Population Census, 1976 - CAPMAS

B. Tanta's Role in NUPS Strategy Projected
Investment Allocation and Population Targets.

Tanta has been selected to illustrate the site-specific implications of operating within the NUPS preferred spatial framework for an important set of settlement issues which may be addressed effectively by examining Delta cities rather than other development areas. The overall strategy is discussed in the Introduction. The broad issues addressed by the Tanta Illustrative Development Project include:

1. managing and controlling any conversion of arable land to urban uses,
2. renewal and infilling of existing urban settlements to achieve greater population absorption at higher settlement densities,
3. the development of regional services to address the needs of both rural and urban populations and to concentrate these services in two to three major services centers, and
4. the strengthening of a relatively strong economic base without major encroachment on to arable land.

However, it is readily apparent that an overall Delta management strategy will not be defined solely by a simple set

of locally-based plans, projects and policy recommendations for its principal urban centers. For example, if the Delta cities with populations greater than 50,000 in 1976 grew at their 1960-1976 trend rates to the year 2000, their population would be almost two and half times the 1976 total. The consequences of this level of population growth would be disastrous with regard to the loss of arable land. Therefore, a major part of the Delta management strategy must include net out-migration from the Delta coupled with the selection of alternative locations for industry that is non-essential to the Delta. Cairo, Alexandria and Suez regions provide such alternative locations which can accommodate growth on non-arable land. Thus, NUPS recommendations for the major metropolitan areas should be viewed as an essential element of a growth management strategy for the Delta.

Within the Delta, the Delta management strategy focuses a concerted planning effort on several key cities -- Tanta, Mansoura and possibly Mahalla and Zagazig -- to develop growth management techniques encouraging more intensive use of land within the existing built-up area as well as planned urban extension on to arable land only where absolutely necessary. Also, it will determine which industries can and should be encouraged to expand or start up in these areas.

In order that Tanta can play its role within an overall Delta strategy, investment allocation and population targets have been estimated for the period 1986 to the year 2000. From an estimated base population of 317.7 thousand in 1980, NUPS projects a year 2000 population that will range between 525 and 575 thousand. These increases result in annual growth rates which vary from 2.5 to 3.0 percent. 2/ The proposed NUPS 1986-2000 investment allocation package required to support this projected population is broken down into two major categories: (See Table 6)

1. L.E. 631.0 million for employment generation and
2. L.E. 741.1 million for the provision of physical and social infrastructure and housing for the new population as well as rehabilitation of existing stock and systems. (See Table 6).

These specific allocations reflect not only the requirements for implementing the elements of the Delta growth management strategy in Tanta; but also the investment requirements for other elements of the total NUPS strategy.

C. Regional Service Center Functions

Tanta has been a major service center in the Delta for over one hundred years. With government's decentralization

TABLE 6

NUPS PREFERRED STRATEGY INVESTMENT ALLOCATION: TANTA 1986-2000

(1) PERIOD	(2) POPULATION CHANGE (000's)	(3) EMPLOYMENT CHANGE * (000's)	(4) AVERAGE COST PER JOB * (L.E.)	(5) TOTAL INVESTMENT IN JOB CREATION * (L.E. MILLIONS)	(6) PROPOSED INVESTMENT IN INTRA-URBAN INFRASTRUCTURE (L.E. MILLIONS) **				(7) TOTAL INVESTMENT (5 + 6) (L.E. MILLIONS)
					PHYSICAL INFRASTRUCTURE	HOUSING	SOCIAL INFRASTRUCTURE	TOTAL	
1986-1990	59	24	5,407	130.0	111.5	57.5	86.1	255.2	385.2
1991-1995	68	34	5,627	191.0	78.1	66.4	97.0	241.3	432.2
1996-2000	73	48	6,455	310.0	67.2	72.5	104.9	244.6	554.6
TOTAL	200	106	5,953	631.0	256.8	196.4	288.0	741.1	1,372.1

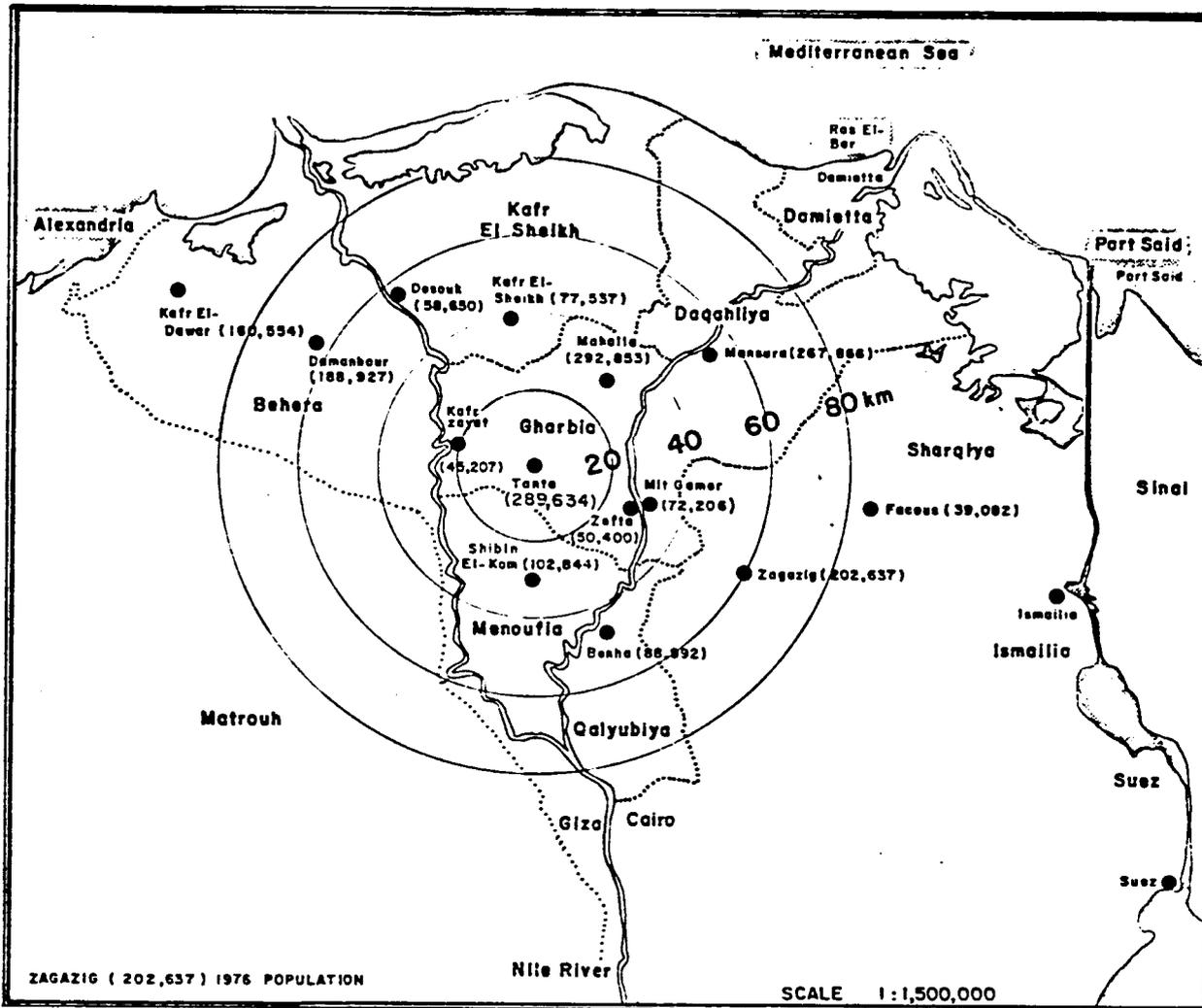
All prices in 1979 constant L.E.

- * These estimates for employment change and average job costs are based on Tanta's existing employment base, job requirements for a growing population and increasing labor force participation, taking into account similar requirements in other settlements consistent with overall Preferred Spatial Strategy.
(See National Urban Policy Study Draft Final Report. Appendix I.A. for details).
- ** Includes provisions for physical and social infrastructure and housing for new populations and rehabilitation of existing stock.
(See National Urban Policy Study. Draft Final Report. Appendix IV.A. for details).

policies of the last 20 years, it is taking on the characteristics of the "capital" of the Delta.

Tanta is strategically located in the heart of the Delta, midway along the transportation corridor connection Cairo with Alexandria. It is surrounded by a rich agricultural hinterland mainly cultivating cotton. Within a 60-kilometer radius of the city are found the majority of the Delta's other largest urban centers --Damanhour, Kafr El Sheikh, Mahalla, Mansoura, Zagazig, Benha and Shebin El Kom. (See Figure 3). Due to its strategic location, it has experienced steady economic growth over the past one hundred years. For example, its food processing, leather, spinning and weaving, agricultural implements assembly and ready-made clothing industries have been expanding at relatively high growth rates. Many of these industries have strong linkages with Tanta's surrounding agricultural hinterland. Tanta also has strong industrial linkages with other nearby industrial centers such as Mahalla, Kafr El Zayat and Zefta. Figures 4 and 5 highlight the flow of goods into and out of Tanta. Present government policy, to consolidate and site the headquarters of public service and infrastructure suppliers in Tanta will strengthen and build upon the many regional functions which Tanta already provides, which include:

- Government Center: capital of the Governorate of Gharbia; capital of the five-governorate Delta Regional Planning Authority; one of the country's seven Army Induction Centers.
- Transport Center: major road, railway and pipeline node in the Delta; hub of the road network radiating out to Cairo, Alexandria, Mahalla, Shebin El Kom, Zagazig and Kafr El Sheikh and headquarters of Highway and Bridge Authority (HBA) of the Ministry of Transport middle region; main Delta railway marshalling and repair yard with rail connections to Cairo, Alexandria, Zagazig and Mahalla.
- Petroleum Refining Center: location of one of four petroleum refineries with pipeline links to other major refineries in Cairo and Alexandria and to a number of industrial users in Mahalla.
- Educational Center: main campus of Tanta University with an enrollment of 29,000 with Faculties of Medicine, Agriculture, Dentistry, Business, Literature, Science; branch of Cairo's Al Azhar University; Regional Center for the Sadat Council -middle and top-management training center.
- Medical Center: Tanta University, which is presently being expanded, offers a wide range of medical ser-

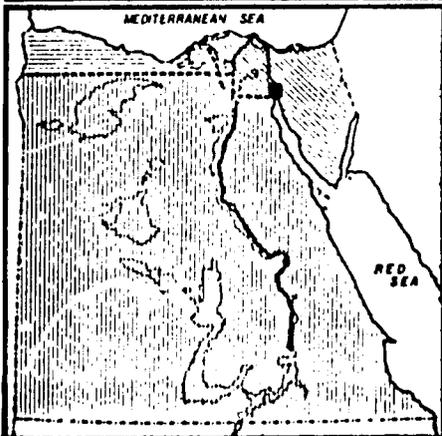
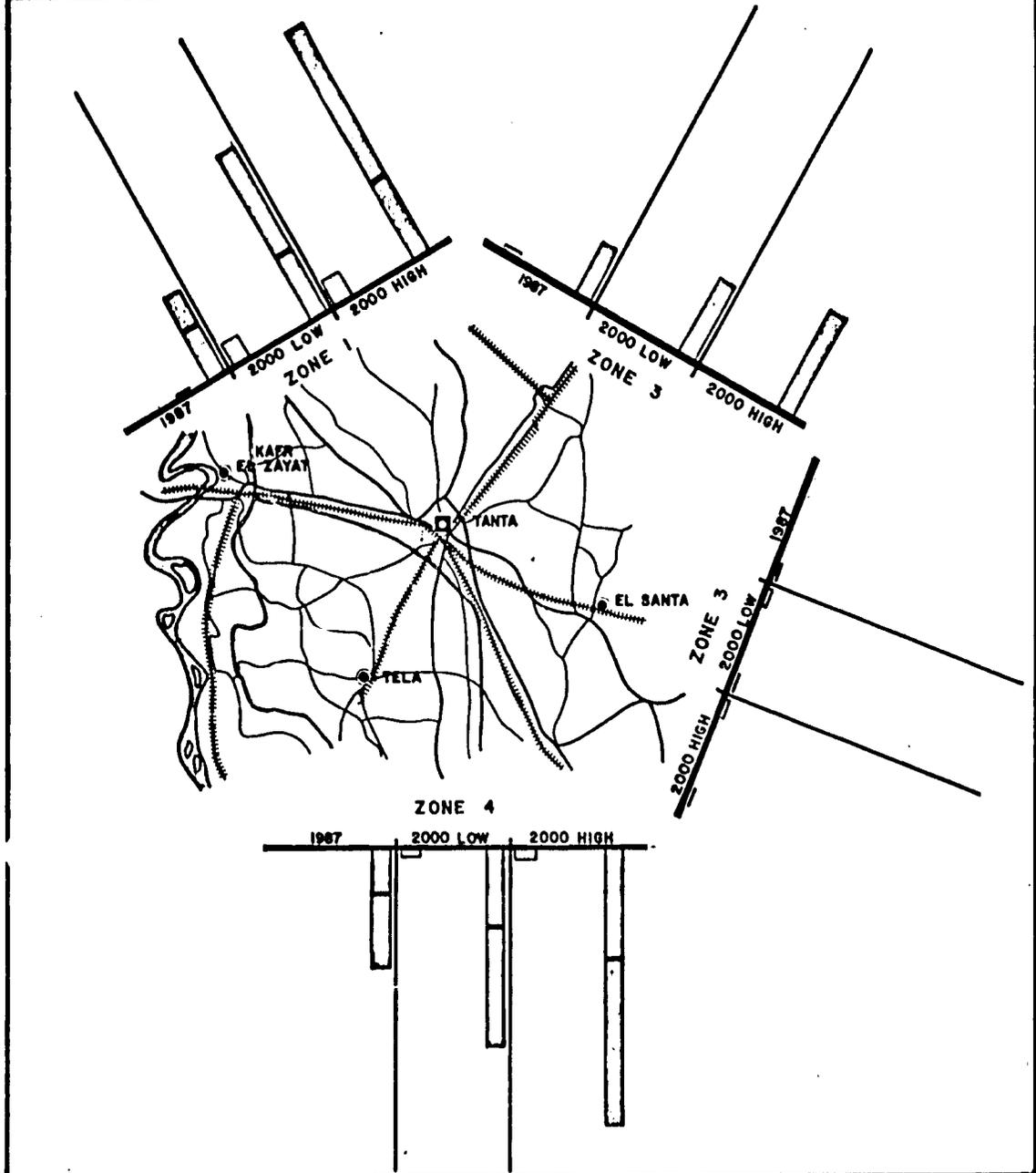


TANTA'S LOCATION WITH RESPECT TO OTHER DELTA CITIES

FIGURE 3

- 15.8 -

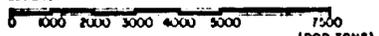
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- ZONE**
- ZONE 1
 - ZONE 2
 - ZONE 3
 - ZONE 4

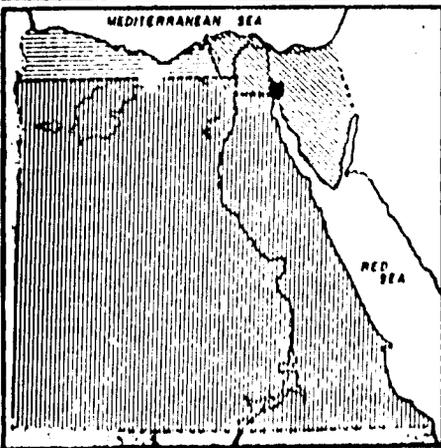
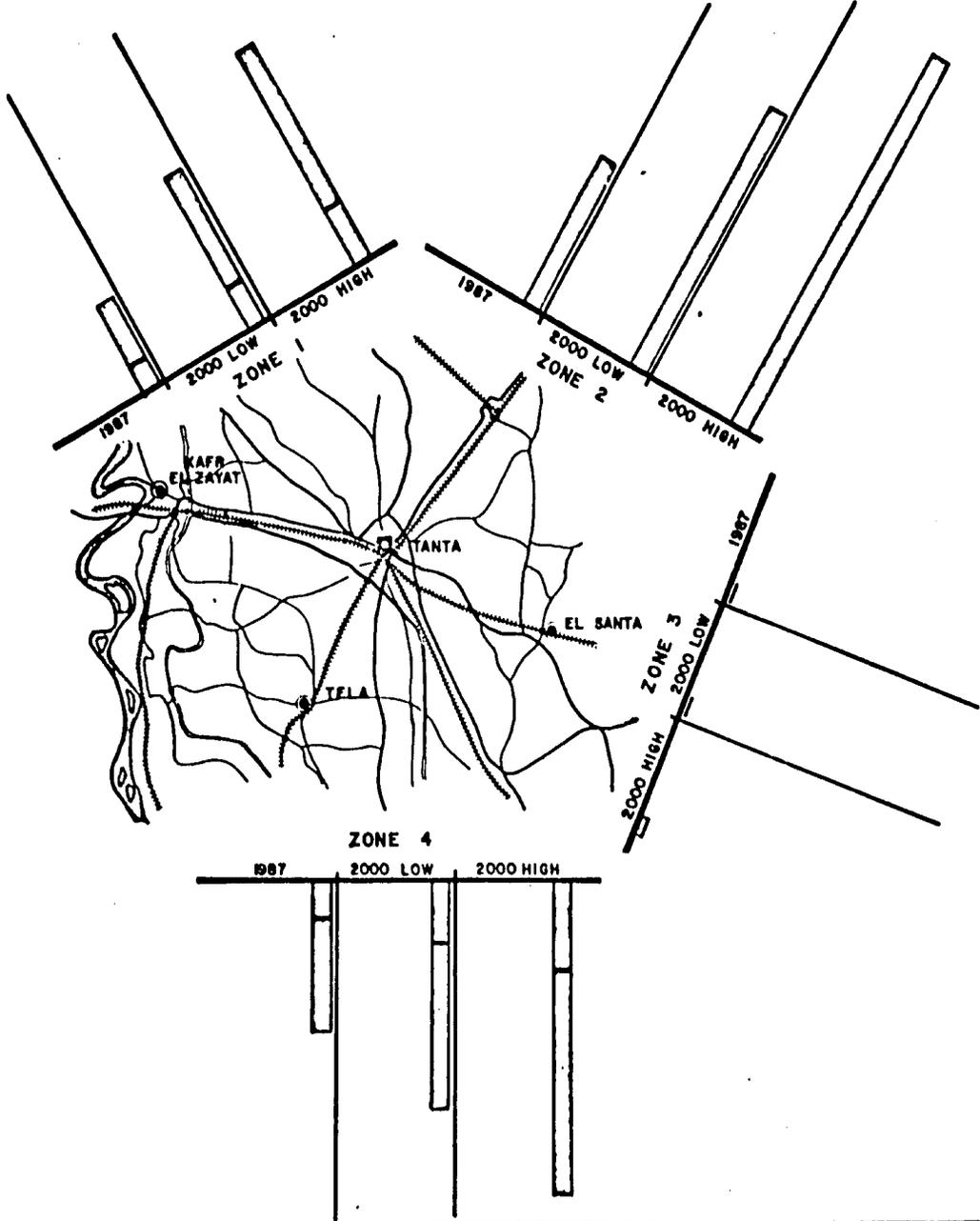
ALL GOODS TRANSPORTED TO TANTA
(1987-2000 PROJECTIONS)

- ROAD
- RAIL
- RIVER
- MAIN HIGHWAY
- SECONDARY HIGHWAY
- RAILWAY LINE
- CANAL
- NILE RIVER
- BELOW 100 000 TONS



SOURCE: NATIONAL TRANSPORT STUDY

40



- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4

ALL GOODS TRANSPORTED FROM TANTA (1987-2000 PROJECTIONS)

- ROAD
- RAIL
- RIVER
- MAIN HIGHWAY
- SECONDARY HIGHWAY
- RAILWAY LINE
- CANAL
- NILE RIVER
- BELOW 100,000 TONS



0 500 1000 1500 2000 2500 3000 (KMS) (MILES)
SOURCE: NATIONAL TRANSPORT STUDY

FIGURE 5

vices. There are also special hospitals for cancer, respiratory diseases, leprosy, endemic diseases and psychiatric care.

- Telecommunication Center: major trunk routing center for the Delta.
- Financial Center: offers full range of banking services and serves as regional center for several banks (i.e. National Bank of Egypt).
- Religious Center: location of Sidi El-Badawi Mosque, one of Egypt's and the Middle East's most important mosques.
- Tourism Center: linked with weekly visits to Sidi El-Badawi Mosque and the week-long celebration of Sidi El-Badawi's birth in October.

Present government policy emphasizes rationalization and decentralization in the provision and distribution of public services in the Delta. This policy is exemplified in recent plans to transfer the distribution headquarters for bottled gas from Cairo and Alexandria to Tanta. These new policy directions will strengthen Tanta's role as a, if not the major, service center in the Delta.

D. Center for Rural Hinterland and Smaller Urban Centers

Tanta serves a rural hinterland and network of smaller urban centers which encompass much of the area of Qahtia Governorate. The governorate lies squarely between the two branches of the Nile River (the Kishid and the Damietta). It is divided into eight districts (Mihallas) each with its district capital. Tanta, the governorate's capital, is located approximately mid-way between the two branches. It is the hub of an intra-governorate transport network which connects it with the governorate's other major industrial centers --Mahalla, Kafi El Sayat and Zetta. In addition to serving a major regional center for the Delta as a governorate capital, it supplies services to the rural hinterland and smaller district capitals which surround it.

As is the case with most other Delta cities, Tanta is surrounded by many small agricultural villages. These villages are linked to Tanta by a network of secondary and tertiary roads, many of which are not paved. Based on Tanta's location with respect to the region's other main centers, it serves an agricultural hinterland with an area of approximate radius of 10-15 kilometers. (See Figure 6). The surrounding agricultural villages supply the rudiments of day-to-day living: shelter, food, minor household items and repairs, and generally primary education. Other items

are quite frequently obtained in Tanta including: major household or farm purchases -- whatever minor appliances are required, cooking utensils, construction materials or fixtures, agricultural implements, etc. -- ready-made clothing or fabric, and repairs to appliances, farm equipment and vehicles.

Tanta also serves as an educational and health center for its hinterland. After completing primary and possibly preparatory education at the village level, students come to Tanta to continue their secondary, technical and university educations. Medical services, with the exception of the occasional doctor's office or rural unit, are also supplied from Tanta.

Tanta's industrial and service sectors also serve as a major employer for residents of the surrounding villages. Workers travel to Tanta by local transport in the morning, possibly make a few purchases, and then return to their villages at night.

Finally, the other major service center functions supplied by Tanta and described in a previous section (governmental, religious, telecommunications, etc.) will also provide the motive for several other trips to Tanta over the course of a year.

III. CURRENT INDUSTRIAL BASE AND POTENTIAL GROWTH

This section aims at identifying Tanta's current industrial base and its economic growth potential. These points are examined in the context of Tanta's central location in the Delta area, its administrative position as the capital of Gharbia Governorate and its linkages to the rural areas and other major urban centers in the Delta.

A. An Overview

Gharbia Governorate is centrally located in the Delta zone. The economic base of its urban centers is widely diversified, with a large percentage of its employment in agro-based industries and the supporting activities of trade, transportation and storage (See Table 7).

The highly diversified mix of urban employment in Gharbia is the product of its central location in the Delta and the heavy concentration of agriculture-related industries in its major urban centers of Mahalla El Kubra, Tanta and Kafr El Zayat.

Major industries in Gharbia Governorate are textiles, food processing and chemicals. The textile industry is highly

agglomerated in Mahalla El Kubra, the largest textile center in Egypt with a total employment of 46.6 thousand. Chemicals are mostly located in Kafr El Zayat and consist mainly of fertilizers and textile related products. Food processing is evenly distributed between Tanta and Kafr El Zayat. These three industrial centers generate 57 percent of the Delta's industrial output and employ 63.1 percent of the region's total industrial employment.

The governorate's agricultural sector depends on 402.5 thousand feddans of cultivable land. (Regional Statistical Indicators. 1967 data, CAPMAS, Cairo, 1978). This sector supports a total employment of 299.4 thousand or 51.5 percent of the total employment in the governorate. As in most of the Delta governorates, land holding is highly fragmented (average land holding per rural family in Gharbia amounts to only 1.6 feddans). However, land productivity in Gharbia is relatively higher than in the other Delta governorates. This is especially true for the main crops of wheat, maize and cotton.

TABLE 7

DISTRIBUTION OF GHARBIA GOVERNORATE URBAN EMPLOYMENT

AMONG ECONOMIC SECTORS, 1975

<u>SECTORS</u>	<u>EMPLOYMENT</u>	
	<u>(IN 000)</u>	
Agriculture	119	6.3
Mining	-	0.0
Industry	639	33.6
Electricity and Gas	14	0.7
Construction	77	4.0
Commerce	262	13.8
Transportation	159	8.4
Insurance	42	2.2
Services	482	25.5
All Other	99	5.2
TOTAL	1,893	100.0

SOURCE: Employment sample Survey, 1975, CAPMAS.

B. Tanta Industrial Base

1. The largest public sector industrial establishment in Tanta is the spinning and weaving mill established in 1960. The mill currently employs 4,655 workers in the production of L.E. 9.1 million (1980) worth of spinning and textile products of which 21.3 percent is exported. The second largest industrial establishment in Tanta is an oil and soap company established in 1943 and currently employing 3,310 workers. By 1978, the company's total production of soap, detergents, oil and animal feed amounted to L.E. 13.9 million, of which 98 percent is directed for domestic use. There also exists an oil and flax company established in 1954 which produces flax, fibers, oil, paint and compressed wood. The establishment's current employment is 1,274 workers and its output level is L.E. 4.5 million. There also are an oil refinery, public sector dairy plant and three flour mills. Table 8 provides total employment figures for large scale industries in Tanta.

TABLE 8

DISTRIBUTION OF TANTA LARGE SCALE INDUSTRIAL EMPLOYMENT, 1980

<u>INDUSTRY</u>	<u>EMPLOYMENT</u>	
Spinning and Weaving	4,655	35.8
Oil and Soap	3,310	25.4
Oil and Flax Fiber	1,274	9.8
Beverages	358	2.7
Dairy Products	208	1.6
Flour Milling	2,324	17.8
Rubber Tires	892	6.8
TOTAL	13,021	100.0

SOURCE: Planning Division, City of Tanta.

Employment figures for the oil refinery are not available.

Most of these large-scale industries are land extensive, mainly due to their requirements for large storage areas. Thus, possibilities for any horizontal expansion are limited to extension on arable land.

2. Small-Scale Industries

The importance of small-scale industry (1 to 50 employees) in Tanta, especially with respect to job creation, is equal to that of the large scale sector. Total employment for small-scale industries in Tanta amounted to 11.8 thousand in 1980. This figure represents 49.3 percent of the city's total industrial employment, a relatively higher ratio in comparison to other urban centers of a similar population size. The mix of these industries is diversified, but the categories of food processing, furniture and wood making and auto repair are of prime importance. (See Table 9). These industries are dispersed throughout the city. The basic problems for the potential expansion of these industries are the lack of finance and the lack of potential sites.

TABLE 9

SMALL-SCALE INDUSTRIES IN TANTA, 1980
(1-50 WORKERS)

<u>INDUSTRY TYPE</u>	<u>NO. OF ESTABLISHMENTS</u>	<u>TOTAL EMPLOYMENT</u>
Food and Related Industries	171	1,710
Furniture and Wood	394	2,218
Light Metallica	629	1,254
Auto Mechanic Repair	461	2,035
Leather	293	1,172
Ready Made Clothes	159	1,327
Printing	58	811
Tiles and Construction Material	48	524
Spinning	18	780
TOTAL	2,231	11,831

SOURCE: Data supplied by the Planning Division, City of Tanta, 1981.

C. Present Industrial Development Priorities

Following the government's industrial development strategy, priorities are currently directed toward improving the efficiency of Tanta's existing industries, rather than the creation of new ones. Based on limited available data from the Ministry of Planning, total industrial investment allocated to Tanta for the years 80/81 amounted to L.E. 18.0 million. This figure represents 23.5 percent of the governorate's total industrial investment. Investment

is directed toward expanding and upgrading the capital stock of Tanta's existing large-scale industries. Table 10 provides the industrial investment for the major urban centers of the governorate.

TABLE 10
ALLOCATED INDUSTRIAL INVESTMENTS,
GHARBIA GOVERNORATE, 1980-1982

(IN L.E. MILLIONS)

<u>URBAN CENTER</u>	<u>ALLOCATED INVESTMENT</u>	
Mahalla El Kubra	29.8	38.9
Kafr El Zayat	20.9	27.3
Tanta	18.0	23.5
Others	7.9	10.3
TOTAL	76.6	100.0

SOURCE: Data are compiled for the Delta Annual Regional Plans for 1980/81 and 1981/82, the Delta Region Planning Authority, Tanta.

The Ministry of Industry proposed new industrial investment for Tanta over the period 1980-84 amounts to L.E. 70.1 million. This amount represents 39.9 percent of governorate's proposed share in industrial investment. The planned increase in the share of what has already been allocated to Tanta for 1980-1982 is due mainly to the proposed location of a large-scale, capital intensive rubber products industry in Tanta, its total proposed investment is on the order of L.E. 41.6 million. Table 11 lists these proposed investments.

TABLE 11
PROPOSED INDUSTRIAL INVESTMENT, TANTA, 1980-1984

INDUSTRY TYPE	INVESTMENT (L.E. MILLIONS)	
Textiles	25.79	36.8
Ready Made Clothes	2.07	2.9
Flax Fiber and Oil	0.60	0.9
Rubber Products	41.60	59.4
TOTAL	70.06	100.0

SOURCE: Ministry of Industry, General Organization for Industrialization.

IV. PHYSICAL DEVELOPMENT

Tanta has been selected for special emphasis as a NUPS Illustrative Project because it presents an excellent opportunity to examine how growth in the Delta can be managed in an efficient and land-conserving way. Specifically, this section looks at the major physical development issues confronting the city, the present spatial structure and land use patterns (especially in the central core area and on the periphery of the city) and the major inter-regional and local infrastructure issues. Future sections recommend a physical development strategy for guiding and planning for Tanta's growth to the year 2000.

Specific information for the present section has been collected from secondary sources and from discussions with governorate and local council officials.

A. Development Concerns and General Parameters

1. Although master planning has been done for Tanta in the past, most of the development presently taking place is on the periphery of the city's built-up area, along transportation corridors radiating from the city, and in the small villages located just outside the city's boundary, in an unplanned and uncontrolled manner.
2. Redevelopment planned for the city's old central core should provide a range of housing packages which are in line with what most households can afford to pay and takes into consideration the rights and present livelihoods of existing tenants and landlords.
3. Vertical densification of existing informal peripheral areas of the city should be encouraged while new exten-

sions to the built-up area should be planned at densities which will make efficient use of scarce infrastructure resources and conserve arable land.

B. Physical Development Patterns

Historically, Tanta has developed from an agglomeration of small villages (*kafr*). These villages were originally grouped around what is today the site of Sidi El-Badawi Mosque. From an area of 73 feddans in 1854-55, the city has grown to almost 3,500 feddans (1,460 hectares) in 1978 based on actual (1942) city boundaries. Growth of the city's built-up area has occurred entirely at the expense of agricultural land. Surprisingly enough (See Appendix A) agricultural land still constitutes almost 34 percent of total land area within the city's boundaries. Growth over this one hundred and thirty year period has taken several forms:

1. expansion of the central core itself,
2. development along major transport corridors radiating outward from the central core in the direction of surrounding small villages, and
3. growth of the small villages themselves which in the course of time have become fully integrated within Tanta's built-up area (i.e. Kafr Seigar, Kafr Satuta, Kahafa).

With the coming of the connection to the Cairo-Alexandria railway and the extension of the railroad to Mahalla in the third quarter of the nineteenth century, directional growth was effectively constrained for the next fifty years. The rail line restricted growth in a southeasterly and southwesterly direction. Therefore, until the end of the nineteenth century, growth of Tanta's built-up area occurred outward from the original central core in a generally northerly direction along major transportation corridors. Two of the corridors paralleled the rail lines, and a third (present-day El Geish Street) radiated in a northerly direction from the central core toward the village of Kahafa. A secondary and tertiary street network developed from these major spines over the last one hundred years. It is only within the last 50-60 years that development has occurred in a southerly direction from the central core. This most recent development trend was impelled by the industrial development of the region taking place along the corridor which connects the downtown with the Cairo-Alexandria highway. Industrial development in the city's southeastern quadrant hastened nearby low-standard residential development as factory workers sought to locate as close as possible to their workplace. This trend caused

the central core to leapfrog the confinements of the rail lines and begin to push outward toward the villages of Kafr Seigar and Kafr Satuta. This trend continues to the present. Kafr Satuta has been completely incorporated within the city's built-up area and Kafr Seigar (included within the 1966 Census for the first time as a Tanta sub-*kiam*) will be almost completely engulfed in the next 10-15 years. Both are now included in the Kafr Seigar sub-*kiam*. (See Figure 7).

Present day growth of Tanta is characterized by expansion into agricultural land in all directions. Much of this growth is of an unplanned and haphazard nature. The city's official 1942 boundary is not able to contain this unplanned growth. Several of the small villages just outside of the city's boundaries and strategically located with respect to the Cairo-Alexandria highway or other major highways such as Kafr Isam, Kafr El Hima, and Mit Hibeish-El Bahariya are experiencing rapid, uncontrolled growth. The trend is for population infill to continue to occur between these villages and the existing built-up area of the city.

On the northern tier of the city, growth is presently constrained to a certain extent by the Cairo-Alexandria highway and an irrigation canal. Strip development is occurring along the highway, with infill occurring between it and the built-up area of the city. As in all cases, this infill is occurring on agricultural land. A major extension of the Tanta University Medical Center is taking place in this area. The development of the Medical Center essentially uses the last available piece of land within the city boundaries in the northern part of the city. Both formal and informal growth continues to take place in the northwestern quadrant of the city within a wedge bounded by El Nadi, Nahas and Kafr Isam Streets. Streets are being extended in a westerly direction toward the Cairo-Alexandria highway. A major secondary street network for the area was called for in either the 1958 Master Plan or the 1970 Update (it was not clear which, due to the sketchy information supplied to the NUPS team). However, unrealistic as the plan might have been, it has been almost completely invalidated by recent unplanned development. Circulation within the area is extremely difficult, (i.e. streets not yet open or potential rights-of-way blocked by illegally constructed buildings). The situation will only worsen, thus hampering future higher density vertical development, since the area, lies along a major growth corridor for extension of the city's built-up area.

North of the downtown area, and to the east of El Geish Street, in an area designated as "New Tanta", high-standard, formal development is occurring at a relatively



KHARSIT

KAHR ISAM

KAHR EL-HIMA

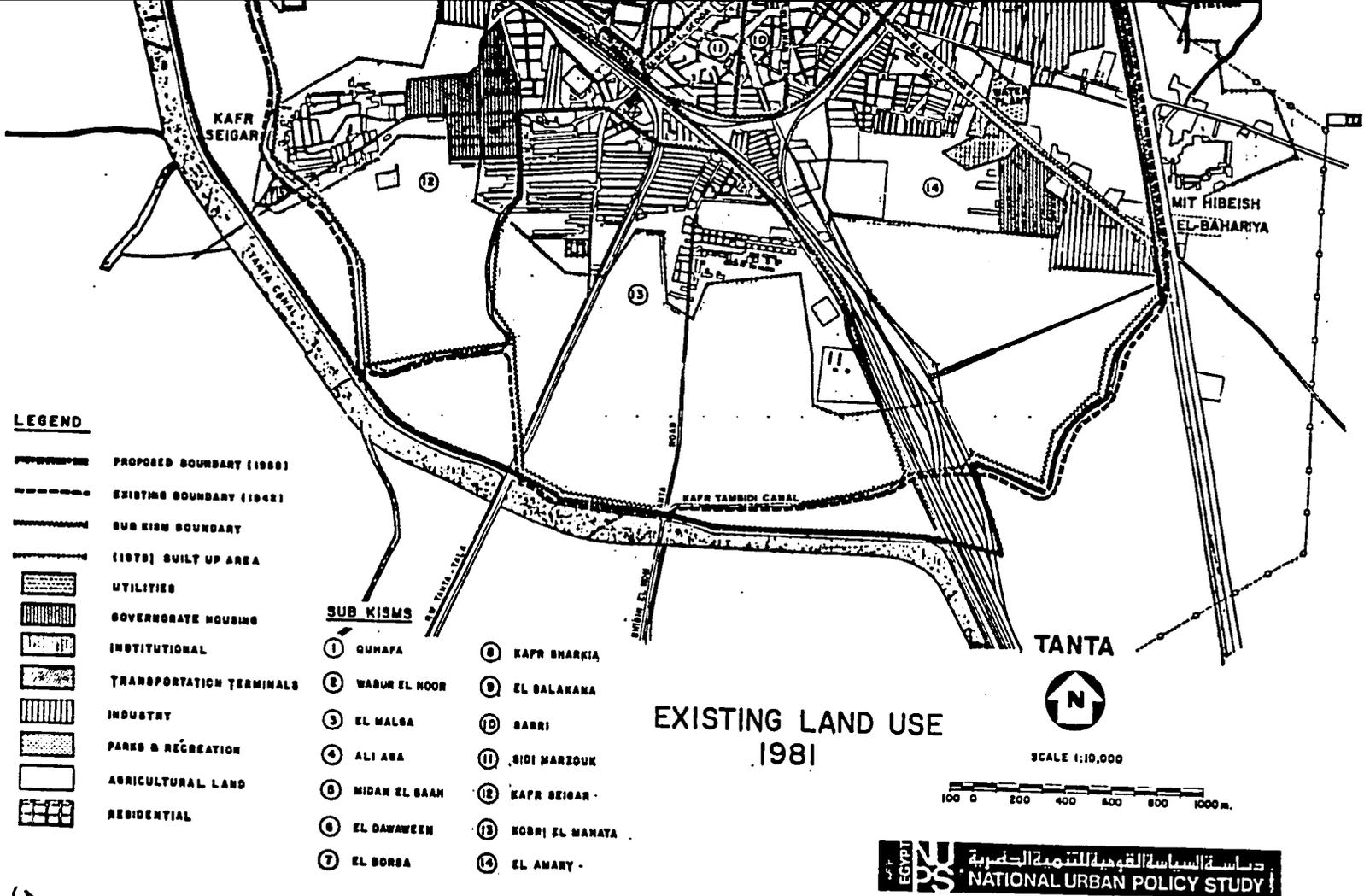
QUHAFA

CANAL

CAIRO-ALEX ROAD

SEWAGE PLANT

POWER STATION



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slow pace. Urban infill has already linked the New Tanta development with the village of Kahafa. The existing grid pattern is being extended to the north and east in the direction of the previously mentioned irrigation canal which is presently acting as a constraint to further development on agricultural land to the northeast.

The area to the south and west of the railways to Cairo-Alexandria and Mahalla contains most of the agricultural land still remaining within the city's boundaries. This development is generally low-income, lower-standard and illegal. To a certain extent, growth is being "naturally" constrained in this area due to two irrigation canals and a recently completed highway which connects the western entrance to the city with the highway to Shebin El Kom. The area also contains parcels of government land which are being used for public housing projects. Infill is occurring at a rapid rate along the road which connects the village of Kafr Seigar with the city's built-up area. Sporadic development has begun to appear off the main roads leading southward to Tala and Shebin El Kom. This is a dangerous sign since it is occurring outside of the built-up area on some of the city's most fertile agricultural land.

With the industrial development of the 1920's, the city expanded rapidly along El Gala Street, toward the Cairo-Alexandria highway. The city's major spinning and weaving plant, as well as numerous public housing blocks, are located along this street. The area first to be developed was located along the railway to Mahalla and is a district of narrow streets and 3-4 storey buildings. Rapid informal development is occurring between the southern periphery of this area and the industry and public housing located along El Gala Street. A major cemetery which in the past helped to constrain growth in the southeastern quadrant of the city has been expanded. This expansion, however, has not stopped recent illegal development from occurring. Access into this rapidly growing, informal area from any direction is already a major problem due to the unplanned and haphazard nature of this development.

Industrial development has also taken place to the north of El Gala Street. Rapid infill, mainly of an informal nature, is also occurring on the remaining agricultural land between El Gala Street, the rail line to Mahalla and the Cairo-Alexandria highway.

Much recent attention has been focussed on the rapid development taking place just outside the city's boundaries in the villages of Mit Hibeish-El Bahariya. These villages are located to the east of the Cairo-Alexandria highway on the highway to Zefta. Due to its prime location, a

substantial amount of industrial and residential development has already taken place. The Tanta Jute and Oil Factory is located in this area. In addition, a new prefabricated housing factory has recently gone into production to supply the major building components for a 2,640-unit cooperative housing project. A major new bus repair terminal is also under construction.

C. Land Use Patterns

The following sections give an indication of the types of land uses and their locations to be found in the city of Tanta. (See Figure 7).

1. Residential

The types of residential construction identified for Tanta are similar in construction to those found in Qena and Naga Hamadi. The following simplified classification system will be used for a discussion of the built-up area:

- a. Central core
- b. Peripheral informal development (illegal)
- c. Formal development
 - Public
 - Older 3-5 storey buildings on edge of central core
 - New 4-5 storey flats

The old, central core of the city which surrounds the Sidi El-Badawi Mosque is characterized by one and two storey structures of unbaked mud bricks. These structures are generally in poor condition. Better quality, formally constructed buildings are found along the area's major thoroughfares. The area is bisected by a system of narrow winding streets. Underutilization of space in the form of warehouses, garages and stables is common. The area is served by a full compliment of public services since it is one of the oldest parts of town. A portion of this area has already been selected by the governorate's Planning Office for redevelopment.

The oldest structures of the small villages which have been incorporated within Tanta's built-up area (Kafr Seigar and Kafr Hatuta, Kahafa) exhibit similar construction materials and techniques to those found in the downtown area surrounding the Sidi El-Badawi Mosque.

The area of the city which expanded outward from the original central core over the past one hundred years

is constructed on an irregular grid pattern. Main thoroughfares such as El Geish and Shams El Doen Streets define this pattern with narrower secondary streets and alleys providing for internal circulation. Residential construction is generally of 3-5 storey and of burnt brick. Similar type residential development extending from the central core can be seen in the oldest portions of the sub-*kizna* immediately to the south of the railways which bisect the city.

On the fringe of this initial area of expansion can be found Tanta's existing and future higher standard residential districts. (Sub-*kizna* 3 and 4 as shown on Figure 7). This area is to be found to the south and east of the *Nadi* (Club) and on streets running perpendicular and to the east of El Geish Street. Construction undertaken during the last 30-40 years is usually of burnt brick with ornate external finishings. The newer, formal construction taking place to the east of El Geish Street on the fringe of the built-up area is of reinforced column and beam construction with brick infill. The 4-5 storey structures are finished in stucco and painted. The street pattern is on a regular grid. Both old and new formal residential areas are fully serviced.

On the periphery of the built-up city, especially on the southeastern and southwestern tiers, substantial informal construction without Ministry of Agriculture approval or building permits is occurring on arable land. This illegal development often follows old farm paths. Street widths are much narrower than in the formal sector (often 2-3 meters), building set backs are not maintained and the circulation network is highly irregular or non-existent. Many of the narrowest streets and alleys have never been formally opened. Construction is of burnt brick and usually of three storeys. Most of the construction makes use of a reinforced column and beam structure. This type of illegal construction is also seen in the small villages both within and outside Tanta's boundaries. Surprisingly, a substantial part of recent illegal development has already been serviced with water, sewerage and electrical connections. This is especially true of the informal development closest to the central core. Informal areas presently not served are located in Kafr Belqar and the rapidly expanding villages to the north of the Cairo-Alexandria highway.

Public housing units have been constructed mainly in two locations. The largest concentration is located off El Gala Street near the major spinning and weaving industrial complex. The other is located along both

sides of the Cairo-Alexandria highway in the Kahafa area. A new area, southwest of the city, along the Kafr Seigar road is presently being developed for public housing. This land belongs to the government. Past public housing designs have come from Cairo and are of the typical 5-storey walkup variety. The structure is a reinforced concrete column and beam with brick infill. Past housing blocks have been sited on available public land with little consideration given to the environmental wellbeing of the future residents.

2. Industry (Including Small-Scale and Repair Shops)

Most of the large-scale industry in Tanta is located along or near El Gala Street between the downtown area and the Cairo-Alexandria highway. Here are found the Coca Cola Bottling Plant, Tanta Oil and Soap Company, Delta Spinning and Weaving, Misr Dairy and Food Products. Major new industries are also located along the Zefta highway just to the east of the village of Mit Hibeish-El Bahariya. Other industries are sprinkled throughout the city, generally in locations with good rail or highway access. The Tanta Oil Refinery is located outside the city boundaries to the west of the village of Mahallet Marhum on the Cairo-Alexandria highway.

Small-scale industry and repair shops are concentrated in the old central core and along major arteries radiating from the core. Small-scale industries include all types of metal and woodworking, tailors and shirtmakers, horse-drawn carriages and shoemakers. Repair shops are geared to the repair of cars and trucks, machinery and farm implements. The heart of this particular land use is found along Shams El Deen Street which parallels the Mahalla railway and in the narrow streets of the downtown area.

3. Commerce

The old central core owes its present vitality to the wide-range of commercial activities which are located there. The survey work done for the governorate's Redevelopment Project indicates that over 40 percent of the occupied buildings are strictly commercial or a mix of commercial and residential uses. Most of the shops are of a speciality nature -- household items, fabrics, clothing, furniture, appliances and watches, etc., but private sector department stores also exist. The area owes its vitality not only to the local Tanta trade, but also to the many customers who are drawn from Tanta's rural hinterland. In addition, a major generator of sales can be attributed to the domestic tourism attracted to the Sidi El-Badawi Mosque.

A higher order of commercial activity is noted along El Geish Street. Here are found the public department stores such as Salon Vert, clothing boutiques and the exclusive furniture stores. Another higher quality commercial strip is beginning to appear along El Nahas Street.

4. Transport

Most of the terminals which serve Tanta's inter-regional transport functions are concentrated in a relatively small area on the fringe of the downtown. The rail terminal is located at the foot of El Sekka El Gedida Street which leads to Sidi El-Badawi Mosque. The bus and taxi terminals are all within one block of the rail terminal.

5. Institutional

Major public institutional uses -- government buildings, secondary schools and hospitals, etc. -- are found in the older northern sections of Tanta along major arteries. The City Council offices are located on the fringe of the central core, while the governorate occupies a relatively new building at the intersection of El Geish and El Nahas Streets. Other major institutional users such as the Ministry of Agriculture, Tanta University and Medical Center, are located along El Geish Street. Major secondary schools are also found in this area.

Due to the lack of large parcels of vacant land within the existing built-up area, new institutional uses have been developed on the periphery on agricultural land. The new Medical Center straddles the Cairo-Alexandria highway on the city's northern edge, while a new regional Army Induction Center is under construction at the western extremity of the built-up area to the south of the Cairo-Alexandria railway.

6. Open Space and Recreation

Tanta is almost completely lacking in parks and public recreational facilities. A narrow strip of green area with benches serves as the median strip for El Geish street. Central squares surrounding the City Council building and Sidi El-Badawi Mosque are too congested and commercially oriented to serve as much of a respite.

The city's stadium and *El Nadi* Sporting Club provide recreational opportunities for a limited number of the city's residents.

D. Infrastructure

Adequate and appropriate levels of local and inter-regional infrastructure and housing are principal requirements if Tanta is to be able to fulfill its role within the NUPS Preferred Strategy. Due to the limited time and secondary source material available for the Tanta Illustrative Development Project, only certain key infrastructure issues will be identified and developed in this section. The Egypt National Transport Study (NTS) done by NEDECO during the period 1979-1981 serves as the main source of inter-regional transportation information. Discussions with local engineers and material supplied to the NUPS Team provide the basis for the sections on local infrastructure and housing.

The key concerns identified by the NUPS Team include:

- i. The requirements, both in terms of financial resources and arable land, implied in carrying out the extension, rehabilitation or new construction of existing transportation networks (roads, railways and pipelines) in order that Tanta maintain and expand its present position as the transport center both for the movement of inter-urban goods and passengers in the Delta,
- ii. the provision, capacity, and maintenance of local infrastructure systems (water, sewerage and electricity) to meet existing demand and provide for projected future populations,
- iii. the provision of adequate and affordable housing (with particular emphasis on cost recovery) to serve existing and future needs, and
- iv. the provision of specific infrastructure projects required to implement the proposed physical development strategy. (See Section V.C).

1. Transportation

Most of the transportation network required for Tanta's continued growth as a major regional service center is already in place. What is needed is better maintenance of the existing systems and specific extension or rehabilitation projects to increase capacity in certain branches of the various networks.

The following sections discuss the present situation with respect to the regions's transportation networks and briefly outline current and planned government programs to improve the functioning of the systems.

a. Roads

Tanta, located mid-way between Cairo and Alexandria, is at the hub of the Delta's road network. It is directly linked by this road network to all the Delta's other largest cities. (See Table 12). It is the headquarters for the Highway and Bridge Authority's (HBA) Middle Region.

The primary and secondary road network overseen by the Tanta HBA office is deteriorated due to a rapid growth in both the number of vehicles and of axial loading. Road pavement condition, rather than capacity, is the main problem in most cases. Although the Cairo-Alexandria highway by-passes Tanta, congestion is beginning to become a problem, particularly at the city's main entranceways. 3/ The tertiary road network, particularly at the city boundaries of Tanta, presents deficiencies with respect to capacity and access within the city's rapidly expanding peripheral areas. The NEDECO study notes that routine maintenance of roads is presently at a low level due to two main reasons:

1. main roads have deteriorated to the extent that routine maintenance cannot offer a real solution, and
2. due to the lack of technical and management capacity an established tradition of routine maintenance standards and procedures is missing.

In order to combat these problems, the HBA, in its Five-Year Plan (1980-1984), has earmarked a substantial portion of its budget for the Tanta region to the rehabilitation (maintaining existing cross-section) of existing roads. The HBA envisages upgrading the existing 6.0 meter carriageways from Tanta to Kafr El Sheikh, Bagour (passing through Babel) and Zagazig (passing through Zefta and Mit Ghamr). The proposed modernization program for the Tanta region is apparently in its beginning stages. A new section of road which by-passes Bagour has also recently been opened between Istanha (on the Bagour-Benha highway) and Shebin El Kom.

The Egypt National Transport Study proposals are even more ambitious. For the period till 1987 which takes into account the HBA's rehabilitation program for the Tanta region, the Study proposes an additional 44 kilometer extension of the

TABLE 12

MAJOR ROAD NETWORK OF TANTA HBA REGION, 1979

ROAD SECTION	LENGTH (KM)	CLASSIFICATION	PAVEMENT WIDTH	PAVEMENT CONDITION	TRAFFIC VOLUME		ADT 2000 (EST)		
					ADT '79	ADT '87 (EST)	HIGH	LOW	
<u>AGRICULTURE ROAD</u>									
Benha-Tanta	46	Primary	4 lanes 2x8 m	Good	14,230	25,510	38,790	55,390	
Nile Bridge	-	-	-	-	16,350	30,490	41,780	65,750	
Tanta-Kafr El Zayat	18	Primary	4 lanes 2x9 m	Good	N.A.	N.A.	N.A.	N.A.	
Nile Bridge	-	-	-	-	21,870	40,530	61,780	83,580	
Tanta-Mahalla	26	Primary	4 lanes 2x8 m	Fair	6,610	12,740	19,060	25,590	
Tanta-Bagour	44	Primary	6.0 m	Fair	3,930	7,910	11,150	15,080	
Tanta-Tala	13	Secondary	6.0 m	Fair-Poor	1,980	4,000	6,000	8,000	
Tanta-Kafr El Sheikh	50	Primary	6.0 m	Fair	2,710	4,690	5,830	9,000	
Tanta-Zefta	32	Primary	6.0 m	Fair	2,760	5,540	7,320	10,020	
Nile Bridge	-	-	-	-	4,150	8,000	12,000	15,000	
Tanta-Basyoun	27	Secondary	6.0 m	Poor	2,500	5,000	7,500	10,000	
Basyoun-Dessouk	28	Secondary	6.0 m	Poor	2,290	4,220	5,920	8,120	

61 SOURCE: NUPS elaboration of Egypt National Transport Study, 1981 data.

carriageway between Tanta and Bagour (and on to Kanater El Khairiya) from 6.0 to 7.5 meters. For the period 1987-2000, the study recommends major extension and upgrading of roads within Tanta's region. 4/ The estimate for a road infrastructure investment includes a list of projects which must be closely evaluated for the Tanta region:

1. Nile Bridges

Kafr El Zayat (under construction)
 Zefta-Mit Ghamr
 Dessouk

2. Semi-Urban Distributory Road System (Tanta)

4-lane by-pass - 15 kilometers
 2 large grade separated intersections
 2 minor grade separated intersections

3. Divided Inter-Urban Highways (Extensions of Existing Roads)

2x3 lanes: Denha-Kafr El Zayat (including portions in Tanta region) 153 km

2x2 lanes: Kanater El Khairiya - Tanta 75 km

4. Upgrading to 7.5 m Highway

Tanta-Zefta 30 km
 Tanta-Basyoun-Dessouk 55 km
 Tanta-Tala 13 km

5. Railways

Tanta is well served by the nation's rail infrastructure. It is located on the main double track line between Cairo and Alexandria. It is also served by three single lines:

1. Tanta-Menouf-Qalyub (93 km);
2. Tanta-Zefta-Zagazig (57 km); and
3. Tanta-Mahalla-Damietta (116 km).

With a few exceptions, all signalling systems presently in operation are of the mechanical variety. Work is presently underway on the Tanta portion of the Cairo-Alexandria double line to convert to an electro-mechanical system. Tanta is also the location of one of the Egyptian Railways (ER) eight marshalling yards.

No specific information was available on the rail lines which serve Tanta. However, in discussions with railway officials, it was ascertained that the present condition of the lines serving the Tanta region is indicative of the general condition of the nation's railways. The present network is fully capable of meeting present demand. Extensions of the present network are not justified on economic grounds. The National Transport Study makes the point that the most important factor concerning the rail network is the generally poor condition of the lines which show serious problems with respect to track and component (particularly the ballast bed) conditions. The situation is regarded as critical, with further rapid deterioration likely if no immediate action is taken.

Much of the blame for the present situation is placed on the lack of routine and preventive maintenance. 4/ It is encouraging, therefore, to note that of ER's total capital budget of L.E. 250 million for the five-year period 1980-1984 almost 70 percent or L.E. 168 million is earmarked for maintenance and rehabilitation of the existing network. Maintenance and rehabilitation items include:

1. track and bridge renewal;
2. strengthening of embankments;
3. maintenance equipment;
4. modernization of marshalling yards;
5. remodelling of stations and yards; and
6. renewal of freight sheds

c. Pipelines

Tanta is the location of one of Egypt's four crude oil refineries (the others are located in Alexandria, Cairo, and Suez). A trunk line connects the present network of refineries. The Cairo-Tanta branch is mainly used to send crude oil to the Tanta refinery from Suez, but it is also used to transport products (gasoline, naphta, kerosene, diesel oil, etc.) in both directions according to distribution needs of the separate refineries. The Tanta-Alexandria branch is mainly a product line since Alexandria receives all crude oil requirements by sea. The line is mainly used to ship products from Alexandria to the Tanta refinery which acts as the main distribution center of petroleum products in the Delta and whose own production is relatively limited. The Tanta refinery is directly linked by a 6-inch pipeline with a

number of major industrial users in the Mahalla area and with a central storage depot in Shawa (Dakahlia). The line is also used for the shipment of certain petroleum products.

Gas pipelines are of recent construction, and presently are not linked with Tanta. According to the NTS analysis of crude oil pipeline transport requirements for the period 1978-1987, no extension in main trunk line capacity affecting Tanta is recommended assuming that a balance can be maintained in the production of petroleum products at the Suez and Alexandria refineries. In addition, no extension in pipeline capacity is necessary or projected for the Tanta-Mahalla-Shawa line (present capacity of 310,000 m³). No extension of the natural gas pipeline to Tanta is envisaged for the period 1978-87.

The picture is not as clear for the period 1987-2000 for crude oil and petroleum products pipeline requirements. Unless careful balancing of production in Alexandria and Suez is achieved extension of either or both the Cairo-Tanta and Alexandria-Tanta pipeline branches may be required. Much appears to depend on whether a new refinery is built in Upper Egypt, thus freeing up some surplus from Suez for Tanta.

2. Intra-Urban Infrastructure (Water Supply, Sewerage and Electricity)

Tanta's current and planned water supply and sewerage networks will provide sufficient service levels for projected populations well into the 1980's. Tanta presently gets its water supply from two sources: the El Kased Canal and 26 artesian wells. The canal water is treated. It is not known to the NUPS Team, however, whether the deep well water is treated, and if not, whether treatment is required.

Present capacity of 137.5 million liters per day (96 million from the canal and 41.5 million from the wells) works out to 433 liters per capita per day for the estimated 1980 population. This daily per capita capacity compares very favorably with the national urban average of 169 liters per capita per day or the figures for Cairo and Alexandria of 338 and 288 liters per capita per day, respectively. Four new proposed wells will supply an additional 10.4 million liters per day capacity when they come on line.

According to 1976 Census data, almost 75 percent of Tanta's families had direct access (either in dwelling

unit or in building or on plot) to piped water. Local engineering officials estimate that this percentage has now reached 90 percent. They estimate that the population presently not served is located either on the rapidly expanding urban fringe or outside the system's service area.

Sewage treatment in Tanta dates from 1927. The existing plant uses a combined process of aeration, filtration and chlorination. Present capacity is 60 million liters per day. Based on 1980 population estimates, total capacity equals 189 liters per capita per day. This figure is slightly less than the daily per capita flows for Cairo and Alexandria of 200 and 221 liters per capita per day, respectively. No national urban average is available. In addition, a new L.E. 3 million treatment plant is almost complete and will come on line in early 1982. This new plant will increase present capacity by almost 17.3 million liters per day. This increase will raise per capita flows to above the Cairo and Alexandria totals.

The 1976 Census registered almost 50 percent of Tanta's total building stock (including residential, commercial and industrial) as having sewerage connections. Local engineering officials estimate the percentage of buildings connected has now reached approximately 60 percent. Similar to the case of water supply those buildings not served are generally located on the periphery of the built-up area or outside the service area of the existing network.

Although no figures dealing with electrical supply capacity were made available to the NUPS Team for Tanta, field visits to Tanta's rapidly growing informal peripheral areas took note of the fact that most areas were already served by electricity. The 1976 Census tends to substantiate this finding. As of 1976, almost 80 percent of Tanta's total number of buildings was connected to the electrical distribution system. This percentage is probably higher today.

3. Housing Stock

There is very little material available on the quality and quantity of Tanta's housing stock. The 1976 Census counted 25,585 residential buildings for Tanta. The total number of dwelling units for the same year was 62,556 or an average number of dwelling units for residential building of 2.45. For the period 1966-1976, the number of residential buildings grew at an annual rate of 4.7 percent. This figure is almost double the annual population growth of 2.20 percent

over the same period. While this question will be further discussed in the section on Administration, it is clear that the majority of these residential buildings are being built illegally on arable land without either Ministry of Agricultural and/or City Council Engineering Department building approval.

Quality of housing was not asked on the 1976 Census. Some insight into the quality of at least a portion of the housing stock can be gleaned from the survey work already done for the governorate's Redevelopment Project (see description later in this section). Of the 1,600 buildings contained within the redevelopment area, over 70 percent were considered to be in poor condition (not defined). While this percentage of poor housing quality is certainly higher than in most other areas of the city, it is indicative of the condition of Tanta's central core and is probably similar to the housing condition of the several small peripheral villages which have been integrated into Tanta's built-up area.

The Governorate's department in the Ministry of Development has been responsible for planning and design of public housing for the past several years. However, newer housing blocks do not seem any better adapted to local conditions than those which had been built in the past. Designs are particularly lacking in aesthetic qualities and do not afford the user the private space that is available in informal sector construction. Over the three-year period 1978-1980, the governorate constructed 1,030 housing units. These were mainly of the 2 and 3 bedroom units in 5-storey walkup flats. Rental values are highly subsidized; the 2 and 3 bedroom units rent for L.E. 3 and L.E. 6 per month respectively.

Two projects which are intended to improve the quality of the city's overall housing stock are presently in the planning and design stage. The following paragraphs briefly review the two projects; Appendices B and C provide a more detailed description.

a. Mit Hibeish Cooperative Housing Project

This private sector project is located on a 27 feddan site along the Tanta-Zefta highway just to the east of the village of Mit Hibeish-El Bahariya. The proposed 2,640 units are to be accommodated in 110 6-storey blocks located on a 20 feddan section of the total project area. A pre-fabricated housing factory which will supply the

project's main construction components occupies the other 7 feddans. Apartment sizes of 50 and 70 square meters are planned. The proposed land use budget for the housing part of the project is presented in the following table:

TABLE 13

**PROPOSED LAND USE BUDGET FOR
MIT HIBEISH COOPERATIVE HOUSING PROJECT**

<u>LAND USE</u>	<u>AREA (m2)</u>	
Residential	57,600	69.3
Community Services (school, markets, government offices, mosque, and shops)	5,600	6.7
Open Space	4,700	5.6
Circulation	15,300	18.4
TOTAL	83,200	100.0

SOURCE: Gharbia Governorate Utilities and Engineering Office

While the distribution of the project's land area appears reasonable, the gross densities resulting from a relatively intense residential land use, in combination with the proposed number and height of housing blocks, are quite high. Calculated gross residential densities of 1,555 persons per hectare or 653 persons per feddan are more than double the highest existing density in Tarta's built-up area and are almost 65 percent higher than the density proposed for the downtown redevelopment area. 6/ In addition, a brief review of the project by NUPS architects has identified certain other areas that should be checked in more detail to assure compliance with Buildings Law No. 106 of 1976 and implementing Decree No. 169 of 1962. They include total floor area to site area ratio, building heights and distances between buildings and between buildings and the site boundary.

b. Downtown Redevelopment Project

The second major planned project involves the Gharbia Governorate's redevelopment scheme for a portion of the city's old central core area. The project area encompasses 75 feddans and 13,000 residents. It contains mainly 1 and 2 storey, deteriorated mud brick structures used mainly for commercial and residential purposes. Population in the area is declining and much of the land area is poorly utilized as stables, warehouses and garages. The area is ideal for redevelopment. Survey work dealing with building quality, land use, population and ownership patterns is complete. The governorate envisages developing the site in 4-5 stages. It has decided to begin the first stage on land owned by itself and the Ministry of *Waqf*. The first stage entails approximately 200 flats in 7-storey buildings and would cost roughly L.E. 5-6 million. The present stage of development is not known. As mentioned previously, the main issues which still must be addressed include the physical standards at which the redevelopment will take place, the whole question of landlord-tenant relations during redevelopment, and the project's financing mechanism. (Proposals for zoning changes which would assist this process are shown in section D of Chapter V).

4. Infrastructure Requirements to Implement a Physical Development Strategy

A physical development strategy often calls for undertaking certain infrastructure works in order to assist in its implementation. This is the case with the recommended development strategy for Tanta. (See recommendations Chapter V, sections B and C). The proposed infrastructure might include the opening of a new stretch of road or the upgrading of an existing one, the extension of a distribution network for water supply or sewerage, or the construction of a bridge to facilitate growth along a new corridor. These infrastructure items do not necessarily involve major expenditures. The most important factor is their timely implementation with respect to the staging of the development strategy. If the planning, design and construction phases for infrastructure works do not keep pace with, for example, complementary administrative and economic actions, the entire development strategy could be undermined and the desired results not attained.

V. ADMINISTRATIVE IMPLICATIONS OF THE NUPS STRATEGY FOR TANTA

The structure of Gharbia Governorate is based on the several local government laws which date from 1960, the last being Law No. 50 of 1981. The Governor is the central government's representative at the Governorate level. Gharbia Governorate contains eight districts (*markaz*) each with a city or village designated as its capital. Tanta is the capital of the Governorate, as well as the capital of the district of Tanta. Local Government law calls for the establishment of local councils whose members are chosen by direct election according to provisions of the law and whose responsibility is to oversee the workings of the respective local units. The following table briefly summarizes the number and composition of the local government councils for Gharbia Governorate:

TABLE 14
LOCAL COUNCILS IN GHARBIA GOVERNORATE

<u>LOCAL COUNCIL</u>	<u>NUMBER</u>	<u>MEMBERS</u>
Governorate	1	60
District	8	337
Towns	8	144
Villages	53	901
TOTAL	70	1,442

SOURCE: Secretariat General of Local Government.

The Tanta Illustrative Development Project has focussed on the city of Tanta and its role within the Delta. Specifically, the Governorate and the Tanta City Council are examined in detail. In Tanta, the City Council is responsible for the affairs of the entire district. The Delta Regional Planning Authority, encompassing the Governorates of Gharbia, Beheira, Kafr El Sheikh, Dakahlia and Menoufia with its capital in Tanta, will also be discussed. Figure 8 presents a schematic of the organizational structure of Gharbia Governorate and its relation to central government.

SCHEMATIC OF QENA AND GHARBIA GOVERNORATES AND THEIR RELATION TO CENTRAL GOVERNMENT

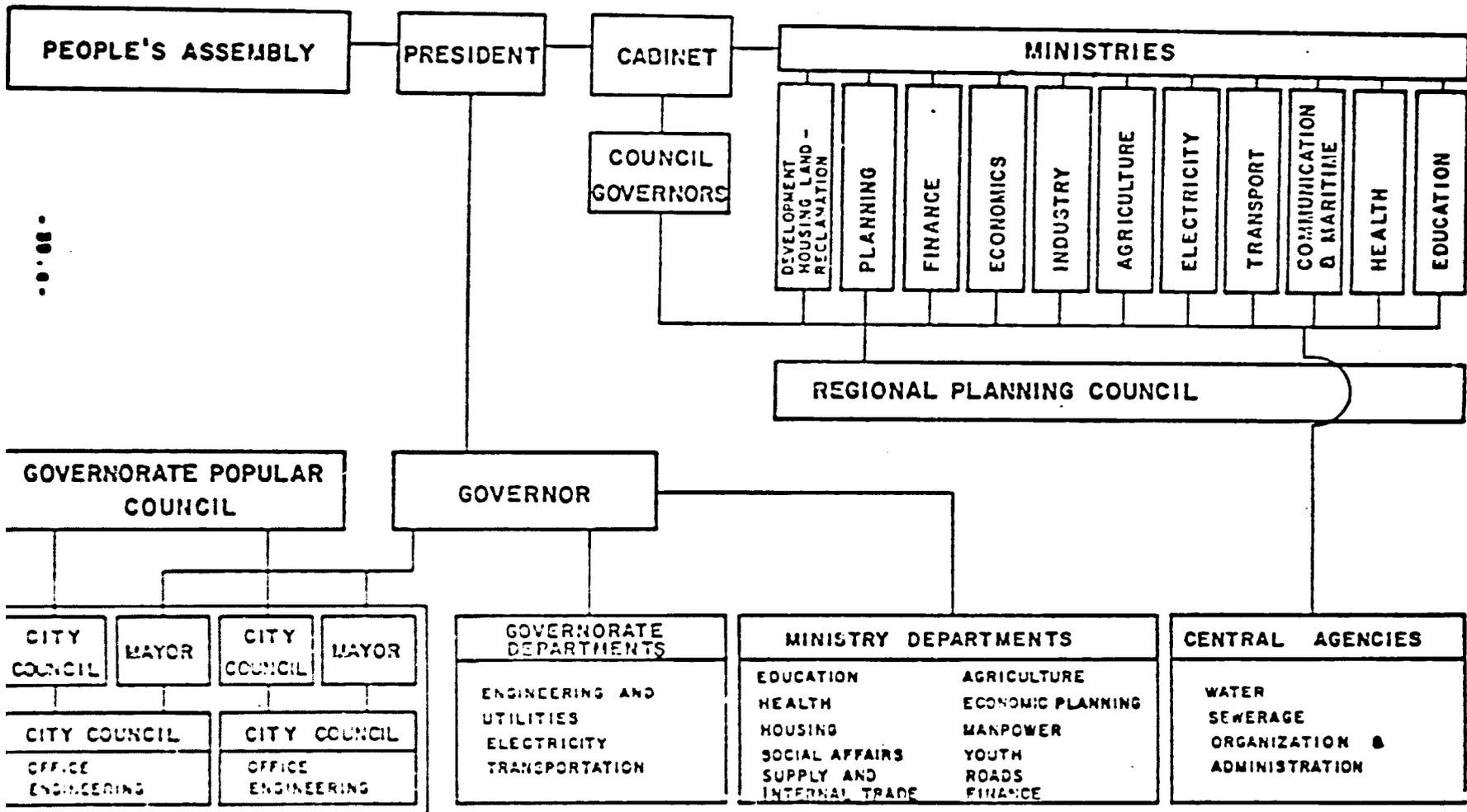


FIGURE 8

A. Administrative Structure

Table 15 outlines the functional responsibilities of the principle levels of government affecting implementation of the NUPS strategy in Tanta. It is interesting to compare the table with a similar table presented for the Illustrative Development Project in Qena-Naga Hamadi. The major difference in the functional responsibilities of the two cases is the economic and physical planning capacity which has emerged at the governorate level in Tanta. In Gharbia, the Governorate's major functions can be summarized in the following way:

1. It serves as receptor at the local level for central government policies and programs. These recently have begun to be carried out at the local level through the planning, design and implementation of programs, and particularly, some physical projects and infrastructure.
2. It has recently begun to prepare, in conjunction with local councils, sectoral investment budgets (BAB 3), albeit on a limited scale, for certain programs and projects -- food security, small industries, road repairs and bridges and public housing -- it also collects the add-on tax placed on all import and export taxes, movable properties (stock, bonds, etc.), business profits and the joint revenues assigned to local budgets (real estate, motor vehicle and entertainment taxes).
3. It is responsible, through the Ministry of Agriculture's representative within the Governorate, for enforcing Law No. 59 of 1973 which prohibits building on agricultural land (within and outside city boundaries) without the Ministry's authorization; it also must approve all building permits for structures with a cost exceeding L.E. 5,000.

The Tanta City Council performs limited functions similar to those found in Qena-Naga Hamadi (1) approve building permits for costs less than L.E. 5,000 and issue all permits for buildings, shops and restaurants; (2) regulate and control building construction; (3) maintain government buildings; (4) maintain streets, parks and public gardens; and, (5) construct and maintain local roads.

The functions of local government in Gharbia, and specifically in Tanta, point up a set of constraints which must be either removed or ameliorated in order to be able to successfully implement a national urban policy at the local level. Although we observed large numbers of deficiencies in the Illustrative Development Project for Qena-Naga

TABLE 19
MAJOR FUNCTIONAL RESPONSIBILITIES OF GOVERNMENT AGENCIES AFFECTING MAPS AT LOCAL LEVEL - GAMBIA (CONTINUED)

LEVEL OF GOVERNMENT	TECHNICAL POLICY, PLANNING, TRAINING, CONSTRUCTION, TRAINING	PLANNING, PROGRAMMING AND PROJECT CYCLE: PHYSICAL INFRASTRUCTURE & INDUSTRY	INDUSTRY AND TRAINING	MINISTRY OF AGRICULTURE	OTHER AGENCIES
1. CENTRAL					
A. MINISTRIES & AGENCIES	MINISTRY OF PLANNING & FINANCE, ECONOMICS	MINISTRY OF DEVELOPMENT, HOUSING & LAND RECLAMATION (M.C.-D.P.P., NEW URBAN COMMUNITY AUTHORITY, & WATER & SEWER AGENCIES); MINISTRIES OF ELECTRICITY, TRANSPORT, COMMUNICATIONS & MARITIME TRANSPORT; M.E.A.T. AND EDUCATION	MINISTRY OF INDUSTRY	MINISTRY OF EMPLOYMENT AND TRAINING	
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Integrate national plans into comprehensive national plans - Allocate investment funds and resources to local government units - Prepare guidelines and review draft final budgets for government units - Establish transfer policy. 	<ul style="list-style-type: none"> - Develop all policy matters - Regulate any public sector companies (including financing) - Make major industrial location decisions. 	<ul style="list-style-type: none"> - Apply Civil Service Law i. training ii. job classification iii. organization and methods iv. other provisions of Civil Service Law. 	<ul style="list-style-type: none"> - Recruit & place pool of college graduates and returning workers into public services - Develop vocational training programs. 	<ul style="list-style-type: none"> - Establish policy guidelines concerning use of agricultural land - Grant final approval for subdivision permits.
2. GOVERNORATE					
A. DEPARTMENTS & AGENCIES	ECONOMIC PLANNING AND FINANCE OFFICE	GOVERNORATE ENGINEERING & UTILITIES AND GOVERNORATE LEVEL INSTITUTIONAL DEPARTMENTS	NO SPECIFIC DEPARTMENT ASSISTANCE TO MINISTER FROM ENGINEERING & UTILITIES AND ECONOMIC PLANNING & FINANCE OFFICE	GOVERNORATE DEPARTMENTS OF MINISTRY OF EMPLOYMENT AND TRAINING AND OF CENTRAL AGENCY FOR ORGANIZATION AND ADMINISTRATION	GOVERNORATE ENGINEERING & UTILITIES OFFICE AND GOVERNORATE DEPARTMENTS OF MINISTRIES OF AGRICULTURE AND DEVELOPMENT
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Collect local, central government and special fund loans - Prepare governorate draft economic plan (under MB 1, 2 and 4 budgets and MB 3 investment requests for towns & villages). 	<ul style="list-style-type: none"> - Plan, design and supervise construction of most infrastructure and public facility projects - Operate certain public facilities (water, electricity). - Prepare physical plans for villages and towns. 	<ul style="list-style-type: none"> - Select specific industrial sites including local council participation. 	<ul style="list-style-type: none"> - Administer central government policies and programs - Oversee local recruitment and placement - Operate vocational training programs. 	<ul style="list-style-type: none"> - Review requests for building & subdivision approvals on agricultural land and use of topsoil for brick making (Joint committee of representatives from Governorate departments of agriculture, housing and irrigation) issues building permits for buildings costing more than L.E. 10,000 or greater than 125 sq. m.
3. CITY COUNCIL					
A. DEPARTMENTS	FINANCE OFFICE	LOCAL COUNCIL ENGINEERING AND UTILITIES OFFICE		LOCAL COUNCIL ENGINEERING & UTILITIES OFFICE	
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Develop draft budgets for MBs 1 and 2. 	<ul style="list-style-type: none"> - Operate and maintain water sewerage works - Maintain government buildings, local roads, parks and gardens. 		<ul style="list-style-type: none"> - Issue building permits for buildings costing less than L.E. 10,000; - Enforce building code and issue penalty violations - License cinemas, restaurants and other forms of entertainment. 	

Hamadi, some needed structural changes have been introduced in Tanta. The purpose of the present section is to identify how the functions of existing offices might be strengthened, modified or expanded in order to carry out the recommended NUPS strategy. Major areas focussed on include the following:

1. While master planning has been undertaken for the city of Tanta (1958 with a 1970 update) in the past, the working relationships between the Governorate Engineering and Utilities Office (essentially the Governorate physical unit) and the City Council Engineering Office are too limited to effectively gain control of the haphazard physical growth occurring on agricultural land on Tanta's periphery and surrounding rural hinterland.
2. The Delta Regional Planning Authority, in conjunction with the Governorate Economic Planning Office, has little influence on the budgeting process for major capital investments (such as infrastructure and industry) to be sited in Tanta or Gharbia Governorate.
3. The Ministry of Agriculture's Governorate department and the Tanta City Council's engineering and utilities office have a poor record in the enforcement of laws which prohibit the illegal subdivision and development of agricultural land.

The following sections discuss the existing situation with respect to the previously mentioned problem areas. The Illustrative Project's final section recommends how these problems might be ameliorated.

B. Physical Planning Framework for Tanta and Surrounding Hinterland

While positive institutional changes have been made in the area of physical planning over the past several years, physical development continues to occur in Tanta and its surrounding hinterland in an unplanned and haphazard manner. A master plan was done for the city in 1958 and updated in 1970, but there are no signs that the plan is presently operational. Maps of the city and surrounding villages seen by the NUPS Team were, with a few exceptions, out-of-date. In addition, while a certain amount of new development undoubtedly must take place on agricultural land, the siting of new public facilities (including industry and housing) has been done on an ad hoc basis without any relationship to an overall development strategy for the city. As mentioned previously, severe and uncontrolled growth pressures are also prevalent in specific areas outside of existing (1942) city boundaries.

Until recently, there was no local institutional capacity to confront these existing growth management problems.

Within the past several years, the central government has authorized two offices within the Gharbia Governorate to undertake physical planning and design activities. These offices are the Ministry of Development's department within the Governorate and a separate Utilities and Engineering Office which provides a range of engineering and planning services to the Governor's office. These two offices presently work in close coordination. The Tanta City Council Engineering Office does not have sufficient capacity to undertake either planning or design functions and is mainly involved in the supervision of infrastructure and other public facilities and the operation and maintenance of existing infrastructure networks.

1. Utilities and Engineering Office

It must be noted that physical planning at the governorate level in Gharbia is in its incipient stage. This is a problem, and at the same time, its beginning represents potential for the management of Tanta's future growth. It is only within the last two years that the Engineering Office has been authorized to undertake physical planning activities. While it has been building up staff -- professional staff presently numbers 10 engineers with planning experience -- it has proceeded cautiously. It coordinates its work with the Ministry of Development's department, but reports directly to the Governor. It is presently undertaking the two previously described physical planning projects, one outside the city's boundaries and one within. In addition to the office's own staff, it borrows female social workers from the Ministry of Social Affairs, when field surveys are required. Assistance is also obtained on economic issues from the Governorate's Economic Planning Office. It also provides engineering services to the mayor's office in the form of monitoring local council physical needs and problems.

The glaring deficiency of the Engineering Office's present mandate is that it has not yet been authorized to tackle, alone or with GOPP assistance, general planning for the city of Tanta itself.

Presently, the Engineering Office's main planning responsibility involves physical planning for the Governorate's many small villages. The office has already completed a physical plan for the village of Mit Kibeish-El Bahariya. Not coincidentally, this village's strategic location at the intersection of the

Cairo-Alexandria highway and the Tanta-Zefta highway, has made it a prime candidate for development. Its location outside of the city boundaries on agricultural land has not deterred past local decisions from siting projects in this area. The Tanta Flax and Oil Company dates from the early 1960's and a new prefabricated housing factory has recently entered production. A multi-storey cooperative housing project is also in the design stage. The Office's analysis and mapping of the existing situation appears to be of a high quality, and the proposed development strategy, if the area is to be developed, is reasonable. The problem arises from the fact that the village, located so close to Tanta, can not be planned in isolation. The other major planning project presently undertaken by the Engineering Office involves the previously described redevelopment scheme for a portion of the city's old central core.

On balance, however, even if the Governorate Engineering Office were also to develop physical plans for all the rapidly growing villages surrounding Tanta, and specific projects within the city's boundaries, this piecemeal exercise would not get at the heart of the problem; that Tanta would still continue to grow in an unplanned and haphazard manner. The problem is obviously a difficult one, and involves more than simply building up the Engineering Office's capacity to undertake a comprehensive planning assignment. Problems relating to jurisdictional areas of responsibility also exist between the Governorate and city council levels with respect to who will undertake this planning. The city council has no planning capacity and should not be expected to shoulder this burden. The Governor will have to resolve this issue. In the meantime, valuable time is being lost, poor planning decisions are being made, and Tanta continues to grow in an unplanned way.

2. Ministry of Development's Governorate Department

The Ministry of Development's Department within the Gharbia Governorate functions in a similar manner to corresponding offices in other governorates. It has major responsibility for overseeing the implementation of the construction of all government buildings, public housing, infrastructure, schools, hospitals, etc. constructed in the Governorate. In the Governorate's larger cities, this office monitors construction through the local city council engineering offices. It serves a coordinative function for all activities of the city council engineering offices found in the Governorate. In addition, it has the responsibility for approving all building permits for structures of greater than 125 square meters or L.E. 10,000.

In comparison with the Ministry's Department in Qena and other Upper Egypt governorates, Gharbia's Ministry Department has gradually taken on the responsibility for the planning and design of all government buildings, public housing and minor infrastructure works. In addition to its professional staff of over 50 architects and engineers, it will employ, on occasion, local consulting firms for specialized design requirements.

C. Economic Planning and Budgeting

The main purpose of the present section is to examine the economic planning and budgeting process for capital investment within the Delta Regional Planning Authority and the Gharbia Governorate Economic Planning Office. For a more general description of how the overall budgetary process for salaries and wages, current expenditures and capital transfers (Babs 1, 2 and 4) functions at the governorate level, refer to the section in the Qena-Naga Hamadi Illustrative Development Project report on "Economic Planning, Budgeting and Taxation". In order to give the reader an indication of the amount of locally raised revenues potentially available for development projects, the present section also briefly reviews the main conclusions with respect to expenditures and revenues from the 1978 and 1979 Gharbia Governorate budget. A brief description of the Delta Regional Planning Authority's functions and responsibilities is also provided.

1. Revenues

As stipulated by Local Government law, Gharbia Governorate has three sources of budget revenue: (1) locally collected revenues including revenues from special funds; (2) the Governorate's share of joint revenues which are collected nationally, but counted as local revenue; and (3) central government grants-in-aid or subsidies. As in the case of the other Delta governorates, Gharbia derives little of its total budget from locally raised revenues. Locally raised revenues totalled L.E. 6.7 and L.E. 5.8 million, respectively, in 1978 and 1979. What is surprising, based on Gharbia's population and industrial base, is that these sums are less than 2.5 times the revenues collected in the Qena Governorate over the same two years. Including all local revenue as presently calculated by the Ministry of Finance, Gharbia was able to raise only 17.2 and 12.6 percent of total budgetted expenditures for 1978 and 1979 (see Table 16). It also raises none of its salaries and current expenditures, (BABS 1 and 2). In a brief discussion with Governorate

TABLE 16

GHARBIA GOVERNORATE BUDGET REVENUES - 1978 AND 1979

REVENUE SOURCE	1978		1979	
	AMOUNT (000's)		AMOUNT (000's)	
<u>Raised Locally</u>				
Land Tax	1,150	2.9	1,165	2.5
Building Tax	170	0.4	200	0.4
Entertainment Tax	75	0.2	80	0.2
Vehicle Licences	800	2.1	949	2.1
Joint Revenues *	250	0.6	318	0.7
Utilities Administered by Governorate	2,211	5.7	503	1.1
Other Local Fees and Taxes	541	1.4	600	1.3
Quarries	3	0.0	3	0.0
General Revenues	247	0.6	351	0.8
Other Local Revenues	284	0.7	326	0.7
SUBTOTAL	5,731	14.7	4,495	9.8
Local Share of Joint Revenues	979	2.5	1,287	2.8
SUBTOTAL LOCAL REVENUE	6,710	17.2	5,782	12.6
<u>Government Subsidies</u>				
Current	28,229	72.4	36,737	80.3
Auction of used property	--	0.0	--	0.0
Sale of lands and Buildings	15	0.0	--	0.0
Other Finance Sources	1,407	3.6	--	0.0
Investment	245	0.6	374	0.8
Share of Loans from Foreign Governments	2,393	6.1	2,882	6.3
SUBTOTAL	32,289	82.8	39,993	87.4
TOTAL BUDGET REVENUES	38,999	100.0	45,775	100.0

* Joint revenues refer to taxes on business profits and custom duties, and income from stocks, bonds and similar wealth.

SOURCE: Secretariat of Local Government

Finance Department officials, it was estimated that Gharbia is collecting on the average L.E. 1 million per year through special fund revenues. These special funds are derived from several sources: (1) 2 percent tax on rental value of buildings to be used for road maintenance; (2) 10 p.t. tax on each kantar of cotton produced; (3) 1 p.t. on all water and electrical receipts; and (4) a 15 percent levy on Governorate public sector industry after-tax profits.

2. Expenditures

Expenditures for Gharbia Governorate for 1978 and 1979 are presented in Table 17. Total expenditures for the two years equal L.E. 29.0 and L.E. 45.8 million, respectively. BAB 3 capital investment makes up a small percentage of this total. Budgetted capital investment at the Governorate level was L.E. 3.9 and L.E. 3.1 million for the two years. These sums represent only 10.0 and 6.7 percent of total budget expenditures. As is common in other governorates, the largest expenditure item is for salaries and wages (EAB 1). This budget item equals 74.0 and 80.7 percent of total expenditures for the two years. Governorate Headquarters and the Education Department received over 70 percent of total budget expenditures, and over 85 percent of capital investment for the two-year period.

Certain investment items do not appear in the Governorate budget. Major infrastructure and industrial investments appear in the respective ministries' budgets in Cairo. All told, it was estimated by Gharbia Finance officials that capital investment in the Governorate totals on the order of L.E. 10 million per year or roughly 2.5 times the investment funds budgetted at Governorate level.

With the previous sections serving as background, the following sections examine the economic planning and budgeting process prevailing in Gharbia and the Delta Regional Planning Authority.

A very positive first step has been taken in decentralizing certain economic planning and budgeting responsibilities to the local level in Gharbia Governorate. Beginning in 1979, the Delta Regional Planning Authority with its head office in Tanta has begun to coordinate the activities of the Governorate Economic Planning Offices. Lamentably, the Delta Regional Planning Authority only covers the Governorates of Gharbia, Menoufia, Dakahlia, Kafr El Sheikh and Damietta.7/ Working through the Governorate Planning Offices which in turn are in direct contact with the

TABLE 17

GHAMBIA GOVERNORATE EXPENDITURE - 1978 & 1979

ITEM	SAB I. SALARIES & WAGES				SAB II. CURRENT EXPENDITURES				SAB III. INVESTMENTS				SAB IV. CAPITAL TRANSFERS				TOTAL			
	1978		1979		1978		1979		1978		1979		1978		1979		1978		1979	
DEPARTMENTS	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%	L.E. (000's)	%
Headquarters	5,292	18.3	7,808	21.1	3,296	54.2	2,176	38.9	2,228	57.0	2,674	86.8	150	100.0	176	100.0	10,966	28.1	12,834	28.0
Education	15,222	52.7	18,375	49.8	1,214	20.0	1,313	23.4	1,102	28.2	--	--	--	--	--	--	17,538	45.0	19,688	43.0
Health	4,238	14.7	5,543	15.0	1,300	21.4	1,812	32.4	441	11.3	277	9.0	--	--	--	--	5,979	15.3	7,632	16.7
Housing	592	2.1	630	1.7	61	1.0	62	1.1	--	--	--	--	--	--	--	--	653	1.7	692	1.5
Social Affairs	560	2.0	717	1.9	125	2.1	140	2.5	138	3.5	52	1.7	--	--	--	--	843	2.1	909	2.0
Supply & Internal Trade	265	0.9	484	1.3	6	0.1	7	0.1	--	--	--	--	--	--	--	--	271	0.7	491	1.1
Agriculture	2,453	8.5	3,085	8.4	70	1.1	82	1.5	--	--	--	--	--	--	--	--	2,523	6.5	3,167	6.9
Manpower	218	0.8	277	0.8	7	0.1	8	0.1	--	--	77	2.5	--	--	--	--	225	0.6	362	0.8
TOTAL	28,848	100.0	36,919	100.0	6,079	100.0	5,688	100.0	3,909	100.0	3,080	100.0	150	100.0	176	100.0	38,998	100.0	45,775	100.0

Columns might not add up due to rounding

SOURCE: Secretariat of Local Government

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local councils, the Under-Secretary of the Planning Authority discusses and assembles information on the needs and priorities of the various local government units in his region. Possibly based on the high quality of the present Under-Secretary, the system, albeit of limited scope, is apparently functioning quite well, with information flowing up and down the ladder from the Regional Authority to the local councils. The Regional Authority's eight professionals (mainly business majors and economists) undertake studies to determine the region's or a specific local council's needs. Projects would then be designed based on this analysis. It also reviews and appraises projects submitted for budget approval. The Regional Authority often uses specialists from Tanta University to aid in the design and evaluation of projects. Tanta University was cited as a main source of assistance on Food Security programs. The Authority has also used the Sadat Council training facilities in Tanta to organize training sessions for governorate planning office professionals and local council members. The training programs have included courses on basic planning, needs surveys, the planning process, statistics and project appraisal.

Based on an estimated capital investment budget for each participating governorate, the Regional Authority, in close coordination with the individual governorate planning offices, prepares a list of projects for the region's various local councils. The final draft list of projects makes up the draft annual capital investment budget which is presented to the People's Assembly. Proposed changes in the draft budgets are carried out on the basis of the Regional Authority's judgement and on direct discussions with the interested local council.

It is a positive sign that the economic planning and budgeting process has begun to reflect local needs and priorities in Gharbia.^{8/} It must be mentioned, however, that this process is in its very early stages. The Under-Secretary readily admits that he has control over, or formal input into, a limited number of budgetary items. The Regional Authority is responsible for a portion of each sector's total budget for Gharbia and the other governorates:

- a. Agriculture: food security
- b. Industry: slaughterhouses, ice and brick making
- c. Electricity: utilities administered by governorate

- d. Transport: local road and bridge maintenance and repair
- e. Public Service: security, fire protection, youth clubs, street cleaning and traffic control
- f. Housing: public housing funds generated locally through the Economic Housing Fund

A review of this list shows that major investment decisions are still made in Cairo, outside the purview of the Regional Authority. Types of investment decisions presently not affected by the Regional Authority include all major infrastructure works - water, sewerage, electricity, primary roads, etc., and the decision on whether an industry should come into the region or not. The Regional Authority is consulted informally on many of these decisions, but is presently not a participant in the formal review process.

Furthermore, while the Regional Authority is apparently working quite closely with the Gharbia Economic Planning Office, it is not known how the Authority functions in the other governorates. It was pointed out that, at the present as the need arises, working sessions are held in the other governorates. However, no full-time staff is presently located outside of the headquarters office in Tanta.

As is stated in the introduction, the National Urban Policy Study Team strongly recommends that a Delta Growth Management Study be undertaken to develop growth management strategies for the entire Delta. During such a study, the role of the Delta Regional Development Authority should be evaluated in terms of its potential role in managing Delta growth. The potential role of the Development Authority in planning and programming of Delta growth is further discussed in Chapter V.D., in the National Urban Policy "Final Report" (Chapter V) and in the National Urban Policy Study "Urban Management Handbook" (Chapter II).

D. Enforcement of Prohibitions on the Subdivision and Development of Agricultural Land

Based on inspection trips of Tanta City's peripheral areas and agricultural hinterland and on discussions with governorate and local council officials, it is the impression of the NUP'S Team that the responsible local authorities have lost not only physical, but also administrative control of the conversion of agricultural land to urban uses. Available data tends to substantiate this conclusion both from the standpoint of obtaining approval to build on agri-

cultural land, as well as obtaining the required building permits themselves. The situation is especially critical on the rapidly urbanizing periphery of Tanta City and around several strategically located villages just outside the city's boundaries (Kafr Inam and Mit Hibeish-El Bahariya).9/

A brief review of the number of Ministry of Agriculture approvals for construction on agricultural land over the period 1979-1981 reveals that the number of approvals granted is miniscule in comparison with the development activity taking place. No formal subdivision permits have been issued within Tanta district over the last 20 years. Yet the subdivision of agricultural land continues on a massive, illegal scale. Based on the analysis of Appendix A, it is estimated that approximately 180 hectares of agricultural land solely within Tanta city limits has been urbanized between 1975-1981. The process appears to be that an owner of a piece of peripheral land, faced with the pressures and profitability of converting his land to urban uses, will begin to sell off small parcels while continuing to farm the rest. He will often construct a house for himself -- with or without Ministry approval, while leaving it up to purchasers of the small parcels to seek permission on their own. Most do not.

Over time, this process leads to the illegal and uncontrolled subdivision of large tracts of agricultural land. According to the Ministry of Agriculture figures cited in Table 18, only 80 approvals were given to individuals to construct housing on agricultural land. These approvals totalled almost 46 hectares or over 5,000 square meters of land per approval. In two of the reporting subareas within Tanta City (Tanta and Kahafa), the average parcel size for 32 approvals was almost 7,000 square meters. On the other hand, one of the fastest growing areas of the city, Kafr Seigar, shows only 2 approvals over the six-year period for 800 square meters. This low number of approvals and extremely high average parcel size, even within Tanta's city limits, tend to reinforce the conclusion that the original owner of the land (most likely registered with the Ministry of Justice's Land Registration Office) is obtaining approval to build a dwelling unit, but that the purchasers of the sold-off parcels are probably not registering the sale or obtaining Ministry approval to build their dwelling units.

Over the 1975-1981 period, 309 violations were issued by the Ministry of Agriculture in Tanta district. Interestingly enough, while the number is quite small, the average parcel size per violation was 500 square meters, while still quite large, much more accurately reflects actual plot size in the informal sector.

TABLE 18

PERMITS AND VIOLATIONS FOR BUILDING ON AGRICULTURAL LAND

TANTA GOUBAZ

CITY OR VILLAGE	1975		1976		1977		1978		1979		1980		1981		TOTAL 1975 - 1981																	
	PERMITS	VIOLATIONS	PERMITS	VIOLATIONS																												
	No.	No.	No.	No.																												
Tanta	0	0.0	N.A.	N.A.	0	0.00	N.A.	N.A.	3	0.64	0	0.00	1	0.18	2	0.64	0	0.25	0	0.00	25	4.24	0	0.41	21	1.00	13	9.09	35	5.75		
Shirbay	2	6.00	N.A.	N.A.	1	0.04	N.A.	N.A.	1	0.02	1	0.11	1	0.02	2	0.14	0	0.00	9	0.46	0	0.00	14	0.34	1	0.04	44	2.21	6	7.60	70	3.26
Sakha	1	0.11	N.A.	N.A.	1	0.11	N.A.	N.A.	5	7.00	2	0.02	3	1.59	0	0.00	3	1.71	5	0.58	4	0.53	19	0.94	2	0.09	34	0.94	19	12.04	60	2.28
Kahr Isma	1	0.00	N.A.	N.A.	0	0.00	N.A.	N.A.	0	0.00	2	0.35	2	0.30	10	0.20	1	0.02	4	0.36	0	0.00	0	0.00	0	0.00	6	0.10	4	1.20	22	1.01
Kahr Saiger	0	0.00	N.A.	N.A.	1	0.04	N.A.	N.A.	1	0.04	0	0.00	0	0.00	3	1.17	0	0.00	0	0.00	0	0.00	6	0.11	0	0.00	0	0.00	2	0.08	9	1.28
Shara El Hada	1	0.05	N.A.	N.A.	2	0.07	N.A.	N.A.	9	0.42	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	0.13	2	0.07	9	3.53	17	0.26	24	4.20	19	0.33
Kahelaf Marhan	0	0.00	N.A.	N.A.	1	1.55	N.A.	N.A.	2	0.17	3	0.04	1	0.05	0	0.00	0	0.00	0	0.00	0	0.00	12	0.26	0	0.00	18	0.39	4	1.77	35	0.69
El Sharfa	0	0.00	N.A.	N.A.	1	0.04	N.A.	N.A.	1	0.05	0	0.00	0	0.00	0	0.00	11	0.19	1	0.06	18	0.39	0	0.00	3	0.07	3	0.15	32	0.65		
Miy Hizabeh	1	0.07	N.A.	N.A.	1	0.06	N.A.	N.A.	0	0.00	0	0.00	0	0.00	1	0.60	2	0.03	2	0.39	2	0.03	0	0.00	5	0.11	5	9.12	9	0.17		
El Bahariya																																
TOTAL	6	3.79	N.A.	N.A.	0	2.71	N.A.	N.A.	22	9.24	0	0.52	7	1.96	16	1.69	7	10.97	30	1.77	10	9.11	90	6.28	20	4.07	148	5.06	80	45.05	309	15.42

SOURCE: Ministry of Agriculture, Sharbia Goubarate

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The picture with respect to obtaining a building permit for residential construction on agricultural land which has been legally or illegally subdivided is not much brighter. According to the Agricultural Law and stated Tanta City Council Procedures, proof must be furnished from the Ministry of Agriculture that a change in land use has been approved, before a building permit can be issued. The practice apparently is not observed in all cases. Between 1976 and 1980 (the period over which the City Council has supplied information on permits issued), the Ministry of Agriculture has granted 54 approvals for the use of agricultural land for residential purposes. Over the same period, the Tanta City Council Engineering Department issued 1,623 building permits. Even assuming that a certain percentage of these permits were not issued for construction on agricultural land, still leaves a large residual of construction taking place without formal Agricultural Ministry approval. Furthermore, an examination of building permits indicates that a majority of residential construction is taking place illegally without a building permit.

Table 19 gives a quantitative estimate of the amount of informal construction (based on building without a permit) which has occurred in Tanta between 1976 and 1980. Projections of 1976 Census data on number of residential buildings and number of dwelling units were compared with the number of residential permits issued and the number of public housing units constructed. Subtracting the sum of residential permits plus public housing units from the estimated total number of dwelling units constructed, results in an estimate of almost 70 percent of all units being constructed illegally. Furthermore, if the number of units constructed with building permits but without Ministry of Agriculture approval are included, the percentage of informal building in Tanta would be much higher.

Discussions with City Council officials, concerning building permit requirements and costs, revealed why there is such a large percentage of illegal residential building activity. Permit applicants must comply with Law No. 106 of 1976 as amended by Law No. 136 of 1981. All applicants must submit three copies of all working drawings which, in turn, must be certified by a registered architect. A certified engineer must also supervise construction costing over L.E. 5,000. For luxury housing defined as greater than 125 square meters or L.E. 10,000 an additional set of requirements is applied.

Fees for granting building permits are limited by law to L.E. 200. In Tanta, according to discussions with local officials, the fee structure is based on a certain percentage of total estimated construction cost. For example,

TABLE 19
ESTIMATE ILLEGAL BUILDING IN TANTA CITY

1977 - 1980

YEAR	NUMBER OF RESIDENTIAL BUILDINGS <u>1/</u>	NUMBER OF DWELLING UNITS <u>2/</u>	CHANGE IN NUMBER OF DWELLING UNITS	NUMBER OF RESIDENTIAL PERMITS <u>3/</u>	NUMBER OF CORRESPONDING DWELLING UNITS <u>2/</u>	NUMBER OF PUBLIC HOUSING UNITS BUILT <u>4/</u>	NUMBER OF ILLEGAL DWELLING UNITS
1976	25,585	62,556					
1977	27,095	66,383	3,827	294	720	N.A.	3,107
1978	28,693	70,298	3,915	534	1,308	320	2,287
1979	30,386	74,446	4,148	307	752	150	3,246
1980	32,179	78,839	4,393	527	1,291	560	2,542
TOTAL			16,283	1,662	4,071	1,030	11,182

SOURCE: WUPS Analysis

- 1/ 1976 Census figures were projected at a rate proportional to the ratio between population growth over the 1966-1976 period and that projected to 1980 times the percentage increase in the number of residential buildings between 1966-1976 (i.e. 5.9 percent versus 4.7 percent for the period 1966-1976).
- 2/ 1976 Census of 2.45 dwelling units per residential building for Tanta City.
- 3/ Tanta City Council Engineering Department, 1981.
- 4/ Gharbia Governorate, Ministry of Development Department, 1981.

for a unit costing greater than L.E. 5,000, the following three percentages are collected: (1) 10 percent of total estimated cost for government housing bonds; (2) 1 percent for insurance (destination unknown); and, (3) 5 percent for the insurance for the unit's workers. In summary, for units costing greater than L.E. 5,000, the fee in percent of total estimated construction cost equals 16 percent. For a dwelling unit costing L.E. 5,000, the fee equals approximately L.E. 800, not an insignificant sum. Finally, City Council officials revealed that the current permit fee structure presently exceeds the fines for building violations.

VI. RECOMMENDATIONS: NUPS ILLUSTRATIVE DEVELOPMENT STRATEGY

Tanta and its region were selected as a means of illustrating the site-specific implications of operating within the preferred NUPS spatial framework. The following recommendations, therefore, emphasize this site-specific bias. However, Tanta's specific role within an overall Delta Management strategy must also be taken into consideration. The NUPS strategy envisages that regional service center functions for the Delta will be consolidated in Tanta, and one or two other major urban centers. Consolidating these services into two or three urban areas will tend to reduce overall expenditures on infrastructure and conserve arable land. Furthermore, given the availability of non-arable land for industrial sites in Cairo, Alexandria and Suez regions, the major metropolitan areas are an essential element of a growth management strategy for the Delta.

A. Industrial Development

The basic issue of Tanta's industrial growth prospects is how to provide a sufficient number of new jobs to meet population projections to the year 2000 and simultaneously minimize loss of arable land (See the discussion in the Introduction). The physical nature of the city imposes a constraint on industrial growth or expansion and highlights the necessity to adopt an industrial development strategy which limits development in agricultural areas to those services and industries which must necessarily be located in Tanta. New industries to be located in Tanta should satisfy most of the following qualifying criteria (1) be labor-intensive; (2) possess strong linkages with the agricultural and service sectors; (3) have relatively low import content and high export potential; (4) use of local raw materials; and, (5) have a low land requirement per worker.

Based on these criteria potential, new firms in industries to be sited in Tanta can be classified under two groups:

desirable and undesirable. It should be stressed that industries listed under the undesirable category are mostly land consuming and would serve a national market. These undesirable industries would probably be better located in other areas, mainly outside the Delta region.

<u>DESIRABLE INDUSTRIES</u> *	<u>QUALIFYING CRITERIA</u> *	<u>UNDESIRABLE INDUSTRIES</u>
Food Processing	2,3,4,5	Construction materials
Textiles	1,2,3 partially, 4,5	Basic iron and steel
Ready Made Clothes	1,2,3 partially, 4,5	Transport equipment
		Electrical equipment and machinery
		Chemicals and rubber **

* A more complete discussion of desirable industries for location in the Delta is presented in Chapter IV of the National Urban Policy Study Draft Final Report.

** Some expansion of fertilizer plants already located in the Mansoura area may be desirable. Other chemical and rubber industries should be located outside the Delta.

Food processing and textiles are Tanta's traditional industries. They possess strong linkages with the agricultural sector and have low import content and high export potential. Short to medium term actions should continue to strengthen these industries and improve their efficiency through new production techniques and skill training.

Light metallic industries could be introduced at a later stage but should be limited to the manufacture of light agricultural machinery and hand tools and spare parts for the textile industries.

The success of any industrial development policy for Tanta requires that local authorities are able to provide attractive locations for new industries (See Physical Recommendations Section). The Study Team realizes the difficulty in locating new sites for industries growth. It is recommended that new sites be located both in the inner city and in selected peripheral areas. However, conversion of arable land needs to have strong justification whenever

it is authorized. Furthermore, the efficient utilization of already existing and fenced warehouses for the open storage of grain and cotton should be encouraged. More compact storage facilities would release scarce peripheral land for industrial or other uses. It is expected that additional jobs will be generated, also, in farm-related services (repairs, parts supplies, etc.).

B. Physical Development Principles

Although the National Urban Policy Study strategy for the Delta is to reduce population growth below trend growth rates, and for that matter below expected national average urban population growth rates, further growth in Delta cities is still expected. Therefore, the Tanta Illustrative Development Project aims at providing an indicative physical development strategy for the city of Tanta and its surrounding hinterland to order that growth beyond the year 2000. This strategy which is detailed here for Tanta is indicative of the types of strategies which should be pursued for other Delta settlements to manage their growth to the end of the century. The underlying principles of the strategy are:

1. only where absolutely necessary should arable land be used for expansion of the city's built-up area;
2. the use of arable land, including the provision of urban services at appropriate density levels, should be done in the most efficient way possible; and
3. urban growth and consolidation should be governed by realistic land use planning.

The major conclusions reached as a result of the analysis of existing physical development in Tanta include:

1. physical development both within and outside existing city boundaries is occurring in an uncontrolled and unplanned manner on arable land;
2. a significant amount of the demand for well located peripheral sites on arable land comes from public and government sector users;
3. Tanta would certainly not reach the NUP's year 2000 projected populations without major encroachment on agricultural land outside the city's boundary (See the analysis contained in Appendix A); and
4. several small, strategically located villages in close proximity to Tanta's major transportation corridors are rapidly expanding their built-up areas on agricultural land.

C. Recommended Physical Strategy

1. Tanta's Existing City Boundaries should be Extended to Include Sufficient Land to Accommodate projected 2000 Populations and Specific Rapidly Growing Villages Located in Close Proximity to Tanta's Present Boundary.

The loss of Tanta's remaining agricultural land, resulting from accommodating its projected year 2000 population, is analyzed in Appendix A. Between 1972 and 1978, Landsat photo analysis indicates that Tanta's built-up area increased by about 3.7 percent annually. For the six-year period, growth of the built-up area averaged over 30 hectares annually. If present trends continue, the remaining 490 hectares of agricultural land within Tanta's existing boundaries could be urbanized before the end of the present decade. More likely what will occur under current practices is that peripheral growth will continue at a differential rate inside city boundaries while major corridor development outward from the city boundaries will accelerate in the direction of the villages of Kafr Isma and Mit Wibeish-El Bahariya.

An extension of existing city boundaries, in addition to strengthening the administrative framework for ordering Tanta's growth (See following section on Administrative Recommendations), provides sufficient land area to efficiently plan for physical development to the year 2000. An extension of Tanta's present boundary implies a continued use of agricultural land for development purposes. However, if density controls as are discussed in Section V.D.4. are imposed, a total savings of 2,348 feddans of arable land could be realized, over the estimated 3,552 feddans of land which would be urbanized if current trends persist. (See Appendix A for details of these estimates).

Based on Tanta's role as a major Delta service center in the NUPS strategy (including a projected population range for the year 2000 of 525,000 to 575,000), this conclusion is most certainly unavoidable. However, the recommended boundary change, in conjunction with specific rational physical development directives, will provide for a more rational future growth of the Tanta region for the following reasons:

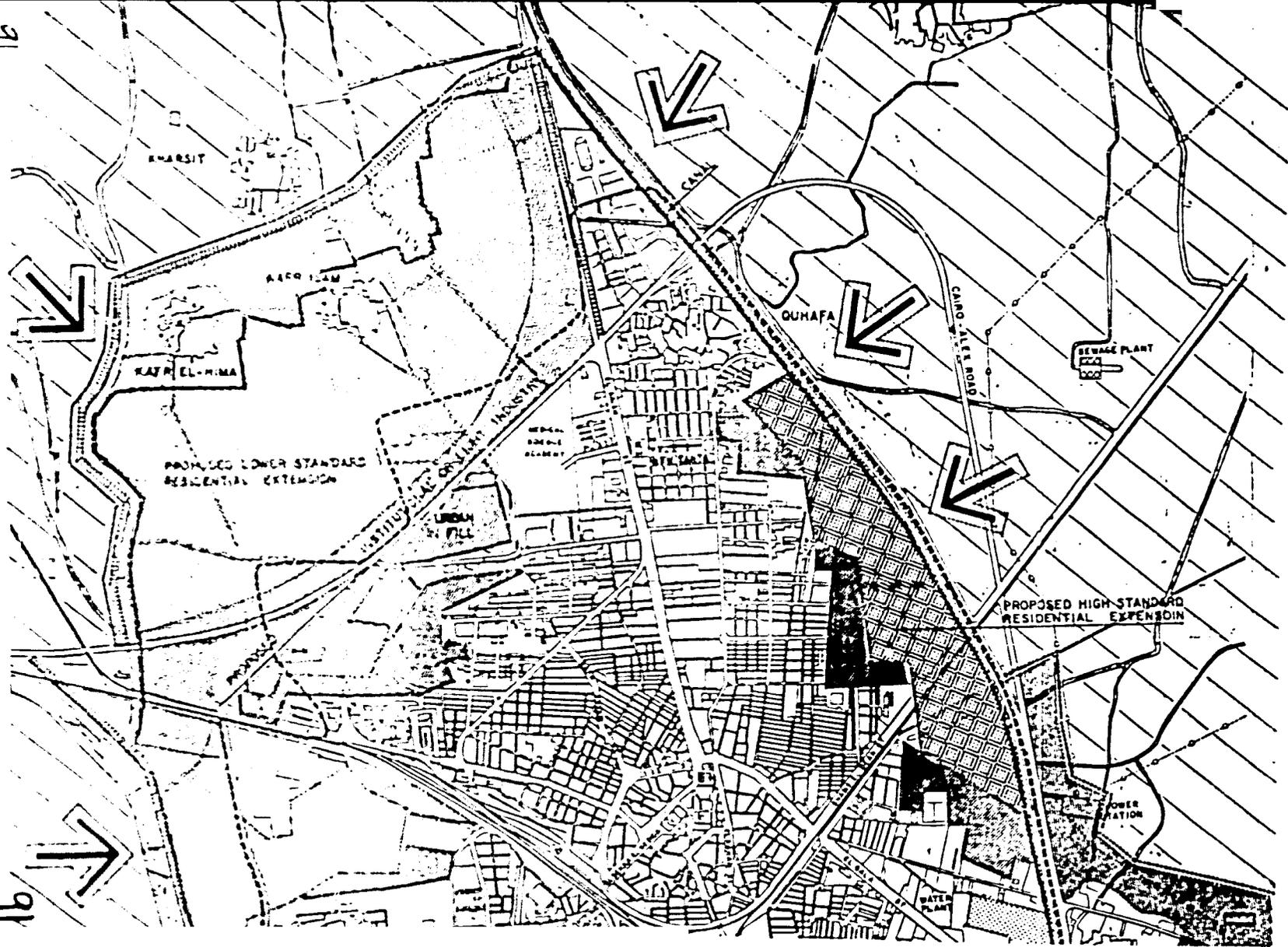
- a. Less agricultural land will be lost due to induced higher density development within the expanded planning area;
- b. Sufficient land area will be provided not only to accommodate Tanta's projected population to the

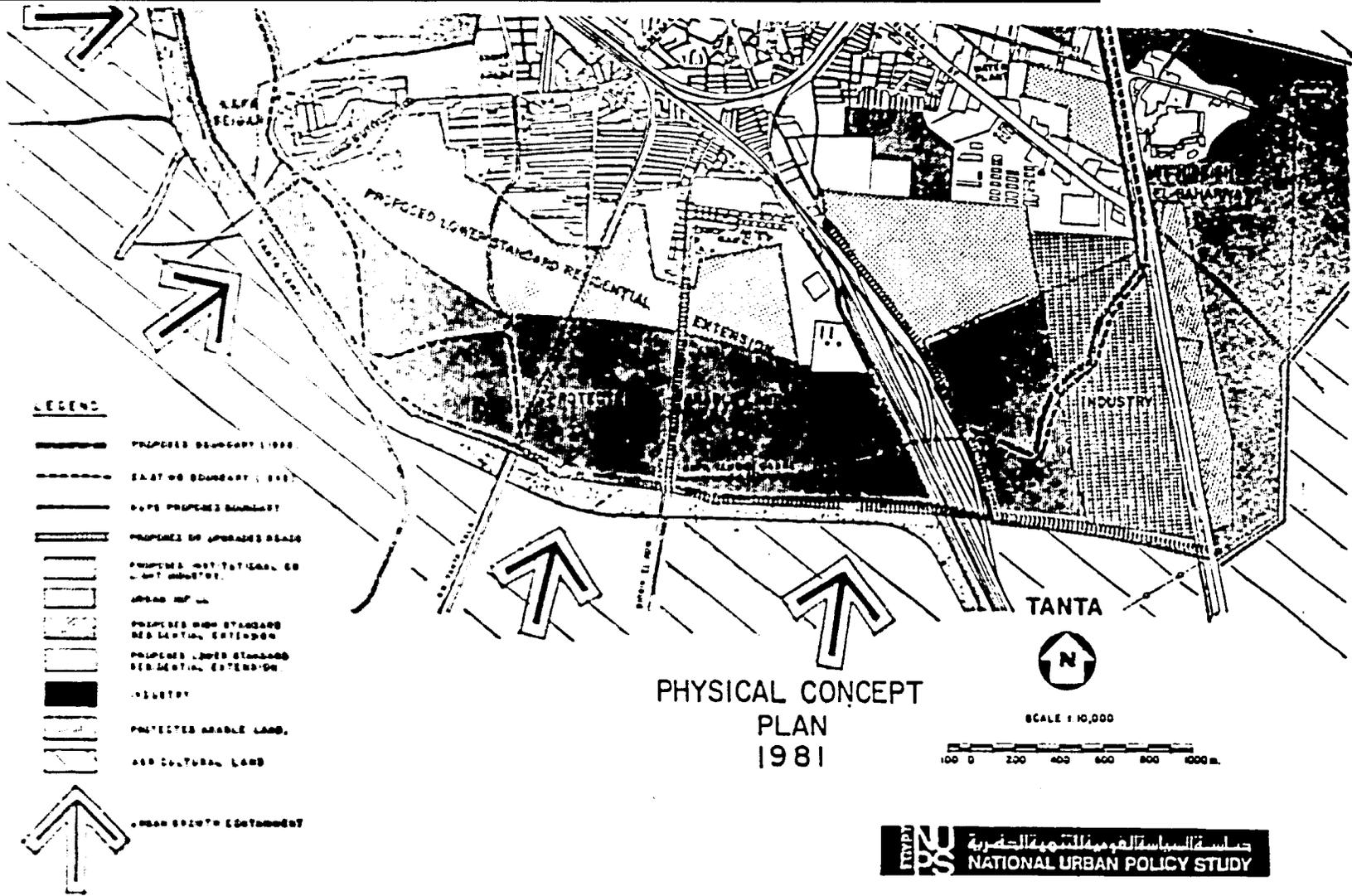
year 2000, but also to meet the demand for institutional and industrial uses;

- c. Allocation of scarce financial resources for public services will take place on a more efficient basis;
- d. The rapidly growing surrounding villages will be integrated within Tanta's built-up area in a planned manner; and
- e. A zone of protected arable land would be introduced into the urban cordon where urban development would not be permitted at least until after the year 2000.

Figure 3 includes the proposed boundary change. With two important exceptions, it reflects the boundary change that is presently being discussed at the Governorate level. The major differences are that the proposed NUPS boundary extension includes the villages of Kafr El Hima and Mit Hibeish-El Bahariya. These two villages are located along prime growth corridors for the city and are presently experiencing rapid growth. For these reasons they should be brought within the confines and control of the Tanta municipal boundaries.

The proposed boundary extension would increase the city's total area by almost 835 hectares, or roughly 57 percent. New protected agricultural land within the urban cordon would comprise 823 hectares or 36 percent of the total area within the new boundaries. This proposed boundary increase would provide an additional 394 to 507 hectares of land which could be developed for purely urban purposes (both residential and non-residential). It would also create bands of protected agricultural land within urban boundaries over which urban development would not be permitted during the 20 years. Generally, the areas in which new urban expansion is permitted are demarkated by existing physical barriers such as canals. However, due to the sporadic development which has occurred north of the built area as shown by the 1978 Landsat analysis and the villages of Kharsit, Kafr El Hima and Kafr Isam, this entire area has been allocated for urban development. If suggested density targets are achieved in new built area expansion, these additional areas would provide a reserve of urban extension land for post 2000 development. The portion of the area within the proposed boundaries in the Mit Hibeish-El Bahariya area not shown in Figure 9 can be found by extending the two boundaries in the north and southeast until they intersect.





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Throughout the NUPS work, we have defined gross densities as the population which results by dividing the total population within the urban cordon by the total area within the urban cordon. However, to provide a ring of protected arable land within the urban cordon, the 394 to 507 hectares of land required for built area expansion was estimated at minimum urban or built area densities (including all urban uses except for protected agricultural land) of 350 persons per hectare. When non-residential uses such as industrial development and core area commercial uses are subtracted, a gross residential density of 438 persons per hectare results.

2. Guidelines to Orient Tanta's Growth to the Year 2000 should be Provided in Order to Encourage Vertical Densification of Existing Informal Peripheral Areas as well as to Plan for New Urban Extensions. Densities which will make Efficient Use of Scarce Infrastructure Resources and Conserve Arable Land.

The planned growth of Tanta is underpinned to the implementation of two major development decisions: (1) the upgrading and extension of mostly existing roadway into a limited access highway which would connect the southern approach to the city from Cairo with the western entranceway from Alexandria; and (2) the opening for mainly residential development of the area located between the villages of Kafr El Hima and Kafr Isaa and the Cairo-Alexandria highway.

The proposed limited access highway is located in the southwestern quadrant of the city and parallels a major irrigation canal for much of its length. Approximately 1.5 kilometers of new roadway and a bridge over the Cairo-Alexandria railway would have to be constructed. The upgraded roadway would serve several purposes:

- a. The limited access nature of the proposed highway would tend to alleviate the bottlenecks at the city's main entranceways, as well as to remove through traffic from the presently congested portion of the Cairo-Alexandria highway which serves as the city's northwest boundary.
- b. In addition to reinforcing the southwesterly growth constraint qualities of the Tanta canal which it parallels, the upgraded roadway would provide access to a small section of land ideally suited for industrial development. This prime land is located between the proposed roadway, the Cairo-Alexandria highway and the existing industrial areas along El Gala Street.

- c. The limited access highway would tend to alleviate some of the growth pressure on the proposed reservations of arable land which abut the roadway.

The other key development instrument calls for the provision of a circulation network which would induce a preferred development pattern for the area to the northwest of the Cairo-Alexandria highway. This area would include the villages of Kafr El Hina and Kafr Isam. The very limited street network which presently exists is causing the area's rapid growth to occur in a haphazard way. The development strategy proposes the planned extension of the city, particularly lower income households, into this area. In order to accomplish this planned growth, a rational circulation network must be provided. The recommended primary road link would extend north along the west side of a small canal from the existing Cairo-Alexandria highway, serve the villages of Kafr El Hina, Kafr Isam and Kharait and then rejoin the existing Cairo-Alexandria road by running south along the eastern banks of the Batanuniya Canal. Secondary and tertiary streets would complete the network.

3. Specific Development Zones should be Identified in Order to Accommodate Tanta's Projected Land Requirements to the Year 2000 in a Planned and Orderly Manner.

Figure 9 indicates the proposed locations for development zones and arable land reservation. Broad categories have been defined at this stage for residential, industrial and institutional uses. Residential zones tend to fill in vacant areas in the existing perimeter of the built-up area. A zone earmarked for heavy industry is well located with respect to the existing concentration of industrial uses along El Gala Street. New institutional, light industrial and warehousing uses are provided for in the city's northwest quadrant along the Cairo-Alexandria highway. Residual land areas remaining after all development requirements have been taken into consideration will be reserved for agricultural purposes. Projected arable land is found along the southwestern and southeastern perimeter of the city. Its location lends itself to either residential or industrial uses in the 21st century if required.

The area surrounding the village of Mit Hiblah-El Bahariya is a special case. It is recommended that the village and its surrounding area be incorporated into the city for the purpose of including it within comprehensive planning. Based on the availability of land for residential and industrial purposes in other

parts of the city, development of the Mit Hibeish area should be discouraged over the planning period. For this reason, agricultural land included with the Mit Hibeish area to be integrated into Tanta City has been designated, and should remain, as protected arable land.

4. The Governorate's Redevelopment Project Should Address the Key Issues of Affordability and Landlord-Tenant Relations.

Downtown redevelopment is probably the most complicated development project which a government agency can undertake. Care must be taken during the planning and design stage to address all the major issues involved. A basis for doing so is provided by existing or proposed Egyptian laws:

- a. Law No. 136 of 1981 (Renting and Sale of Buildings and Relations between Landlord and Tenant);
- b. Law No. 14 of 1981 (Cooperative Housing Law);
- c. August 1981 Draft of Proposed Planning Law.

Three major issues are:

- a. The planning and design of the redevelopment project should provide for a range of housing, commercial and small-scale industrial uses which reflect existing housing and workplace conditions so that existing community ties can be maintained (non-conforming land uses should be moved however). These should be at costs which are compatible with what most households can afford to pay.
- b. The area's prime commercial and small-scale industrial location probably dooms to failure any attempt on the part of local officials to relocate any but the most obvious uses (i.e. stables, certain warehousing uses, etc.) outside of the redevelopment area. The relocation of households and commercial/industrial uses within the project area as demolition and reconstruction take place is much more feasible. First-stage development by the Governorate on land it already owns recognizes this fact. It is planned that occupants for the completed first-stage would come from the next phase, and so on. It is hoped that future stages of development can proceed in the same manner. Maintenance of the area's existing commercial/small-scale industrial base should be a priority of the redevelopment scheme.

- c. Redevelopment plans must take existing landlord-tenant relations into consideration.

The Governorate should presently be undertaking the following tasks in order to ensure the successful implementation of the project:

- a. Prepare a sufficiently detailed plan for the project area which gives prospective builders guidance in the following areas (Article 39 of Planning Law):
- Land use;
 - Building height and architectural features;
 - Plot size and dimensions;
 - Modifications to street or utility networks;
 - Historic preservation conditions regarding Sidi El Badawi Mosque.
- b. Organize actual landlords and tenants into building groups which would coincide, as much as possible, with the planned phasing of the project and would provide sufficient lead time for individual or business decisions.
- c. Encourage participation in the redevelopment scheme through attractive packaging and advertising. Expropriation should only be used as a last resort, but it should be employed where progress is threatened by a recalcitrant landowner. If elected by the landowner, compensation could take the form of an equivalent share of real estate in a completed building (Article 51 of Proposed Planning Law), see also section V.D.4. which further develops these concepts.
- d. Arrange financing if already not underway, for the project's first stage. The Proposed Planning Law (Article 42) would allow the Governorate to borrow from a bank or other financial institution. Approval for the borrowing must be obtained from the Tanta Popular Council.

Additional administrative proposals are given in Section D.4 for both implementing this project, and for applying vertical redevelopment concepts on a broader scale, both within Tanta and in other Delta settlements.

- e. Provide additional incentives for landlord participation by allowing a return which more closely approximates alternative investments. This could be realized by fixing annual rents on the basis of

* percentage of land and superstructure value equal to two points above the market borrowing rate at the time of transaction (Law No. 136 of 1981 presently establishes this rate at 7 percent).

5. In Order to Provide the Time Required to Refine and/or Modify the Recommended NUPS Development Strategy, an Immediate Moratorium should be Instituted on the Issuance of any Building Permit (Residential or Industrial) for Construction Outside of Tanta's Existing 1942 Boundary.

The NUPS Team believes that Tanta's future development should take place within a well-defined planning area that can accommodate expected growth. The NUPS strategy meets this criterion. In order to provide sufficient lead-time to prepare the development strategy, a moratorium on all development outside the city limits is recommended. This provision is aimed particularly at the development, both legal and illegal, presently occurring outside the northwest quadrant of the city beyond the Cairo-Alexandria highway and including the villages of Kafr El Hima and Isam and the village of Mit Hibeish-El Bahariya. The moratorium should have a limited duration, say one year, to permit time for strategy development; but sufficiently short to force strategic choices to be expeditiously made.

The functioning prefabricated housing factory and adjoining cooperative housing project in the village of Mit Hibeish-El Bahariya drew the special attention of the NUPS Team. It represents all that is wrong with present physical development in the Delta. This conclusion is based on several reasons:

- a. The factory and proposed housing project are being constructed on agricultural land without Ministry of Agriculture approval.
- b. It is located outside of the existing 1942 city boundary, and surprisingly enough, is also outside of the boundary extension proposed by the Governorate.
- c. While the site has obvious locational advantages, it would be better used for other than residential or heavy industrial purposes.

Management of the Delta's future growth eventually comes down to government taking a firm stand on the indiscriminate use of agricultural land. The line should be drawn in Mit Hibeish. Since the prefabricated housing factory has been constructed and is in

production, it would be counter-productive to halt production and dismantle the factory at this stage. Future developments of this type, however, should be severely restricted. The housing project is another matter. NUPS recommends, since construction has not yet begun, that development be stopped and that any building permits which have been issued should be rescinded. The 15-feddan housing project can and should be carried out within Tanta's city limits on land which has been reserved and developed for this purpose. It is the responsibility of the Governorate working with the City Council to make this land available. Excellent sites are available within three kilometers of the factory. Transportation of prefabricated components should not present many more problems than those which would have been encountered with transportation from the factory to the initially proposed site.

D. Administrative Recommendations

The Gharbia local government structure has only recently begun to undertake the functions required for successful implementation of the NUPS Preferred Strategy for Tanta. While major policy decisions originate, and should continue to be formulated, at the central level in Cairo, the Gharbia Governorate has begun to play an increasing role in the development of projects for physical infrastructure and public buildings. It has begun to take the lead in the physical planning of the small villages which surround Tanta. Furthermore, the Ministry of Planning's governorate office, working in close coordination with the Delta Regional Planning Authority, has initiated, albeit on a limited scale, planning and budgeting for certain sectoral capital investment projects to be sited in the Governorate. Middle and upper level professionals and managers are usually from the Delta with staffing problems not being nearly as severe as in the case with Upper Egypt. One major area of concern to the NUPS Team is the inability of the combined efforts of the Governorate and City Council to halt illegal development on agricultural land and effectively plan for the future growth of Tanta and its surrounding villages. Certainly limited local revenues remains a constant problem and a severe constraint to implementation of the NUPS strategy.

The major thrust of the administrative recommendations, therefore, focuses on strengthening specific Governorate functions presently in an embryonic stage, in addition, to concentrating and prioritizing Governorate and City Council efforts in the areas of prohibiting illegal use of arable land and illegal building. Improvements to the region's administrative structure should further the following principles:

1. Provide for a planned and orderly growth for Tanta through the efficient use of no more arable land than is needed and scarce financial resources for public infrastructure.
2. More fully integrate appropriate Governorate departments within the framework for decisions which will continue to be taken at the national level, but whose implementation has spatial and economic implications for the local level (see Table 15).
3. Reinforce city and village council participation in decisions being taken at the Governorate level regarding the planning and budgeting of small-scale development projects.

The following sections highlight what are believed to be the most critical administrative areas where intervention is necessary to implement a growth management strategy for Tanta to the year 2000. While in most areas, the problem issues identified are specific to the Tanta region, the NUIS team believes that the recommendations are sufficiently general to be applicable to the other urban areas in the Delta. Specific areas of recommendation include:

- strengthen and expand the existing Governorate physical planning capacity so that it can take on prime responsibility for growth management planning of Tanta and its surrounding hinterland;
 - include the Delta Regional Planning Authority and the appropriate Ministry of Planning governorate office as necessary participants in major infrastructure and/or industrial location decisions taken at the central government level;
 - facilitate and strengthen Governorate and City Council capacity to implement and coordinate a physical development strategy for Tanta to the year 2000; and
 - develop five administrative zones in which specific types of private sector development would be encouraged. Specific types of financial assistance would be provided in each zone to induce this development.
1. Strengthen and Expand Existing Governorate Physical Planning Capacity to Undertake Growth Management Planning for Tanta and its Hinterland.

The following steps should be taken in order to provide for the necessary management capacity to implement the recommended physical development strategy.

- a. Gharbia's Governor should immediately issue a mandate to the Governorate Planning Office (Engineering and Utilities Office) to take responsibility for all physical planning activities in Tanta and its surrounding hinterland. All future planning should be coordinated where possible, with the Tanta City Council officials, but final responsibility must rest with the Governorate office. In order to undertake this greatly expanded role, its present staff will have to be broadened and enlarged. While the Social Affairs Office and Tanta University can still be relied upon to play an important role in major survey work to be undertaken, the office itself must develop its own capacity to orient and direct this work. At least one or two urban sociologists/antropologists with experience in low income areas should be hired for this task. The same is true of economic capacity. The planning office should include at least one economist or financial analyst with solid economic-financial project appraisal experience. What is required is a multi-disciplinarian team with the technical capacity to address the wide range of issues involved in growth management for a major Delta city.

While the Planning Office is preparing to take on its new responsibilities, specific logistical activities can be undertaken concomitantly.

- b. A new set of aerial photos should be immediately flown for the city and its surrounding hinterland. The photos should preferably be of a scale of 1:5000. From these aerial photos, a complete up-to-date set of topographic maps should be prepared. Mapping should indicate major land uses, housing types and infrastructure networks. In order to structure city-wide planning on a more rational or homogeneous aerial basis, a breakdown of the city into planning districts might be considered. The sub-kism district, used by CAPMAS in its census work and adopted by the NUPS Team in its analysis of Appendix A, could serve as a model.
- c. Once the planning mandate for the city of Tanta has been issued, the Planning Office should begin to prepare its own physical development strategy for Tanta using as an indicative example the NUPS physical development strategy presented in the previous section. The GOPP should be consulted, and as a model and training vehicle for other Delta cities, should probably directly participate in the preparation of this document. The NUPS proposed

strategy should be reviewed and modified as deemed necessary. The preparation of the development strategy should be based on a rapid assessment of the existing situation and should not entail more than 3-4 months work. A full-blown master plan is not envisaged, nor necessary, at this stage. Master planning could be undertaken at a future date if necessary. What is required, in the short-run is an accurate as possible (given the time constraints) assessment of the physical growth situation, an estimate of future land requirements (residential, industrial, institutional, etc.), and a set of normative directives as to how future growth should occur. The result of this planning exercise, which can be refined or modified by more detailed, future investigation, should be a document including the corresponding mapping which would guide Tanta's physical growth to the year 2000. This document should be given legal status initially through a Governor's decree and later through the Physical Planning Law. The Planning Office, working through the Governor, would take the lead in steering the recommended city boundary change through the central government bureaucracy.

This procedure would be a means of implementing Articles 1 and 2 of the 1981 Physical Planning Law which call for the development of master plans for towns and villages. For most such urban settlements, a full master plan as it is traditionally conceived is probably not necessary. What is needed is a physical development strategy which identifies areas where growth is desirable and to be permitted. Once prepared, such a physical development strategy could have the legal status provided under the planning law, and could be published in official journals. Aerial photo mapping can also be used to update these physical development strategies every five years, as is required under Article 4.

One final major responsibility of the Planning Office, in conjunction with the enforcement capabilities of the Ministry of Agriculture and the City Council Engineering Office, will be to ensure compliance with the approved physical development guidelines. (See the last section on how enforcement can be facilitated).

2. Include the Delta Regional Planning Authority and the appropriate Ministry of Planning Governorate Offices as Necessary Participants in Major Infrastructure and Industrial Location Decisions Taken at the Central Government Level.

Previous sections have noted the limited portion of total capital budgeting that is actually taking place at the local government level. Among others, local government presently has budgetary responsibility for Food Security projects, governorate utilities and public housing schemes. It does not presently seem possible nor desirable, to decentralize major economic planning and budgeting functions directly to the local level. Decisions, in addition to the planning and design, regarding major infrastructure projects (such as water supply, sewerage, electricity and primary roads) and industrial location should continue to be made in Cairo. However, it is crucial to a coordinated growth management strategy for the Delta that representatives of the Delta Region Planning Authority (preferably an authority which would include all the Delta's governorates) and the appropriate governorates participate in the discussions leading up to this type of decision. Based on local needs and priorities, and working in close coordination with the Governorate physical and economic planning units, it would be the responsibility of the Regional Planning Authority to supply information to the central level concerning initial physical feasibility and economic justification, and specific advantages or disadvantages associated with proposed projects, programs or new industry for the Delta. Many project-oriented decisions which are presently being taken in Cairo without formal local consultation have direct and adverse effects on the consumption of arable land and present haphazard development of the Delta's main centers.

3. Facilitate and Strengthen Governorate and City Council Capacity to Implement and Coordinate a Physical Development Strategy for Tanta to the year 2000.

Implementation of many of the proposed components of a physical development strategy for Tanta (i.e., expanded city boundary, development zones, etc.) will require careful coordination between different local government agencies. The proposed development strategy assigns special uses to the city's remaining agricultural land. Such uses include lower- and higher-standard residential, heavy and light industrial, and institutional. A certain portion of remaining agricultural land is to continue in production serving as a reserve for future use. Compliance with the development zone planning

concept must be enforced through the coordinated actions of several local government agencies. Main responsibility for enforcing compliance will rest with the Governorate Planning Office working in conjunction with the local representatives of the Ministries of Development and Agriculture. The Tanta City Council Engineering Office and the Ministry of Industry in Cairo will also play important roles. Siting of all new public buildings and industry should obviously conform to the proposed plan.

Once the general physical development strategy for the city is completed, detailed planning of specific development zones can begin on a priority basis. For example, planned areas for extension of lower-standard residential development will certainly be of prime concern. Detailed planning for a zone designated residential should provide a circulation network which will encourage and facilitate development at higher densities than prevailing on Tanta's periphery. Installation of major infrastructure far in advance of site occupancy is not recommended on cost grounds. The proposed Physical Planning Law (Articles 65, 66) allows for such a possibility by exempting compliance with certain of the law's provisions (in this case, the upfront installation of public utilities). If development can be induced to occur according to a preconceived plan, the installation of public utilities can be phased to coincide with site development. By gaining development rights (see Sections D.4) infrastructure expansion can be phased once a sufficient number of permits have been granted in an area to warrant it. The process approximates the present functioning of the informal sector, but with the major difference that development occurs legally and results in an efficiently planned community with infrastructure additions when there is existing demand.

Subdivision approval should be given for only those areas which have been designated residential in the development strategy. It is possible that the Planning Office could work out an agreement with the Ministry of Agriculture's Governorate representative, whereby large tracts of agricultural land found within residential development zones, could secure subdivision approval without having to resort to the time-consuming process presently required. This procedure would obviate a major source of present illegal building, at the same time releasing enforcement staff to concentrate on other priority areas.

Building permits would continue to be issued by the Tanta City Council Engineering Office. However, under

the proposed development strategy the permits would be issued only in residential zones. In protected agricultural zones, farmers would be issued building permits for their sole dwelling unit. Building permits would not be issued in other development zones. Application for building permits should be encouraged by bringing the fee more into line with actual costs incurred in servicing the permit. Approval procedures which call for all drawings to be certified by a registered architect and all construction over L.E. 5,000 to be supervised by a professional engineer should be rescinded. These measures only discourage poor families from obtaining a building permit, and probably add little to the structural integrity of the constructed units.

In effect, what is accomplished by designating special residential development zones and by easing the requirements for obtaining subdivision and building approval is to allow the Governorate authorities the opportunity to focus their enforcement efforts on priority areas. Enforcement on priority areas would have to be jointly coordinated by the Planning Office, the Ministry of Agriculture and the City Council Engineering Office. Present staff should be able to handle this assignment since it will not be spread as thin as in the past. The proposed Physical Planning Law (Articles 68-73) provides for increased penalties in comparison to the existing law. The proposed law has the added advantage that these penalties cannot be suspended and can be collected through administrative measures, rather than court order. The Governor will have to apply the full weight of his office to speed up court proceedings where demolition of an illegal building is being sought. Further, enforcement of the Law should begin when construction first begins, at the foundation stage, rather than waiting for further development to occur.

4. Develop Special Multi-Use Zones to Encourage Efficient Land Use and Vertical Expansion.

Once official mapping of the existing and proposed urban areas is complete, special zones should be created in which specific types of building activity would be encouraged through a combination of financial incentives and development controls to discourage non-complying urban uses. However, unlike traditional zoning laws, which are linked to strict land use classifications, the general concept behind these zones is to encourage vertical redevelopment of existing built areas and efficient vertical, high density rather than horizontal development of new expansion areas.

Thus multi-use urban areas could be created in each zone as long as the different uses are compatible with each other and the general objectives of the zone. The five major zones which have been identified are:

- a. Redevelopment Area Zones (Zone I),
- b. Vertical Expansion Zones (Zone II),
- c. Stabilized Population Zones (Zone III),
- d. Built Area Expansion Zones (Zone IV), and
- e. Protected Arable Land Areas (Zone V).

In the first four zones, integrated programs combining financial incentives and development controls should be developed to link together public sector financial assistance with private sector development. In the fifth zone, where the objective is to protect arable land, strict enforcement of development controls is necessary. A description of the type of actions which should occur to implement the objectives of the four zones where development is desirable is shown in Figure 10.

Initially, the built area can be classified into these zones through aerial photo interpretation in which different building types can be identified both according to their general structural condition and storey height. Once this classification is performed, limited field surveys may be necessary also to identify special conditions or clarify uses which cannot be determined from aerial photos. Field surveys may also be necessary to identify structures within an area for which no action is necessary such as structures in good physical condition which already have adequate net residential densities. They will also be necessary to determine if a building is structurally sound enough to permit the addition of one or two more floors. As is indicated by Figure 10, these classifications are not viewed as fixed classifications of urban areas. As a zone improves, its classification changes. For example, once expansion has occurred in Zone II, structures in the zone would be reclassified according to the Zone III classification, and only routine maintenance of structures and infrastructure would be necessary.

Three sets of development controls are recommended to ensure that new urban expansion complies to objectives set for each zone. The first, which would apply to already built-up areas, would impose high building

PROPOSED ZONING FOR VERTICAL EXPANSION OF DELTA SETTLEMENTS

TYPE	ZONE I: VERTICAL REDEVELOPMENT OF REDEVELOPMENT ZONES	ZONE II: VERTICAL DEVELOPMENT OF VERTICAL EXPANSION ZONES	ZONE III: STABILIZED POPULATION ZONES	ZONE IV: BUILT AREA EXPANSION ZONES
DESCRIPTION	Existing area where structures are deteriorated or do not conform to appropriate urban uses	Existing area where structures are in good condition, but have only one or two floors and floor/area ratios are low.	Area where floor height and/or floor area ratio adequate, or infrastructure not adequate for higher densities.	Vacant areas, urban infill areas or urban expansion areas within boundaries designated for urbanization.
MAJOR ACTION TAKEN	Existing structures to be removed and area redeveloped at higher densities, multiple uses encouraged	Building owners encouraged to add one or two additional floors where foundations and infrastructure are adequate.	Maintenance of existing structures encouraged, or infrastructure capacity increased.	Owners of vacant land encouraged to develop at urban gross densities of 350 to 400 persons/hectare in planned developments.
PROGRAM COMPONENTS	<ol style="list-style-type: none"> 1. Compensation to be paid to existing tenants: <ol style="list-style-type: none"> a. Representing 1 year's rent at current rates, or, b. Present value of accommodation, and c. Tenants receive priority for similar accommodation in or near to existing location. 2. Compensation paid by local government from loans from central government. Loans repaid through increased building tax value. 3. Private owners encouraged to redevelop at higher densities (average gross urban density of 400 persons/hectare): <ol style="list-style-type: none"> a. If no action is taken after three years, vertical redevelopment tax imposed representing revenue loss due to low densities (if existing density is 100, but area planned for 400, tax would be 4 times rental value). b. For owners redeveloping, partial rent control exemption granted if density targets are met: <ul style="list-style-type: none"> - Rent control granted to existing tenants. - Rent control not imposed on new additional units. 	<ol style="list-style-type: none"> 1. Private owners encouraged to add floors: <ol style="list-style-type: none"> a. By imposing building tax rate which progressively decreases as building height or floor area ratios are reached. (Owners given grace period of three years to comply). 2. Owners provided low interest loans backed by local government to add floors: <ol style="list-style-type: none"> a. Increased building tax used to compensate local government for guarantees. b. Low interest loans provided on variable payment basis to increase revenues in later periods, c. Building tax rates increased in later periods to increase revenues, d. If low interest loans granted, rent control may be imposed, but increases in rent permitted at rate equivalent to two points above Central Bank lending rate. (See Item 4 of Zone I) 3. If market rate loans are granted or developer uses own resources, <ol style="list-style-type: none"> a. Rent control not imposed on desirable vertical expansion, but building tax rates would be imposed at high enough levels to recover infrastructure capital costs. 	<ol style="list-style-type: none"> 1. Existing planning and rent control legislation enforced to ensure maintenance of buildings occurs. (See Item 1 of Zone IV for possible) modifications in rent control provisions). 2. Vertical expansion generally discouraged, except where infrastructure capacity increases are planned: <ol style="list-style-type: none"> a. Once infrastructure rehabilitation is complete, provisions of Zone II can be imposed. 3. If rent control is maintained in these areas, then future building taxes should be allocated between tenants and owners according to the basis established for maintenance under the 1981 Rent Control Law (See Article 9 of Law 136/1981). 	<ol style="list-style-type: none"> 1. High vacant land tax rates imposed on vacant/infill or urban expansion land at rates equal to highest urban land values, or 2. In lieu of payment of tax, vertical development rights are granted to local government. 3. Once vertical development rights are granted, land would be developed according to programs established by the master plan. On vacant land within urban boundaries: <ol style="list-style-type: none"> a. All new subdivisions to be developed gross urban densities of 350 to 400 persons per hectare, b. Non-complying developments taxed at rates equal to highest urban land value tax, c. All foundations designed to carry 5 floors except where development plans show gross urban density targets can be reached. d. Cooperative or public sector housing finance can be granted for conforming development: <ul style="list-style-type: none"> - If low interest loans are granted portions of site/area must be allocated to low income housing, but real estate taxes could be imposed at progressively higher rates in later years to finance interest rate subsidies. - If rent control is imposed on areas benefiting from low interest loans, increases in rent would be permitted at rates equal to increases in real estate taxes, or provisions of Item 4 of Zone I could be imposed. - If cooperative loans are used for sale units, cooperatives can be established after construction. - Cooperative loans or public finance may be granted for upper income units, but market rates should be used for financing or building tax rates should be imposed which finance interest rate subsidy.

PART 1

TYPE	ZONE I: VERTICAL REDEVELOPMENT OF REDEVELOPMENT ZONES	ZONE II: VERTICAL DEVELOPMENT OF VERTICAL EXPANSION ZONES	ZONE III: STABILIZED POPULATION ZONES	ZONE IV: BUILT AREA EXPANSION ZONES
	<p>c. Loans are granted to owners:</p> <ul style="list-style-type: none"> - At subsidized rates for construction of replacement flat aimed at housing existing tenants or tenant businesses. - At market rates for non-rent controlled flats. <p>d. Owners would be encouraged to provide space for commercial and small-scale industry uses on lower floors and residential uses on upper floors:</p> <ul style="list-style-type: none"> - If subsidized loans are used to finance development, rent control may be imposed. - If market rate loans are used, no rent control would be imposed. <p>4. If for social reasons, rent control is determined necessary, then the provisions of the 1981 Rent Control Law should be imposed, but rent increases should be permitted at rates which are two points above Central Bank lending rates at the time the loan is granted. These rental increases would have to be included in writing in owner-tenant rental contracts. Further, if rent control is imposed, then future building taxes should be allocated between tenants and owners according to the basis established for maintenance under the 1981 Rent Control Law. (See Article 9 of Law 136/1981).</p> <p>5. If non-compliance continues, existing provisions for expropriation can be imposed. (See Planning Law of 1981).</p>	<p>4. In both cases, if new vertical development occurs, moratorium on building taxes granted for three to five years, then building taxed at lower rate.</p> <p>5. In cases where rent control is imposed, building taxes should be allocated between tenants and owners according to the basis established for maintenance under the 1981 Rent Control Law (Article 9 of Law 136/1981).</p> <p>6. Buildings which are in good condition and already have adequate floor heights would be exempted from provisions of this zone and classified according to Zone III classifications.</p>		<p>a) If market rat. loans or non-public sources of finance are used to finance development,</p> <ul style="list-style-type: none"> - Rent control would not be imposed (if for social reasons, rent control is deemed necessary, then the provisions of the 1981 law should be imposed except that increases in rent would be permitted at rates at which loans were granted. See Item 4 of Zone I provisions). - Building tax rates would be imposed to recover infrastructure capital costs. <p>4. Only subdivisions conforming to development controls would be guaranteed access to infrastructure. Other non-conforming developments may be given infrastructure but only after building tax rates imposed at the highest rate are paid.</p> <p>5. On land not designated for urban expansion, maximum building tax rates would be imposed on new non-farm buildings. These rates would be equivalent to the highest urban rate and would represent the highest land value of urban land. Buildings in these areas could also be subject to demolition.</p> <p>6. In all cases, changes in status of development (such as additions of new structures) would be determined through a combination of landsat and aerial photo analysis performed on at least a biannual basis.</p> <p>7. If rent control is imposed, future building taxes should be allocated between tenants and owners according to the basis established for maintenance under the 1981 Rent Control Law (see Article 9 of Law 136 of 1981).</p>

Suggested density guidelines for all zones: minimum densities
 Gross urban densities (includes all non-agricultural uses): 350 persons per hectare
 Gross residential densities (excludes agricultural, industrial, core area commercial and regions serving administrative and public uses): 438 persons per hectare
 Net residential densities (includes only residential land, excludes all other uses): 800 to 880 persons per hectare

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taxes on buildings which do not comply with density targets and/or are in substandard condition. These taxes which would apply to the Zones I and II, would only be imposed after a grace period of three years had elapsed during which owners could comply with density/building condition targets set for the area. If after that period, no desirable action occurred, the taxes would be imposed and the property could be subject to expropriation under the conditions established by the 1981 Planning Law.

The second set of development controls would apply only to vacant areas and areas designated for new urban expansion. In these areas, high vacant land taxes would be imposed at rates which reflect the highest urban land prices in the settlement. However, in lieu of payment of these taxes, vertical development rights could be granted to the Governorate. Upon receipt of these rights, the Governorate Planning Office would permit new development which corresponds to density and use criteria of the area. Through judicious control of when development permits are granted, the phasing of extensions to the built area could be linked to planned extensions of infrastructure in these areas. In areas where vacant land is already served with infrastructure, acquisition of vertical development rights would probably not be as important. However, if development complying to density and other desirable use criteria does not occur, then vacant land taxes should be imposed at maximum rates, and such property if still not developed, should be subject to expropriation.

The third set of development controls is similar in nature to those proposed for built area expansion areas except that these controls would be imposed to protect agricultural land within the urban boundaries. Within these areas, no building activity would be permitted except for construction of farm buildings. If other types of new buildings occur, punitive building taxes would be imposed at maximum rates reflecting the value of the highest priced urban land, and the buildings would be subject to demolition upon order of the Governor using authority granted under the 1981 Planning Law.

The purpose of imposing very high punitive taxes and acquisition of vertical development rights is to more nearly equalize the effective price facing a developer on urban land and lower priced agricultural land. Recently, price differentials between urban and agricultural land have led developers both private and public for that matter, to seek lower priced agri-

cultural land outside urban boundaries for new urbanization rather than develop close-in fringe sites on more highly priced urban land.

A second purpose for acquisition of development rights over land which has been declared suitable for urbanization is to improve access to these areas by low income groups who traditionally have not been able to afford the high prices of closer-in urban land. After acquisition of the development rights, owners would be allowed to subdivide and sell land for urban purposes, but the Governorate Planning Department would have the capacity to ensure that portions of new sites are developed at standards affordable to low income groups. It could also impose betterment taxes (which already exist under Law 2228, 1955) on increased land prices resulting from declaration of an area suitable for urban expansion. These revenues could then be used to subsidize land purchases for lower income groups or other desirable urban projects.

As mentioned above, in order to be effective, these areal development controls should be combined with financial incentives to developers to comply with them. Two types of incentives are suggested: the first would be in the form of loans to developers for complying development, while the second would be partial exemption from portions of rent control restrictions. The loans would generally be made available to developers through existing banking institutions, but would be guaranteed by the Governorate with Central Bank backing. This guarantee would be granted on the assumption that the revenue base of the area would be improved once development occurred due both to higher value construction and an increase in the number of dwelling units on the site, thus potentially increasing the number of revenue sources. Although loans could be granted to any development which complies with development restrictions, priority could be granted to development targetted to lower and middle income groups. The rent control exemptions would generally restrict application of rent control provisions to specific target groups and would seek to provide developers with a rate of return reflecting the rate of return that they could achieve in other types of investments. These rent control provisions are detailed on Figure 10. 10/

Although the new Physical Planning Law of 1981 provides a good basis for Delta growth management, some of the flexibility built into the law needs to be exercised in the implementation regulations. For example, only the upper density standard built into the law is suitable

for future urban expansion in Delta Settlements. The lower limit shown in Article 7 of 80 persons per feddan (190 persons per hectare), would permit continued urban sprawl which would consume arable land at rates equal to those which have been indicated by landsat analysis between 1972 - 1978. Furthermore, the provision for reserves of up to 50 percent of the site area for public uses, apparently excluding circulation, needs further clarification in executive regulations. As Article 13 seems to indicate, up to 70 percent of a site could be devoted to public uses (the 50 percent maximum reserve for non-circulation public uses and 20 percent for circulation). If such a restriction could be imposed, net residential densities of 1,166 persons per hectare would be necessary if the minimum gross urban density standards proposed by NUPS for Delta settlements are to be achieved. Net densities of this level would be extremely hard to achieve if the final provision of Article 13 were also imposed, i.e., 50 percent of plot is reserved for private open space resulting from plot setbacks.

In the NUPS proposed standards for Delta Settlements, we have proposed that roughly 35 percent of the settlement area would be devoted to public uses and circulation (roughly 20 percent for circulation and 15 percent for other public uses, such as recreation, education, etc.). This would result in roughly 4.3 square meters of non-circulation public space per capita at gross urban densities of 350 persons per hectare. Such a provision would encourage new public facilities to be designed on vertical rather than horizontal planning concepts.

It should be pointed out, that these general guidelines for public land uses exclude provisions for major new region-serving facilities, such as expansion of universities, new governorate buildings, and development of major health facilities. These need to be designed on a project-by-project basis. These provisions also exclude public 'economic' uses such as commercial facilities, expansion of public sector industries, etc., which would occur in either commercial or industrial areas.

Existing provisions in the Planning Law regarding private open space should also be further detailed in the executive regulations as the amount of plot coverage is appropriate based on floor area ratios and/or building height and plot sizes. For very small plots (say, less than 90 square meters such as is the average plot size in much of Greater Cairo's new private sector development), imposing a 50 percent limitation on plot

coverage would make density targets difficult to achieve. For these plots, private open space restrictions should not exceed 35 to 40 percent of the plot area.

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ILLUSTRATIVE DEVELOPMENT PROJECT - TANTA

FOOTNOTES

- 1/ Quoted in Cuningham, Today in Egypt, London, 1912, p. 286.
- 2/ For comparative purposes, Tanta's population grew at an annual rate of 2.75 percent for the period 1960-1976.
- 3/ Congestion is presently a major problem at Kafr El Zayat where the Cairo-Alexandria highway crosses the Nile. A new bridge is presently under construction and will not be completed until 1983. The Nile crossing from Zefta to Mit Ghamr is also severely constrained due to the bridge's narrowness (one-way traffic permitted at any one time).
- 4/ NEDECO, in the Egypt National Transport Study, presents rough national high and low investment requirements which amount to L.E. 2.06 and L.E. 1.36 billion, respectively. They argue that the 2000 high figure must be considered as not possible to finance, but argue that the low scenario, while difficult, is potentially reachable. They base this assumption on an 1987 L.E. 48 million investment level and an annual growth rate in investment of 5 percent between 1978 and 2000. The accumulated 1981-2000 investment estimate equals L.E. 1.15 billion which is approximately 85 percent of the L.E. 1.36 billion estimate. They temper their estimates by noting many uncertain long-term projections, rough cost estimates, and implementation time for certain inter-dependent projects.
- 5/ Of the 3,060 kilometers of Class I and II track, 1,250 kilometers requires complete track renewal (rails, ballast and sleepers) and the remainder requires rehabilitation of the ballast rock. In addition, of all rolling stock, about 20 to 30 percent is beyond repair, but still occupying track and yards, thus hampering operations.
- 6/ Gross densities are calculated on the basis of 4.9 persons per unit for 2,640 units equals an estimated future population of 12,936.
- 7/ Major policy decisions regarding agriculture, industry and the provision of infrastructure should ideally be considered for the eight-governorate Delta region as a whole, including Sharkia, Behaira and Qalyubia.

- 8/ The Regional Authority for Upper Egypt which is located in Aswan (and covers Qena Governorate) has had difficulties in staffing up and presently is represented by only the Authority's head. It has had to rely on the Governorate Planning Offices, which have very limited capacity themselves, for its technical support.
- 9/ The situation has deteriorated to such an extent that a 25-feddan development including a prefabricated housing factory and 25,000-unit cooperative housing project is proceeding to implementation on what was agricultural land without Ministry of Agriculture approval.
- 10/ See Chapter II of the NUPS Urban Management Handbook for further discussion of these proposals.

ILLUSTRATIVE DEVELOPMENT PROJECTS

PART II

I. HISTORICAL AND POPULATION BACKGROUND

Human settlements have existed, since Pharaonic times, in what today comprises the Qena Governorate. Thebes, the ancient capital of Upper Egypt, was located approximately 50 kilometers to the south of the City of Qena. The quarries of Hammamat which supplied stone for many of the periods' finest temples are to be found between Qena and the Red Sea. Coptos, the capital and commercial center of Upper Egypt after the fall of Thebes, was located north of the present day city of Quft.

During the Roman occupation, the quarries located in Wadi Qena were worked for their porphyry stone. This stone was transported to Rome and Constantinople for use in palace and state buildings, statues and columns.

Since earliest times, the Qena region has had extensive ties with the Red Sea through the Port of El Quseir. Because of those direct links with the Red Sea, the capital of Upper Egypt passed to Qos (south of Quft) by the beginning of the 11th Century. During this period, El Quseir enjoyed great importance as the pilgrim's gateway to Mecca. Pilgrims would come up the Nile River by boat, cross the hundred miles from Qos or Qena by camel, and from El Quseir go by boat to Jeddah.

During the Ottoman Rule, Qena replaced Qos as the most important city in the region (See Table 20). By the beginning of the 19th Century, Qena had a population of 5,000. Qena became a provincial capital in 1868, but by that time had already entered a period of relatively slow growth. This was due mainly to the opening of the Suez Canal which had the effect of shifting the movement of goods and the pilgrim passage to the north.

By the time of the first census of 1882, Qena had a population of 15,400 while Naga Hamadi's registered 2,000. Since 1881, Qena's population growth has roughly approximated the national average. Between 1882 and 1947, the population of Qena grew at an annual rate of 1.59 percent. The national growth rate over the same period was 1.61 percent per annum. Between 1947 and 1976 Qena's annual population growth accelerated to 2.74 percent. Nationally, the population grew by 2.45 percent. This increased growth can be partially attributed to Qena's expanding role as a provincial and then governorate capital. At a projected annual growth rate of 3.10 percent, NUFJ estimated a 1980 population of 106,100.

TABLE 20

POPULATION OF QENA GOVERNORATE & CITIES OF QENA, NAGA HAMADI AND HIW 1882-1980

YEAR	POPULATION (000's)				ANNUAL GROWTH RATE (%)			
	QENA GOVERNORATE	QENA	NAGA HAMADI	HIW	QENA GOVERNORATE	QENA	NAGA HAMADI	HIW
1882	N.A	15.4	2.0	4.9	N.A	3.81	2.27	1.69
1897	N.A	27.0	2.8	6.3	N.A	-2.91	3.37	2.67
1907	770	20.1	3.9	8.2	0.87	1.36	0.98	1.16
1917	840	23.0	4.3	9.2	0.69	1.88	3.39	-0.79
1927	900	27.7	6.0	8.5	1.22	2.19	0.00	0.00
1937	1016	34.4	6.0	8.5	0.85	2.23	3.54	0.00
1947	1106	42.9	8.5	8.5	1.55	2.95	5.34	4.73
1960	1350	57.4	14.3	15.5	1.43	2.99	-2.09	-0.77
1966	1470	68.5	12.6	14.8	1.49	3.20	14.05	4.09
1976	1705	93.9	46.9	22.1	N.A	3.10	7.70	N.A

SOURCE : Population Censuses for year noted.

On the other hand, Naga Hamadi experienced several swings in population growth since 1882. Between 1882 and 1907, Naga Hamadi's population grew at a rate of 2.71 per annum. Between 1907 and 1917 growth dropped to 0.98 percent per year only to rebound to 3.39 percent per year between 1917 and 1927. The period between 1927 and 1937 saw no increase in Naga Hamadi's population. These shifts in population growth were most likely caused by world-wide economic depressions which affected the demand for sugar, historically the region's principal crop. Since 1937, Naga Hamadi's population has grown at a yearly rate of 5.41 percent. The growth of the later years of this interval can obviously be traced to the employment related to construction and anticipated employment to be generated by the opening of the aluminum smelting plant. Based on a growth rate of 7.70 percent per annum reflecting this recent growth, NUPS has projected a 1980 population for Naga Hamadi of 63,000. Table 20 also shows the population growth of Hiw, Naga Hamadi's small and sister settlement roughly 1.5 kilometers from the edge of Naga Hamadi's built area.

II. QENA-NAGA HAMADI'S ROLE IN NUPS STRATEGY, PROJECTED INVESTMENT ALLOCATIONS AND POPULATION TARGETS

As stated in the introduction, the Qena-Naga Hamadi region has been selected to illustrate the site-specific implications of operating within the NUPS spatial framework for an important set of settlement issues which may be addressed effectively by examining Upper Egypt cities rather than other development areas. The broad issues addressed by the Qena-Naga Hamadi Illustrative Development Project include:

1. the selection of economic activities required to induce growth in an area distant from the market resources of the major metropolitan areas;
2. the identification of complementary development activities required in contiguous but geographically different areas;
3. the identification of needed inter-regional infrastructure required to link Upper Egypt with other areas of the country, and
4. the improvements required in a technically weak administrative structure to be able to effectively implement a growth inducement strategy.

In order for Qena-Naga Hamadi to achieve these goals within the NUPS strategy, investment allocation and population targets have been estimated for both cities for the period to

the year 2000. From an estimated base population of 106.1 thousand for Qena in 1980, NUPS projects a year 2000 population that ranges between 175 and 225 thousand.

Beginning with the same base year's population of 63 thousand, Naga Hamadi's population is projected to range between 150 and 175 thousand by the year 2000. Effective annual growth for the projected population increases vary from 2.53 to 3.83 percent and from 4.43 and 5.24 percent for Qena and Naga Hamadi, respectively. 1/ The proposed NUPS 1986-2000 investment allocation package required to support the projected population increases in the two urban areas is broken down into two categories (See Table 21): (1) L.E. 382.0 and L.E. 328.0 million, respectively for Qena and Naga Hamadi, for employment generation; (2) L.E. 191.4 million for Qena and L.E. 139.8 million for Naga Hamadi for the provision of physical and social infrastructure and housing for the new population, as well as rehabilitation of existing stock and systems. These are further described in Chapter IV.

III. AN OVERVIEW OF THE ECONOMY OF THE QENA-NAGA HAMADI REGION

The present section examines the Qena-Naga Hamadi region's spatial advantages, its current industrial mix and the possibilities for further diversification. Based on this review, an industrial development strategy will be formulated which recommends a viable industrial mix that will have the greatest impact on inducing economic development in the region, on increasing the region's population absorption capacity and thus on stemming further out-migration. In addition, the final section provides required incentives to facilitate the recommended industrial growth policies thereby setting in motion long-term industrial development.

A. Industrial Locational Advantages

Qena-Naga Hamadi Corridor is located on the main transport route between Cairo and Aswan. This transport link permits easy access to South Upper Egypt, to the major urban centers of Sohag and Assiut in the North, and to Aswan in the South. It is also connected by road to the Red Sea port facilities at Safaga and Quseir. Also, construction is underway on a railroad line between Safaga and Qena. Furthermore, the two urban centers of Qena and Naga Hamadi have access to water transportation by the Nile River. Another basic advantage for the Qena-Naga Hamadi region is the availability of non-agricultural land for industrial as well as urban expansion. Industrial expansion is already taking place along the Qena-Safaga desert road and future possibilities exist for similar expansion along the Naga Hamadi-Armant desert road. Although expansion of Naga Hamadi itself on non-arable land is not possible, expansion on the desert plateau nearby is possible.

TABLE 21

PREFERRED NUPS STRATEGY INVESTMENT ALLOCATION AND POPULATION TARGETS
QENA AND NAGA HAMADI, 1986-2000

ITEM YEAR OR PERIOD	PROJECTED POPULATION (THOUSANDS)				PROPOSED INDUSTRIAL ALLOCATION FOR PERIOD (L.E. MILLION)		PROPOSED INFRASTRUCTURE ALLOCATION FOR PERIOD 1/ (L.E. MILLION)	
	POPULATION CHANGE	QENA ACTUAL	POPULATION CHANGE	NAGA HAMADI ACTUAL	QENA	NAGA HAMADI	QENA	NAGA HAMADI
1980	-	106	-	63	N.A.	N.A.	N.A.	N.A.
1981-1985	22	-	32	-	N.A.	N.A.	N.A.	N.A.
1986-1990	28	-	22	-	81.0	67.0	67.7	44.6
1991-1995	31	-	27	-	112.0	103.0	59.5	45.3
1996-2000	38	-	31	-	189.0	158.0	64.2	49.9
TOTAL	119	175.225	112	150.175	382.0	328.0	191.4	139.8

1/ Includes provision of physical and social infrastructure and housing for new populations and rehabilitation of existing stock and systems.

SOURCE: NUPS elaboration

B. Existing Industrial Mix

1. Large Scale Public Industries

The Qena-Naga Hamadi region's large scale industrial mix is currently limited to agricultural processing and the recently established Aluminum Plant adjacent to Naga Hamadi. Total employment in public industrial enterprises in Qena and Naga Hamadi amounts to 15 thousand, representing 70 percent of total public sector industrial employment at the Governorate level. Table 22 distributes Qena Governorate industrial employment by urban settlement and type of industry for 1980.

The sugar factory at Naga Hamadi is the oldest sugar plant in Egypt, its annual output amounts to 133.3 thousand tons of sugar and 54 thousand tons of molasses. During the production season, which extends from January through May, the plant utilizes all its total employment. During the off-season it only utilizes 50 percent of total employment. Plans are currently underway to substantially renovate its machinery and equipment. The dominance of sugar-cane in the Qena Governorate crop patterns has necessitated the establishment of three other similar plants in Arment, Dishna and Qos. The three plants combined are employing around 6,442 workers in the production of 228.8 thousand tons of sugar annually. None of the sugar plants in Qena Governorate have refining facilities. Raw sugar is transported mostly via the Nile for refining at Hawamdia in Giza Governorate. The molasses is also transported outside the region. The largest part is exported to West European countries. The sugar plants are operating at less than their full capacity. This is mainly due to spoilage of the sugar-cane resulting from inadequate irrigation systems and deficiencies in the transport network which connects the farms with the sugar plants. This causes shortages in the supply of sugar-cane.

The Aluminum complex adjacent to Naga Hamadi is the first attempt to diversify and expand the industrial base of this region away from agro-based industries. The plant's current output level amounts to 100 thousand tons of aluminum, all of which is in the form of ingots, T-bars, cylinders, slabs and wire cables. The plant's employees are paid relatively higher wages than those in other public sector industries in the Governorate. The plant is the largest industrial user of electric power in Egypt. In 1979, it used 1,831.8 million kWh or 23 percent of the total electric power generated by the Aswan High Dam. Electric power to the plant is pre-

TABLE 22

INDUSTRIAL EMPLOYMENT IN QENA GOVERNORATE, PUBLIC SECTOR, 1980

<u>URBAN CENTER/INDUSTRY</u>	<u>EMPLOYMENT</u>	<u>---</u>
<u>NAGA HAMADI:</u>		
Aluminum Plant	8000	37.4
Flour Mill	100	0.5
Sugar Factory	3000	14.0
<u>QENA:</u>		
Spinning Mill	3500	16.4
Macaroni Plant	350	1.6
<u>OTHER URBAN CENTERS:</u>		
Dishna Sugar Factory	1811	8.5
Qos Sugar Factory	2124	10.0
Armant Sugar Factory	2507	11.7
TOTAL	21392	100.0

SOURCE: Industry Sector Report, First Draft, March 1981, Regional Plan for South Upper Egypt, UNDP.

* Figures are estimates based on an average size in other South Upper Egypt Governorates

sently highly subsidized. Plans are underway to expand the complex's output to 166,000 tons of aluminum by 1982. This expansion will increase its hydroelectric usage to 3,320 million kWh and create an additional 2,000 jobs.

The regional economic impacts of the plant are still limited to the direct employment it has created and the local spending of employees. This is mainly due to the absence of any metallic industry that could use the plant's intermediate output. Currently all raw materials are imported from Australia via Safaga and transported by road to the plant site. Also, all the intermediate output is transported outside the region, where 25 percent is used by aluminum-derivative industries in Cairo, Alexandria and Port Said and 75 percent is exported abroad, mostly to France. The plant is located on an area of 3,000 feddans of desert land. Half of this area is used for industrial, housing, recreational, training and supporting facilities. The other half is currently used for vegetable cropping and animal breeding, mostly for internal use by the plant's employees. The plant, as it stands now, is a contained and isolated industrial town with no evidence of inducement or complimentary activities in its surrounding area.

In Qona City, the main source of formal industrial employment is limited to the spinning mill which dates from 1960. This mill requires substantial upgrading of its machinery. Its current employment and output levels amount to 3,500 workers and 15 tons/day of cotton yarn respectively. The absence of cotton cultivation in the Governorate's crop patterns or a weaving mill to utilize the spun cotton has minimised the impacts, (i.e. direct employment and local spending) of this industry.

2. Small Scale Industries

The small-scale industries (employing less than 25 workers per unit) in the Qona-Naga Hamadi region are mostly local resource-oriented and are dispersed in rural as well as urban areas. Small-scale industry is prevalent in the manufacture of bricks, tiles, hand weaving, furniture, mechanical workshops, and molasses syrup. The latter is the region's most dominant small-scale industry. It is mostly located in rural areas adjacent to the sugar-cane plants. There exist 345 of these operations supporting a total employment of 1,035 workers (using an average of 3 workers per operation). In Naga Hamadi district alone, 205 of these operations exist. The rest are scattered in other districts. Table 23 gives an indication of the magnitude of small-

TABLE 23

SMALL SCALE INDUSTRIAL COOPERATIVES, QENA GOVERNORATE

<u>INDUSTRY</u>	<u>COOPERATIVE MEMBERS</u>	<u>ESTIMATED EMPLOYMENT</u>
Furniture	102	612
Photography	46	92
Metallics	23	184
Pottery	93	651
Leather & Shoes	23	115
Hand Weaving	115	648
Molasses Syrup	-	1,035
TOTAL	402	3,337

SOURCE: Labor Directorate, Qena.

NOTE: Statistical discrepancies exist among data supplied by various labor directorates which could not be rectified by the NUPS Team

TABLE 24

SMALL SCALE INDUSTRIES IN NAGA HAMADI DISTRICT

<u>INDUSTRY</u>	<u>NO. OF ESTABLISHMENTS</u>	<u>TOTAL EMPLOYMENT</u>
Tiles	6	46
Molasses Syrup	205	630
Metallics	63	133
Shoes	64	144
Carpentry	105	285
Flour Milling	5	25
Bakeries	11	161
Tailoring	220	330
TOTAL	729	1,754

SOURCE: Labor Directorate District Office, Naga Hamadi

scale industrial employment in Qena Governorate as a whole, while Table 24 lists those industries which are located in the Naga Hamadi area.

The molasses establishments, which follow the same pattern as the sugar-cane factories, operate on a seasonal basis from late December until May. They encounter many difficulties including:

- a. The continuous increase in the price of sugar-cane, and the cost of transportation as compared to a controlled price for the molasses;
- b. Fierce competition between the sugar factories in acquiring sufficient cane;
- c. Lack of effective marketing channels, especially to foreign countries;
- d. Obsolete machinery and primitive production processes which result in substantial wastage.
- e. High turnover rate in employment due to the seasonal nature of production. The seasonality in production of sugar and molasses is reflected in relatively high unemployment rates during the summer months. This is indicated by seasonal variations in the number of job applicants as shown in Table 25.

TABLE 25

VARIATIONS IN THE NUMBER OF JOB APPLICANTS
(BETWEEN SEPTEMBER 1980 AND AUGUST 1981)

<u>DATE</u>	<u>NAGA HAMADI</u>	<u>QENA</u>
September	464	291
October	285	183
November	538	320
December	855	479
January	336	220
February	181	188
March	173	156
April	151	142
May	205	182
June	182	130
August	292	224

SOURCE: Labor Directorate, Qena Governorate

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In addition to the already noted industries, there exists in Qena Governorate small scale operations of poultry raising and animal breeding. These activities are part of the local government food security program, but are still limited in size. Also there are three animal feedstuff factories at Qena, Dandara and Luxor: producing 19.5 tons/day, or 57.3 percent of the current needs at the Governorate level.

3. Short Term Industrial Growth Prospects

Present industrial planning objectives at the national level focus on investment allocations for industries which can build on the existing industrial base and operate efficiently in the region. Based on data available from the Ministry of Industry's 1980-84 Plan and the Planning Division at the Governorate level, the following industrial investment projects have been identified.

- a. Cement Plant: A cement plant is scheduled for completion by the year 1983 on the Naga Hamadi desert plateau. The plant is expected to use local limestone deposits in the production of one-half million tons of cement annually.
- b. Prefabricated Housing: Plans to construct prefabricated housing units from pre-cast concrete and aluminum is proposed for Naga Hamadi. The total cost of this plant is estimated at US \$ 60 million. Its initial employment is expected to reach 600 workers who will produce 4,000 units to be used in housing the expected increase in employment at the aluminum and cement plants.
- c. Expansion of the Aluminum Plant: The Ministry of Industry has proposed an investment of L.E. 43.7 million for expansion of the aluminum plant which will increase capacity by 66 percent.
- d. Renovation of the Naga Hamadi Sugar Factory: The Ministry of Industry's 1980-84 Plan proposes an investment of L.E. 42 million for modernizing and renovating the sugar plant at Naga Hamadi. This investment, however, will have limited impact on the plant's overall direct employment. It is expected to minimize wastage and increase labor productivity and income.
- e. Shale Brick Factory at Qena: Construction is underway on a shale brick factory at El Mahrousa, 20 kilometers southwest of Qena. The plant's total cost is expected to reach L.E. 7.58 million. Total employment is estimated at 1,136 workers.

In conclusion, there is a lack of significant investment allocations for Qena City in the 1980-84 Investment Plan. This would tend to indicate that the present potential for Qena City's industrial growth must be viewed in the broader context of development of the Qena-Naga Hamadi region. This expansion could be based on inputs produced by the aluminum and cement industries in Naga Hamadi and mining industries in the Red Sea Governorate.

IV. PHYSICAL DEVELOPMENT

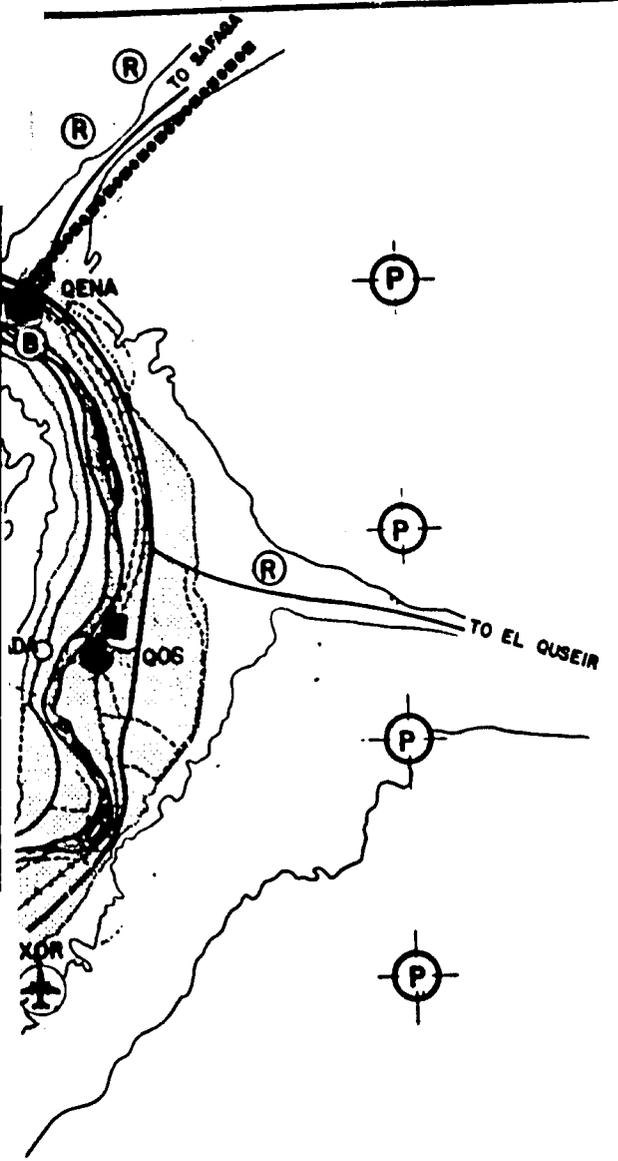
A. Introduction

As noted in the introduction, due to the Qena/Naga Hamadi region's potential for increased regional impact resulting from past industrial investment and its location vis-a-vis sources of inputs, it was selected as a potential area for a growth emphasis strategy in Upper Egypt as part of the National Urban Policy. The following section, therefore, discusses the physical and spatial aspects of the region, its potential for accommodating future population, and the primary issues which must be resolved. Based on the findings of the Study Team, the two principal areas which are suitable for increased urban development include Qena City, and the aluminum factory desert plateau outside of Naga Hamadi/Hiw. Hence, more specific detail has been given to these two settlements. Naga Hamadi proper is not recommended for special emphasis as future physical expansion will impinge on arable land. However, discussion of its physical development characteristics was found useful since most of the smaller urban centers in the region and in other parts of the Nile Valley share its development characteristics.

B. Regional Context

Future development prospects in the study area are conditioned by the regional setting (See Figure 11). The Qena/Naga Hamadi region, in this respect is strategically located vis-a-vis northern and southern Upper Egypt and the Red Sea. Its location is a strong asset for its future development. Key elements which are likely to influence its prospects for future urban growth include:

- The location of a major electrical sub-station at Naga Hamadi and major industrial investment in the aluminum factory has led to plans for other significant industrial investment;
- Access to the port of Safage in the Red Sea Governorate which serves as the primary port of entry and export for southern Upper Egypt;



EXISTING SITUATION AND PROPOSED PROJECTS

SETTLEMENT SIZE

- BELOW 6,000
- 6,000 - 20,000
- 20,000 - 30,000
- 30,000 - 40,000
- 40,000 - 45,000
- OVER 90,000
- GOVERNORATE CAPITAL
- MARKAZ CENTER
- MAJOR TOWN

LEGEND

- ▨ NILE VALLEY
- Ⓡ AGRICULTURAL RECLAMATION
- Ⓟ POSSIBLE PHOSPHATES EXPLORATION
- ▨ ALUMMUM SMELTING PLANT
- ▨ PROPOSED SITE FOR CEMENT FACTORY
- SUGARCANE REFINERY
- ▲ ARCHEOLOGICAL SITES
- ✈ AIRPORT
- ⋯ PROPOSED RAILWAY LINE
- ⋯ RAILWAY LINE UNDER CONSTRUCTION
- ⋯ EXISTING SINGLE TRACK RAILWAY LINE
- MAIN HIGHWAYS
- SECONDARY ROADS
- - - UNPAVED ROADS
- ▨ PROPOSED ROADS
- Ⓟ NILE BRIDGE CROSSINGS
- 500 KV OVERHEAD ELECTRICAL LINES
- S.S. 500KV

0 2 4 6 8 10 20 KM



FIGURE II

- Planned rail access from the port of Safaga to the Western Desert via the study area for the exploitation and export of phosphates at Abou Tartour;
- The location of two of the five public-sector sugar refineries in the area between Qena and Naga Hamadi, and two others in other parts of the Qena Governorate;
- The existence of a strong transportation base with plans for further improvements;
- Opportunities for mineral exploitation near Qena and Naga Hamadi in addition to other industrial development;
- A strong economic base for tourism in Luxor with some opportunities in Qena,
- Siting of a three-faculty university in Qena as well as other regionally important public facilities, and
- Substantial opportunity for urban expansion on non-arable areas outside of Qena and Naga Hamadi.

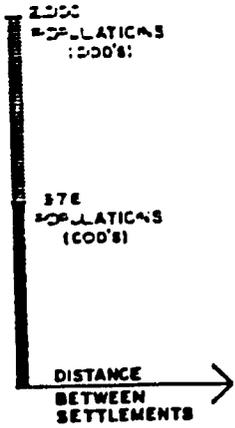
A description of existing, planned and recommended industry which will influence economic development in the Qena-Naga Hamadi area is discussed in other sections. Infrastructure elements are briefly discussed in the following section, with technical details contained in Appendix D of this report.

1. Settlement Hierarchy

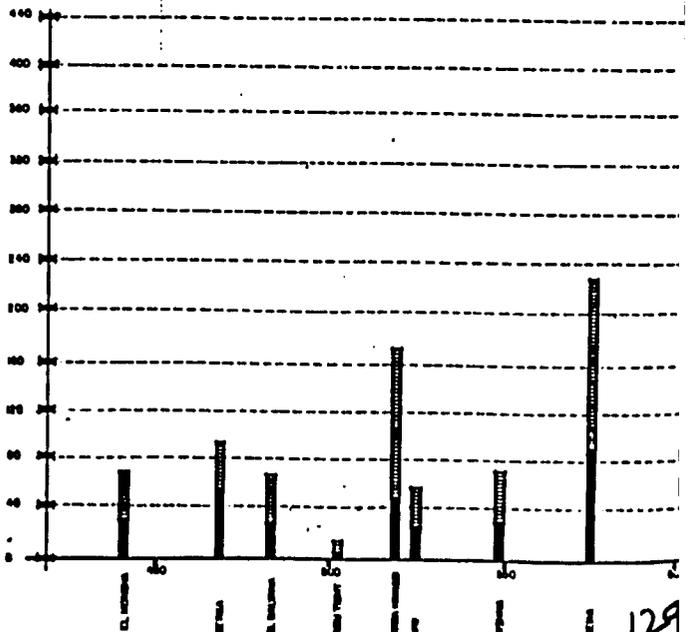
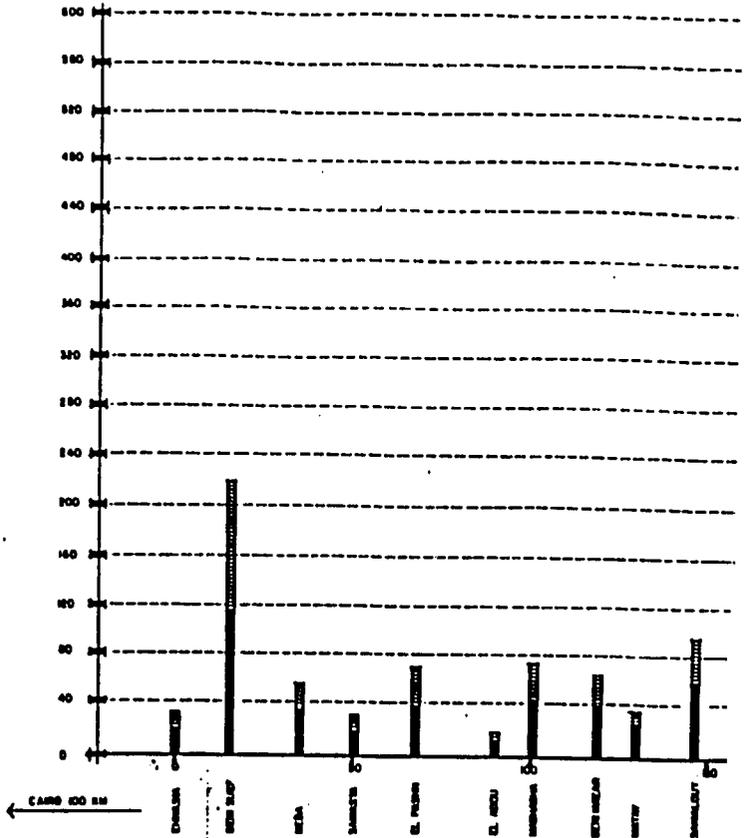
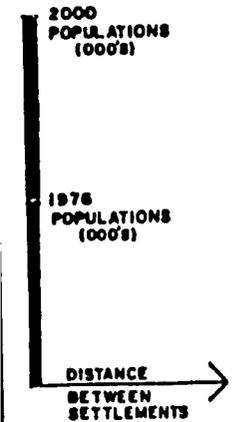
The settlement hierarchy in the Qena Governorate development region is not unlike that in other parts of the Nile Valley north of Luxor. As Figure 12 indicates, governorate capitals are substantially larger than intervening settlements. In fact, there is every indication that the growth of governorate capitals is largely due to the levels of public service which they provide. However, the capitals' importance also appears to be a function of their location and distribution. They are all relatively equidistant and reachable by an easy day's travel time from any part of the governorate. They are also relatively strategically placed regionally (i.e. Beni Suef-Fayoum, Assiut-Western Desert, Qena-Red Sea) vis-a-vis other parts of Upper Egypt.

The governorate capitals also offer a greater level of agricultural service and marketing functions. However, intervening centers seem to satisfy most day-to-day requirements. The larger intermediate settlements are usually *markas* capitals which also provide secondary health services, as well as some agricultural service

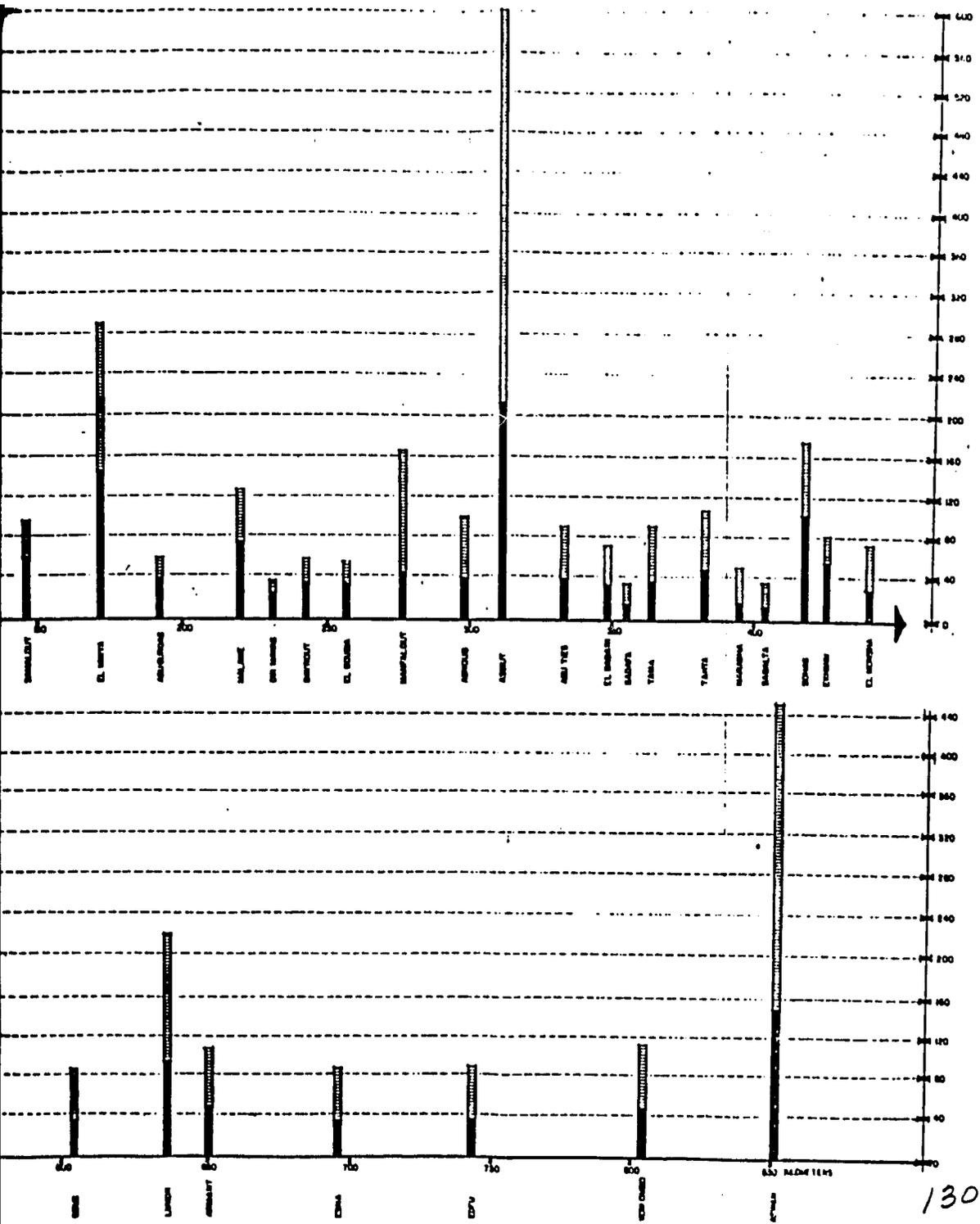
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CONTINUATION →



UPPER EGYPT SETTLEMENT HIERARCHY
 DISTRIBUTION OF SETTLEMENTS AND POPULATION



and marketing functions. In Figure 13, the larger settlements in the Qena Governorate are presented graphically as a function of distance, population size, and regional function. Generally Qena and Luxor stand out in population size. They also have major public and agricultural marketing and service functions. There is also a fairly even distribution of these services among intermediate settlements. Luxor, a major settlement, deviates from the suggested Nile Valley urban hierarchy pattern due to its importance as a touristic and archeological site. Recent growth in Naga-Hamadi-Hiw is not reflected, since population data is derived from the 1976 census. In the future, these settlements can be expected to increase in size.

Villages are scattered throughout the Governorate and study area in close proximity to cultivable land. Few free-standing dwellings exist in rural areas.

The Study Team feels that the implied hierarchy of urban development in Qena, Naga Hamadi (desert plateau) and Luxor will play a significant role in reducing out-migration from the region. Presently, there is not much differentiation among the services offered by the area's settlements to provide a real alternative for potential out-migrants to the major metropolitan areas.

2. Focus: Qena and Naga Hamadi

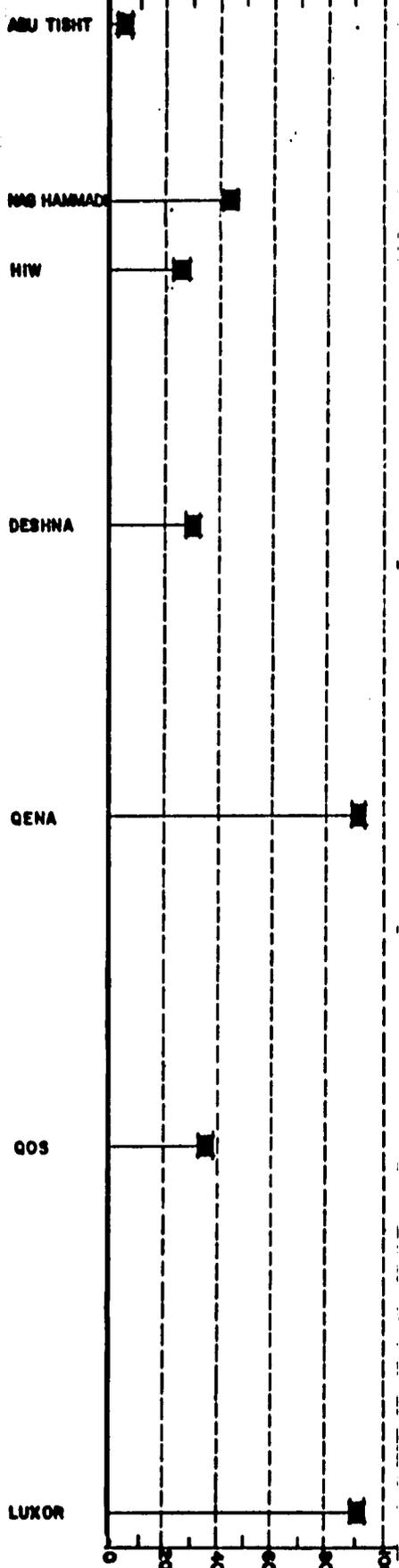
Qena and the desert plateau outside of Naga Hamadi have been selected for future urban growth emphasis due to their economic and physical growth potential. The city of Naga Hamadi does not offer any opportunity for expansion in non-arable areas. Its proximity to the desert plateau will provide a fundamental link to development efforts and existing and planned infrastructure networks. Its development issues are furthermore indicative of other smaller urban settlements in the study area and the rest of the Nile Valley.

For these reasons, specific development issues and more detailed data have been collected for these settlement areas. The following section provides a brief description of physical issues, development characteristics, land use and growth opportunities.

3. Qena City

a. Physical Growth Issues

- i. Development is occurring in a haphazard fashion along major transportation corridors and in fringe areas. Siting of new industries and



Markaz capital, Major health services, Agricultural marketing and servicing.

Markaz capital, Major health services, Agricultural marketing and servicing - Aluminium smelting - Consumer industries of sugar cane.

Secondary health services, Agricultural marketing and servicing, Sugar refinery.

Markaz capital, Major health services, Agricultural marketing and servicing, Sugar refinery.

Governorate capital, Major health services, Agricultural marketing and services - Quarries for building materials - Textiles industries - Spinning and weaving - Main access from Upper Nile Valley to the Red Sea.

Markaz capital, Major health services, Agricultural marketing and servicing, Sugar refinery.

Markaz capital, Major health services, Agricultural marketing and servicing, Tourism and archeology.

public services has been made in an unplanned and piecemeal fashion. The lack of identified secondary and tertiary roads in rapidly expanding peripheral areas has contributed to this problem.

A development strategy, particularly for expansion in the eastern desert area, is required to provide guidelines for future development and to correct past development inadequacies.

Future development of the eastern desert area should attempt to unify industrial and public service uses in order to share common facilities and infrastructure.

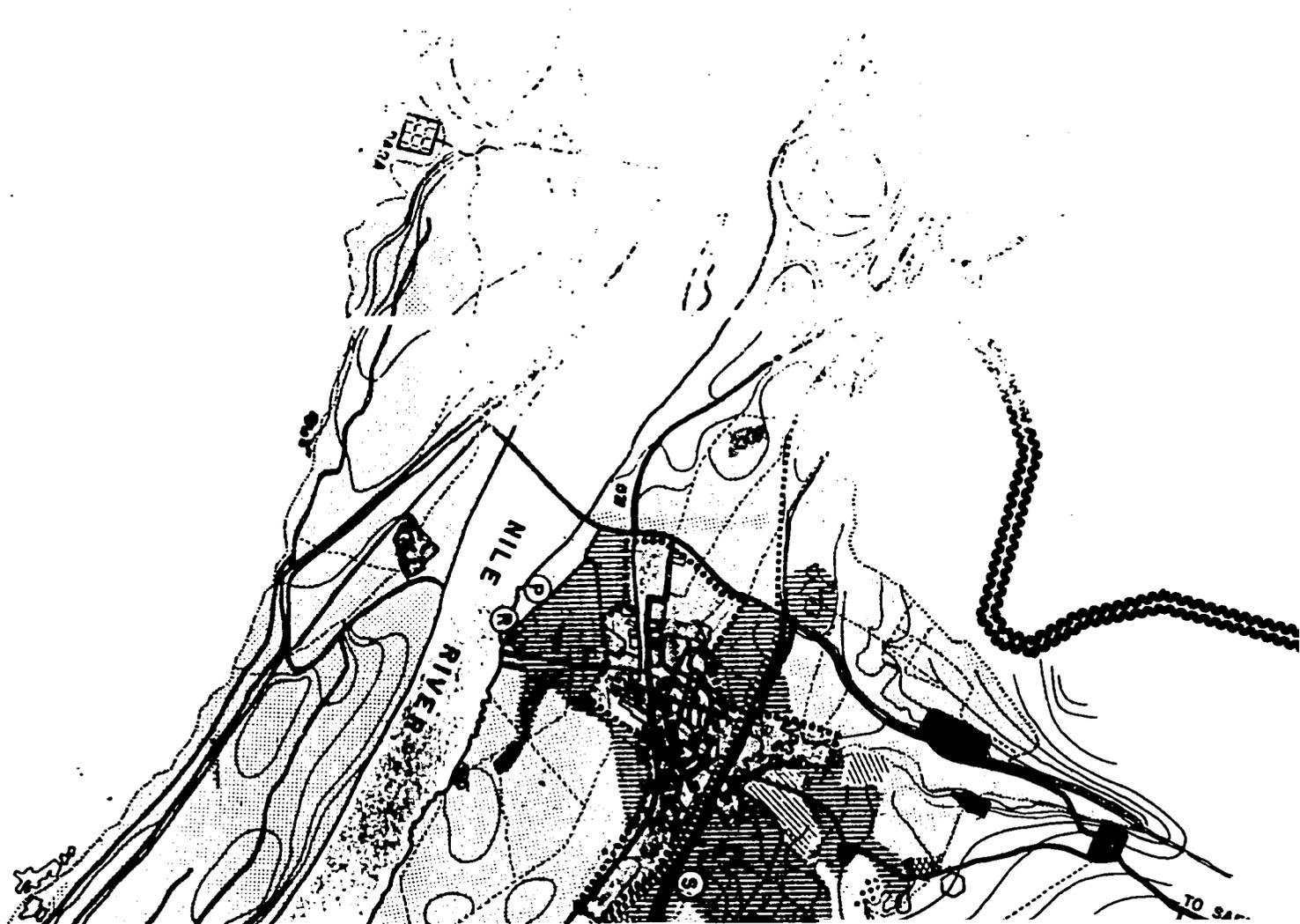
- ii. Planning and development control tools such as maps and aerial photographs are out of date or non-existent. These should be obtained immediately and at regular intervals in the future.
- iii. Lack of a development strategy for future growth is resulting in losses of agricultural land. This loss is unnecessary, given Qena's potential for expansion in desert areas.
- iv. Given the past nature of uncontrolled development and deterioration of the old city, major upgrading is required. An assessment of existing infrastructure and planned services such as the new sewer system needs to be undertaken and a package developed for infrastructure to serve old and new development areas devised. Means should also be found to upgrade the existing housing stock and find appropriate housing solutions regarding climate and local construction techniques and materials.

The "New Qena" City does not form a sound basis for the urban expansion of Qena. This new town has been proposed to house a population of 390,500. However, it ignores the need to restructure Qena's ongoing development and would be extremely costly to implement. (See Appendix E).

b. Qena Development Characteristics

Unplanned development, on both arable and non-arable land, is occurring in Qena in nearly every direction. Furthermore, no concrete plan exists for orientation for future growth. (See Figures 14 and 15).

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GENA EXISTING SITUATION

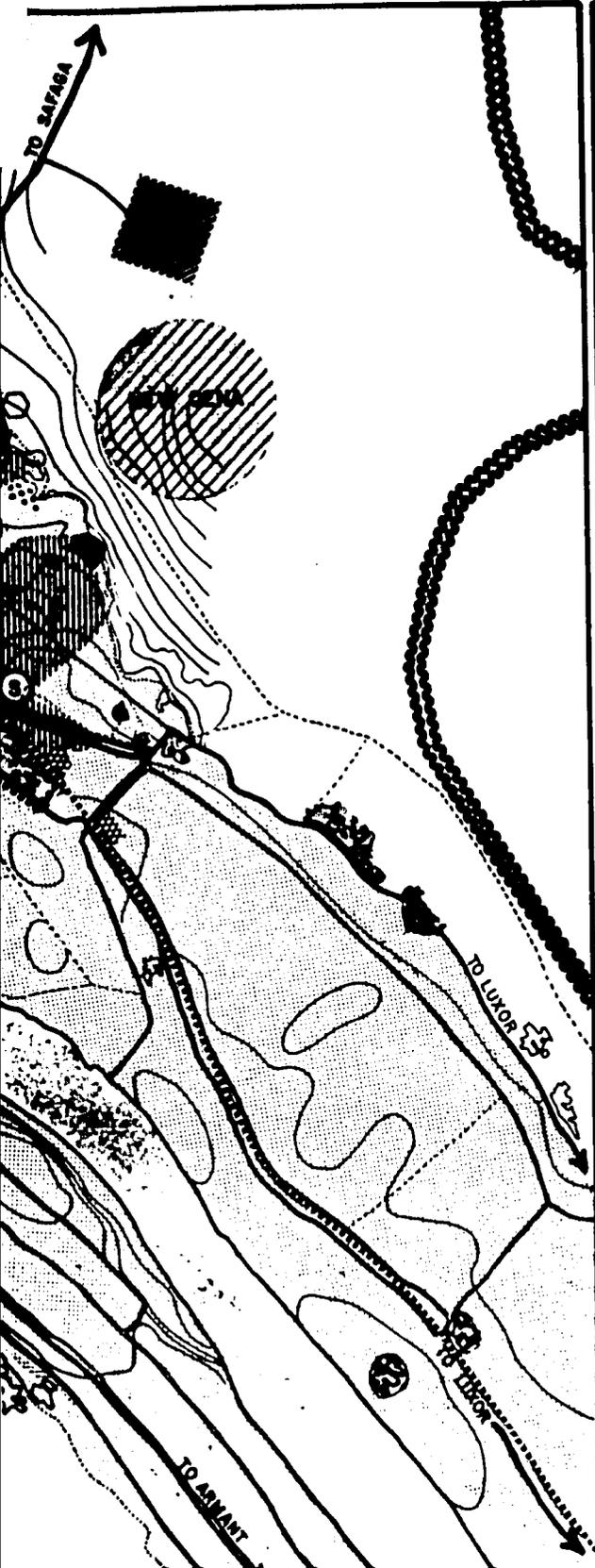
LEGEND

-  MAPPED RESIDENTIAL
-  UNMAPPED RESIDENTIAL
-  PROPOSED RESIDENTIAL
-  AGRICULTURAL
-  UNIVERSITY
-  CEMETERIES
-  DAIRY CATTLE POULTRY PROJECTS
-  MILITARY
-  INDUSTRIAL
-  COMMERCE
-  NEW GENA MARKET
-  RADIO AND TELEVISION RELAY STATION
-  UTILITIES
-  SEWERAGE NETWORK BOUNDARIES
-  TOURISM ATTRACTION
-  SPORTING CLUB
-  STADIUM
-  INLAND WATERWAYS PORT
-  MAIN HIGHWAY
-  SECONDARY ROAD
-  UNPAVED ROAD
-  EXISTING RAILWAY LINE
-  CONTOUR LINES (UNMAPPED)

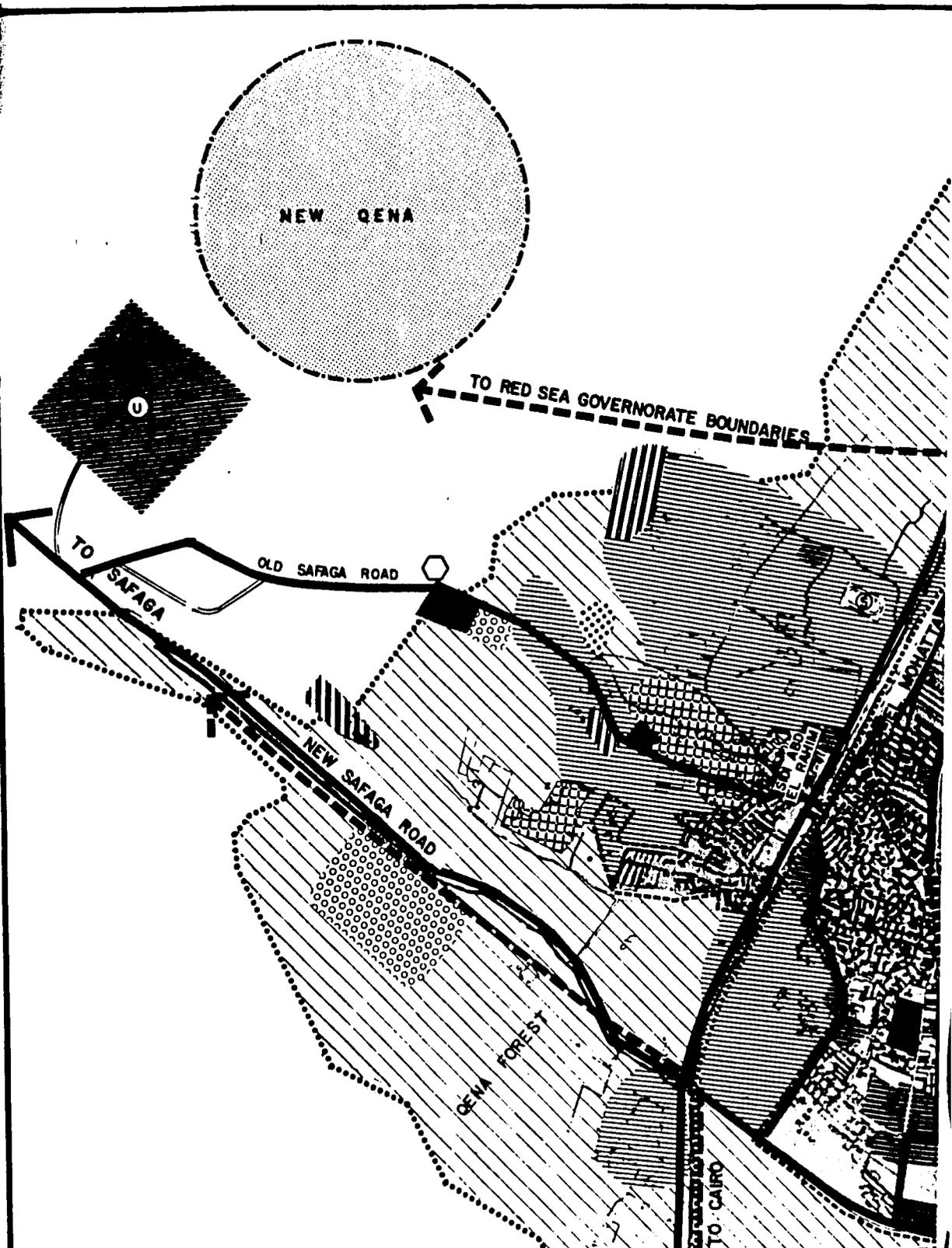
0 1 2 KM



FIGURE 14



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QENA LAND USE PLAN



-  MAPPED RESIDENTIAL
-  UNMAPPED RESIDENTIAL
-  NEW QENA (PROPOSED SITE)
-  AGRICULTURAL
-  HOSPITAL
-  INDUSTRIAL
-  EDUCATIONAL
-  QENA UNIVERSITY SITE
-  CEMETERIES
-  RELIGIOUS
-  MILITARY
-  GOVERNMENTAL
-  NEW QENA MARKET
-  COMMERCIAL
-  SEWERAGE NETWORK BOUNDARIES
-  QENA CITY BOUNDARIES
-  DESERT BOUNDARIES
-  SPORTING CLUB
-  QENA STADIUM
-  THEATER AND CINEMA
-  UTILITIES
-  INLAND WATERWAYS PORT
-  RADIO AND TELEVISION RELAY STATION
-  DAIRY, CATTLE, POULTRY PROJECTS
-  MAIN HIGHWAY
-  SECONDARY ROAD
-  RAILWAY LINE

0 500 1000 M



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FIGURE 15

Expansion of the old city into desert areas to the east of the Cairo-Aswan road may be characterized as corridor development along the old Safaga road. This growth has been uncontrolled along both sides of the road, and has tended to expand toward close-in rural settlements.

Development in this area was motivated by:

- need for expansion areas beyond the old city;
- ease of horizontal expansion;
- the new right-of-way for the Cairo/Aswan road;
- the proximity to the old Qena/Safaga road;
- the location of the Sidi Abdel Rahim Mosque;
- semi-control of wadi flooding;
- government investments in industry, housing, and public services.

Development along the new Safaga road is limited. A few small Food Security industries for raising poultry and producing dairy products are located in the old orchard area northeast of the road. Beyond it, on the south side of the road, near the boundary with the Red Sea Governorate, is located the new university.

Beyond the university, along the Safaga road, is located the waterworks-pumping station for the Red Sea Governorate. To the southeast and east of the university the "New Qena" settlement area is planned, comprised of 800 hectares of desert land.

Southern corridor development has occurred between the Comhouria and 26th of July roads, towards the brick factory. Development in this area includes the macaroni factory, private housing and small-scale service establishments.

Development outward from old Qena in a south-westerly direction has been precipitated by access roads to the Nile-port, the sporting club and the area's relatively close proximity to the city center. This area historically was left undeveloped due to Nile flooding. In recent years, a development project of several hectares organized by farmers in the area was constructed with government approval.

To the southeast, development has occurred in proximity to the Governorate center (also on arable land) in the direction of the brick factory. Much of the construction in this area is public housing.

To the north, development has occurred between the 26th of July Street and the Cairo-Aswan road including a new hospital and preparatory school. Development there has reached the right-of-way for the new Safaga road.

Northwestern development between the old city and the Cairo/Aswan road was due to the infill of a canal in the area (partially filled by floods from the eastern plateau in the 1950's). A good part of this area is comprised of public and other formal housing and some public services.

The old city of Qena developed on a knoll to protect it from Nile and wadi flooding. It is a tightly organized settlement with few main thoroughfares or vehicular access.

c. Qena: Land Use

1. Residential: The following types of residential development are common in the urban area:

- the old city
- informal development (illegal)
 - urban structures
 - rural structures
- formal development (legal)
 - public housing
 - urban structures

The old city is the centroid of all other urban development. It is characterized by multi-storey structures in mud and burnt brick. The structures line narrow winding streets. Private open space in the structures is confined to the interior of the buildings and takes the form of courtyards or roofs. Very few thoroughfares exist in the old city; rather, numerous cul-de-sacs lead to residential quarters. The maze-like development creates shade for hot months, and cuts down on wind and dust. The cul-de-sacs organize the "neighborhood" spatially. Practically no public open spaces exist in the old city.

Informal development exists in two types: "urban" and "rural". "Urban" informal housing is multi-storey (usually of 2 to 4 floors), of concrete post and beam construction and burnt brick infill. Brick construction is also prevalent. It resembles formal housing in construction, but is generally illegal in the sense that building permits were not obtained. Informal "urban" housing has occurred primarily at the urban periphery.

Informal "rural" development is primarily of unburnt brick and one to two storeys high. It occupies a large plot with courtyard. Most of this type of development is occurring to the northeast of the city on arable land.

Formal "public housing" is the typical five storey walkup type (post and beam concrete construction with brick infill). Designs for these units are simply plugged into vacant areas. The designs ignore basic characteristics of traditional housing (i.e. courtyards, privacy, climatic control) and are not ideally suited to conditions in Upper Egypt. Particularly in Gena, similar densities could be achieved in the construction of two storey dwellings in available desert areas. Plans for the Gena new town development are similar multi-storey flats which are also inappropriate for the same reasons.

Formal "private" housing is of post and beam concrete construction with brick infill. However, buildings tend to be joined in "row" developments with private space at the rear. They thus more closely resemble the traditional structures.

ii. Industry

There are few industries in Gena (spinning mill, macaroni factory, poultry and dairy products, brick factory). These are predominantly found in the northern desert area along either the old or new Safage road. However, the brick factory is found at the southern limit of the city, while the macaroni factory is located south of town near the railway (also near the flour mill).

There is a need to bring future industrial programs into a single area in order to econo-

mize on infrastructure and rationalize development in desired areas.

iii. Commerce

The heart of small-scale commerce is in the old city along the Sidi Abdel Rahim thoroughfare. Larger-scale commerce has occurred in the planned extensions to the old city, near the rail terminal to the east and to the west and south. Commerce is primarily confined to the major streets.

Other small scale commerce is sited along major streets such as the Cairo/Aswan road and around the square on which is located Sidi Abdel Rahim Mosque

iv. Public Institutions

The government center is located to the southwest of the old city in an area of planned extension. The city council building is located to the east of the old city on a thoroughfare where other public institutions are found. Schools and hospitals are found primarily to the east and north of the city as well as in the old city. In the western desert area, these institutions are located along the old Safaga road.

v. Open Spaces

The principal open spaces are found in front of the rail terminal, in the city's eastern extension and around the Sidi Abdel Rahim Square.

The stadium is located on the Cairo/Aswan road. No parks exist with the exception of the Sporting Club, but open space does exist along Mustafa Kamal Street.

vi. Services and Small-Scale Industry

Services and small-scale industry are found scattered throughout the old city, in some parts of the urban extensions, and particularly along the road parallel to the railway south of Sharia Mohata.

4. Naga Hamadi

a. Physical Growth Issues

- i. Most recent physical growth within the Naga Hamadi city boundary has been controlled due to a plan for physical expansion which was produced about 15 years ago. Unplanned informal growth has occurred primarily in fringe areas just to the north of the city.
- ii. Future growth of Naga Hamadi needs current planning. The planned urban extension (to the southeast) is now saturated.
- iii. Expansion of the urban area will inevitably result in loss of arable land. Selection of areas for future growth should be made from vacant land and less productive arable land. Growth management of the urban area and its periphery are thus required.
- iv. Within the District of Naga Hamadi, opportunity for substantial development on non-arable areas can only take place upon the desert plateau where the aluminum factory is located.
- v. A strategy for development of the entire desert plateau near the aluminum factory is required. Efforts should be made to plan for an integrated community including the factory, cement plant, electrical company, and other housing in order to avoid duplication of public services and to optimize "urban service" potential.
- vi. The new town (Salaam City) which is planned on the desert plateau makes no attempt to integrate development there. It also appears to be very high standard with no attempt to design for local social, economic, cultural, or climatic needs. Further review is necessary before implementation of this project takes place (See Appendix E).
- vii. In both Naga Hamadi and Qena local conditions must be taken into consideration in the design of housing, schools, hospitals, etc. Standardized designs presently are developed in Cairo and are simply plugged into the local environment. An overall development plan should reflect these local conditions and requirements.

b. Naga Hamadi Development Characteristics

In the past 15 years, most urban development has been accommodated in a planned southwesterly urban extension to the city (40 feddans). Unplanned development has primarily occurred to the north along the Cairo road and in northern/central fringe areas. Less unplanned growth, however, has occurred than in Qena. (See Figures 16 and 17).

The physical elements which have influenced the spatial configuration of Naga Hamadi include:

- the Nile to the east;
- the Cairo/Upper Egypt road (along the Nile);
- the Cairo/Upper Egypt rail line (which divides the city into north and south districts);
- installation of the sugar factory (node for southern development);
- the western ring road and western extension (currently defines the western limits of the urban area).

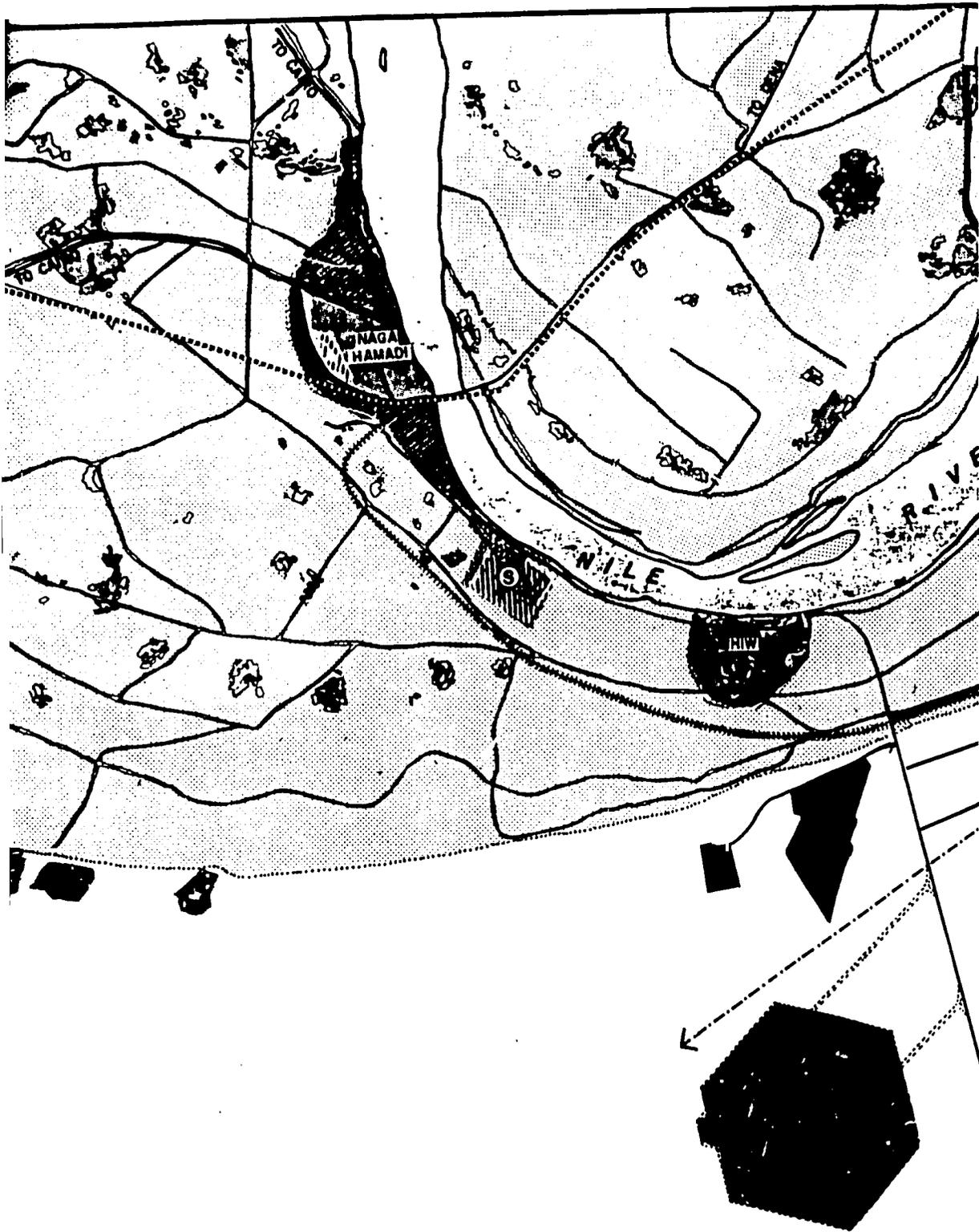
Another element which could have influenced spatial development is the Naga Hamadi bridge. No development, however, has taken place on the eastern bank.

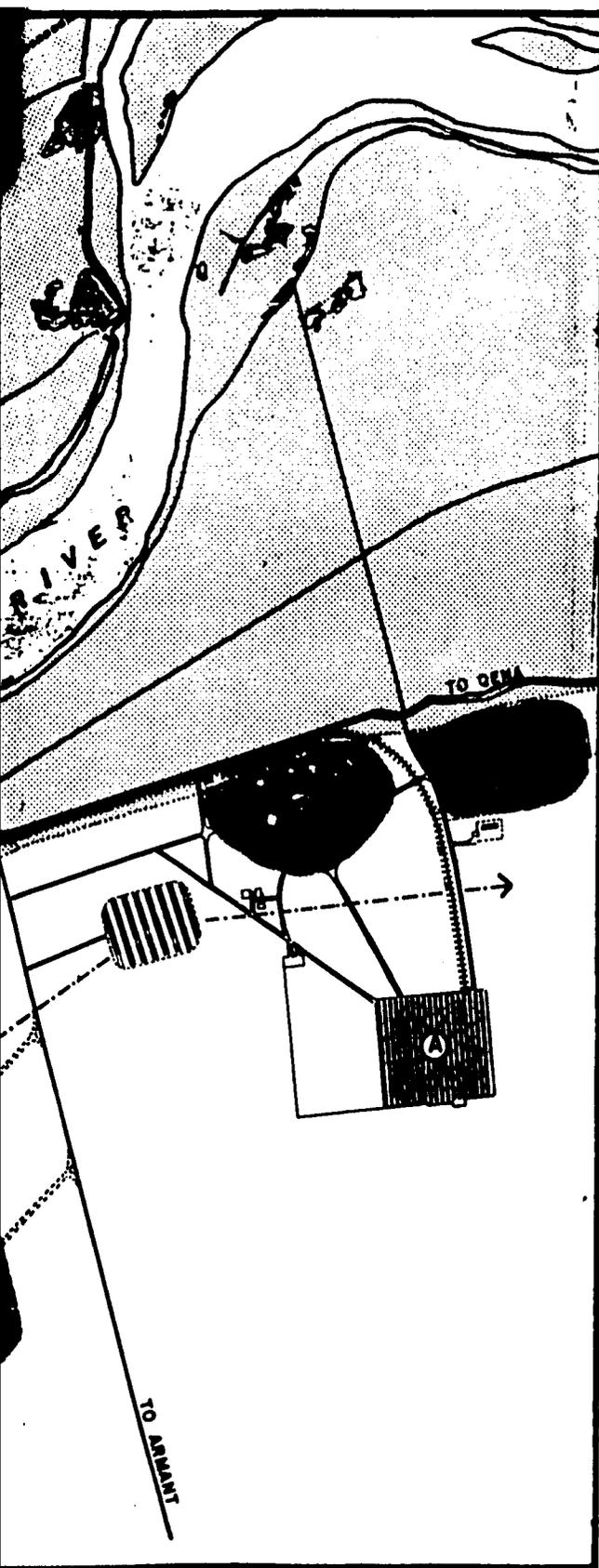
New elements beginning to have an effect on the spatial configuration include:

- the new Cairo-Aswan road;
- the new train terminal;
- rail spurs to serve the aluminum factory;
- new service roads serving the aluminum factory.

Since most residential growth in Naga Hamadi proper has been accommodated in the planned extension (shown in Figure 15 as mapped residential), it presents a marked contrast to the uncontrolled development which has occurred in Qena (see discussion in Administration Section).

Opportunities for future population growth in the city need to be examined. Possible solutions include infill and increased densities of the existing built-up area or planned expansion on less productive





NAGA HAMADI ,HIW EXISTING SITUATION

LEGEND

-  MAPPED RESIDENTIAL
-  UNMAPPED RESIDENTIAL
-  PROPOSED RESIDENTIAL
-  AGRICULTURAL
-  CEMETERIES
-  500KV OVERHEAD LINES
-  800 KV SUB-STATION
-  INDUSTRIAL AREA
-  ALUMINUM SMELTING PLAN
-  NAGA HAMMADI SUGAR REFINARY
-  MAIN HIGHWAY
-  SECONDARY HIGHWAY
-  SINGLE TRACK RAILWAY LINE
-  ALUMINUM PLANT PRIVATE RAILWAY LINE



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FIGURE 16



RIVER NILE

TO GENA

TO CAIRO

NAGA HAMADI LAND USE PLAN



-  MAPPED RESIDENTIAL
-  UNMAPPED RESIDENTIAL
-  AGRICULTURAL
-  HOSPITAL
-  INDUSTRIAL
-  INDUSTRIAL (SUGAR REFINERY)
-  EDUCATIONAL
-  NAGA HAMADI CITY BOUNDARY
-  MAIN HIGHWAY
-  SECONDARY ROAD
-  RAILWAY LINE
-  ALUMINUM PLANT PRIVATE RAILWAY LINE

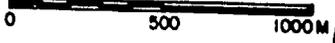


FIGURE 17

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arable areas. However, the bulk of population growth for the district should be tied to economic activities on the desert plateau.

c. Naga Hamadi: Land Use

i. Residential

As is the case in Qena, Naga Hamadi shows similar types of old city, informal, and formal residential development. In Naga Hamadi, however, little distinction can be made between rural and more urban informal housing. Most informal housing is in the northern sector (a type of corridor development) or in central fringe areas. It ranges between 2-3 storeys of burnt brick construction. Some single-family low income informal development primarily of mud brick construction, has occurred north of town in a filled-in canal.

Formal housing is mostly located in the new planned extension. It is primarily 2-3 storeys of concrete post and beam construction and brick infill. Some public housing is located in this area as well as near the railway. Other formal housing is provided by the sugar factory for its employees.

The old city occupies a relatively small area and shows some of the characteristics of Qena's central core (i.e. few thoroughfares, dwelling units bordering pedestrian walks with private spaces to the interior), but on a much smaller scale.

ii. Industry

The only large industry in Naga Hamadi proper is the sugar factory. While small industries are located in the old city and in the planned extension.

iii. Commerce and Services

The principal areas of commerce and services are along the main road in the old city and along 35th and 59th streets in the planned extension.

iv. Public Institutions

The municipal building is on the main road in the old city, while other governmental functions

are located in expropriated royal family properties along the Nile to the south of the old city. Schools and institutions are principally located in the new extension or along the new Cairo road. Open spaces are confined to the grounds of educational facilities.

v. Current Development on the Aluminum Factory Desert Plateau Includes: (See Figures 16 and 18).

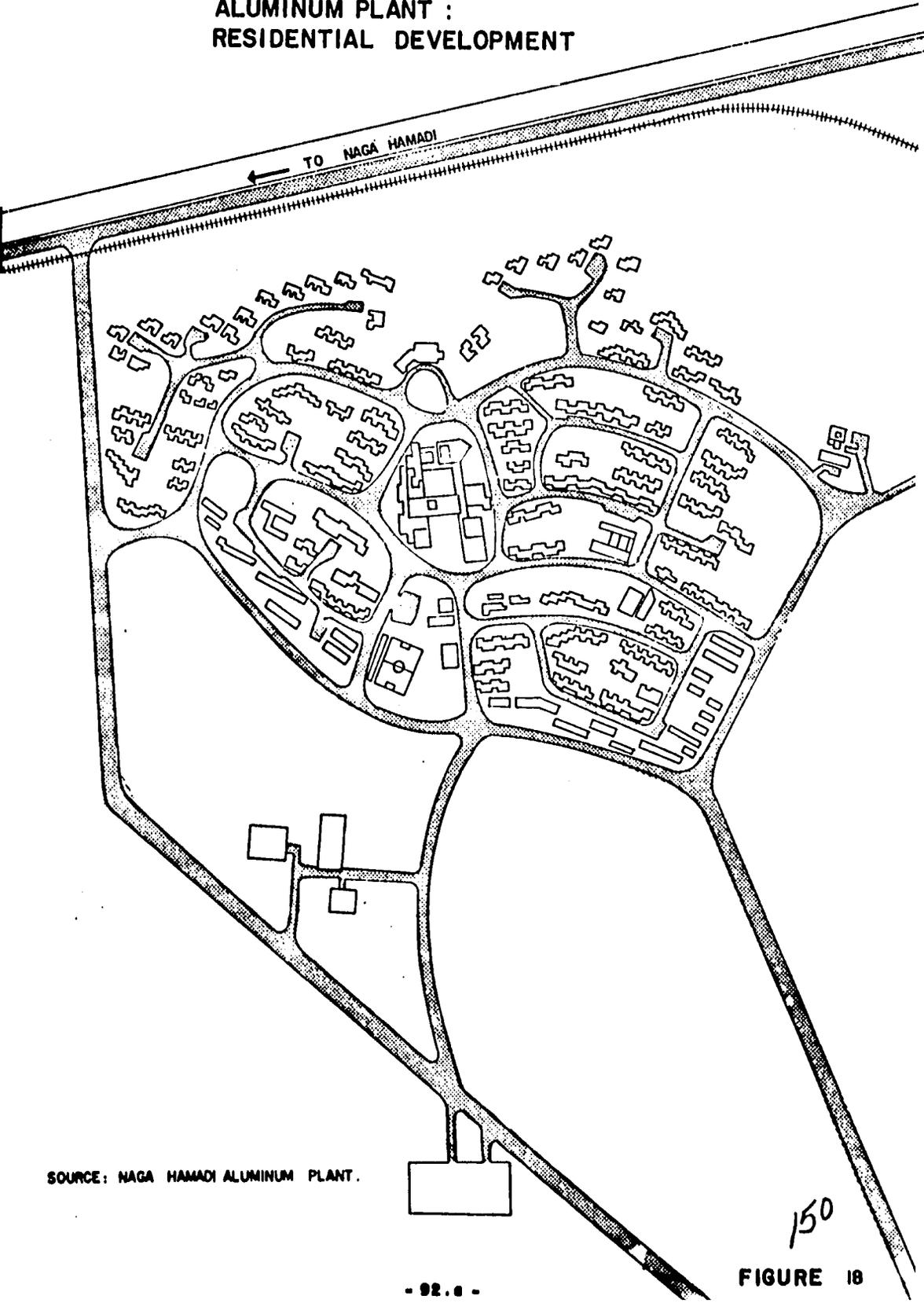
- the aluminum factory (approximately 50 hectares);
- residential development of the factory (approximately 50 hectares) including: 1,500 flats, primary school, hospital, nursery, mosque, cinema and sporting club;
- a small residential development for workers at the electrical sub-station;
- the electrical sub-station;
- the windscreen forest;
- reclaimed land for food sufficiency;
- the new desert road from Naga Hamadi to Armant;
- main road leading past the electrical sub-station with a feeder road to aluminum plant and community.

Other development planned on the plateau includes the new town of Salaam City (area 400 hectares; 6,200 units). (This project's site is about one kilometer to the south of the aluminum plant on Armant road). A cement factory and housing is also proposed for a site 12 kilometers to the south of the factory.

v. QENA GOVERNORATE: INFRASTRUCTURE ISSUES

During the course of the Illustrative Development Project, the Study Team interviewed local government officials responsible for infrastructure programs at the Governorate and city levels in Qena and Naga Hamadi. A review was also made of the "Egypt National Transport Study" prepared by NEDECO in 1981 and a draft report "Infrastructure Overview: Sohag, Qena, Aswan

NAGA HAMADI
ALUMINUM PLANT :
RESIDENTIAL DEVELOPMENT



SOURCE: NAGA HAMADI ALUMINUM PLANT.

and the Red Sea". The latter provides the basis for most of the regional infrastructure issues identified. Relevant basic technical data from these sources have been provided in an infrastructure profile in Appendix D of this report.

The key development parameters which will determine the success of a growth inducement strategy in Qena-Naga Hamadi area have been identified as:

- Infrastructure development must be governed at the regional level by planned areas of emphasis. To achieve this, it is vital that coordination among the various sectors is ensured.
- An integrated regional development plan is required in order to optimize the deployment of financial resources. To date, due to unplanned investment and a lack of coordination, a waste of resources has occurred.
- Improvement in construction, supervision, and maintenance of the infrastructure network is required. Sufficient levels of investment must be earmarked for this purpose. Until recently, infrastructure has been allowed to deteriorate due to inadequate maintenance.
- An improvement in the tariff structures and cost recovery for basic utilities and services is needed in order to satisfy future expansion, operation, and maintenance requirements.
- Only through changes in policy at the central government level can these issues be resolved satisfactorily.

Some progress is being made in resolving these problem issues. The 1978-82 Plan, for example, recognized the previous neglect of utilities and infrastructure especially in Upper Egypt governorates, and allotted 50 percent of national investment to upgrade networks throughout the country. Thus, benefits are beginning to filter down. Present government efforts indicate a will to strengthen infrastructure networks as a means to attract investment and improve the economic and social status of the region. It is hoped that heavy out-migration will be reduced by these efforts.

A. Specific Findings and Description of Infrastructure Elements

In the following section specific findings of the Study Team are discussed and a brief description of the key infrastructure elements are provided. Technical data regarding these networks are provided in Appendix D to this report.

1. Transportation

- Most of the transportation network needed for the future development of the region is already in place and has a surplus of capacity or is under construction. What is needed is a general upgrading of the network and an improvement in the mode of transport;
- Additions to the transportation network should only be made to service new economic activities. This will require a full economic analysis or appraisal including the feasibility of these activities;
- Current investment policies have emphasized development of road capacity over other modes while continuing to heavily subsidize rail transport. Inland waterways carry only 11 percent of all traffic while road capacity has been developed to the point where it carries 75 percent of freight traffic. Railroads, which carry only 14 percent of freight, receive the highest subsidies as only about 24 percent of the economic costs of rail freight costs are recovered through revenues. Figure 19 shows the National Transport Study projections for the flow of commodities to and from the Qena Governorate in the year 2000.

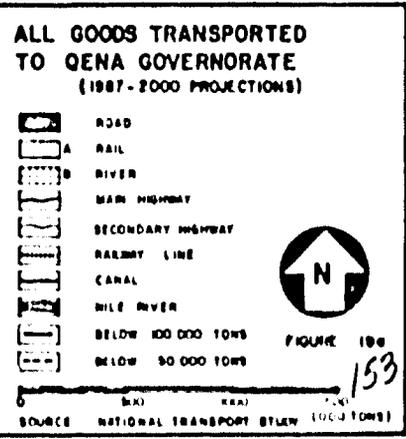
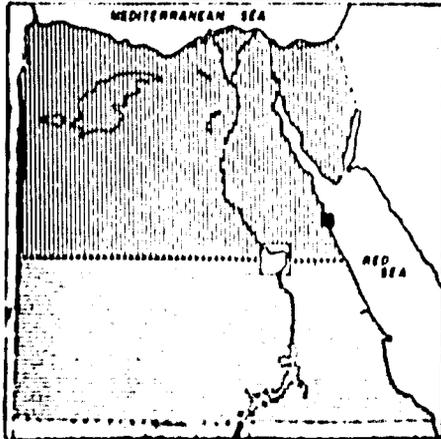
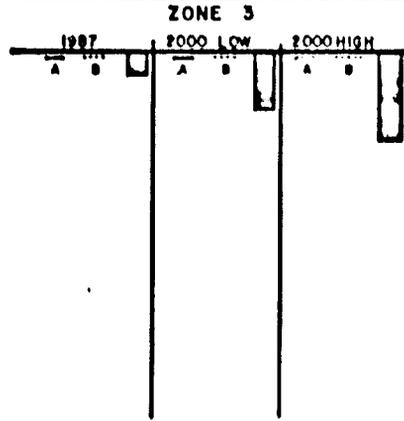
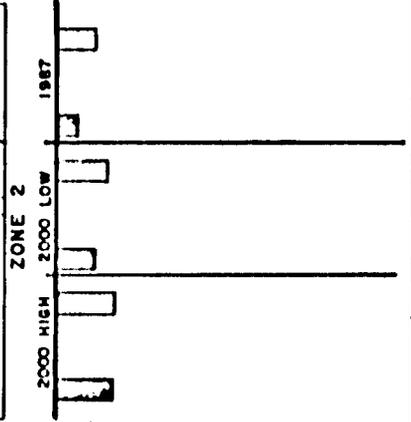
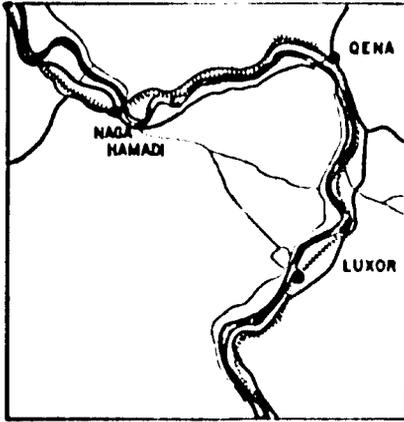
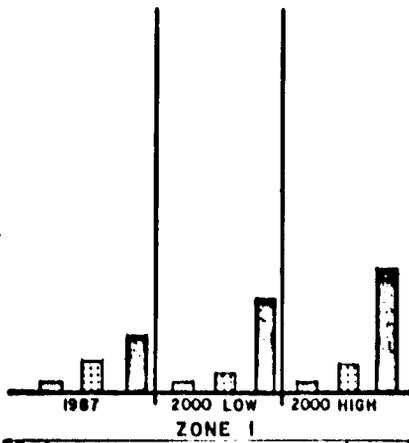
As pointed out above, the existing transportation base, coupled with improvements which are already underway will provide a sound basis for the economic development of the study area.

The principal transportation elements which exist or are planned in the study area include:

a Roads

i. The Cairo/Aswan Road

The Cairo/Aswan road or National Upper Egypt road serves as a central spine to the Qena Governorate and Nile Valley. From Sohag Governorate on the west bank it by-passes part of Naga Hamadi, traverses the Naga Hamadi bridge and the agricultural area on the east bank of the Nile. It passes through Dishna and Qena en route to Luxor and Aswan. The road is currently being upgraded and realigned north of Naga Hamadi and Luxor. The road carries a large amount of local traffic and most inter-governorate traffic particularly via Sohag and Qena. A principal bottleneck is the very narrow Naga Hamadi bridge which is further complicated



by a heavy mix of Naga Hamadi local traffic. For this reason, the alternative "west bank" road is often used.

ii. The West Road

The west bank road links Naga Hamadi and Qena and the portion connecting Luxor and Qena is being upgraded to a primary road. Spurs from the road (and intersecting the Armant desert road) serve the aluminum factory and electrical sub-station on the desert plateau outside of Naga Hamadi, as well as several small villages and a recent agricultural reclamation project along its route. The road provides a critical function for the transport of alumina and aluminum products to and from Safaga. This function is facilitated by the high standard of the Qena bridge.

iii. The Naga Hamadi/Armant Road

Due to the geography of the Nile Valley in the study area, the Naga Hamadi/Armant road will eventually reduce the distance between these two settlements by 95 kilometers vis-a-vis the Nile Valley roads. Much of the road has already been completed and is partially paved (25 km). Means are being devised to negotiate gradient problems north of Armant. The road's feasibility will also be linked to the construction of a bridge at Luxor or Armant. However, the road could have some consequences for the development of Qena as it would then be by-passed by Cairo/Aswan traffic.

Currently the road provides access to the desert plateau from the aluminum factory, the electrical sub-station, as well as the planned cement factory and proposed new town (Salaam City).

iv. The Qena/Safaga Road

The Qena/Safaga road links the Nile Valley via Qena, with the Red Sea and the principal port serving the study area at Safaga. Consequently, most of the traffic on the road is composed of trucks and trailers carrying commodities.

The road, which was constructed in 1941, is in relatively good condition. However, due to the topography of the right-of-way, it has a large series of 237° bends between Qena and Safaga and

some 16 gradients over 51 percent. Consequently, some heavily loaded vehicles use the Quft/Quseir road despite the greater distance.

v. The Quft/Quseir Road

The Quft/Quseir road originates at Quft on the Cairo-Aswan road. It is roughly parallel to the Qena Safaga road and is in less good condition. Because of fewer steep gradients and bends it would be preferred by heavily loaded vehicles if it were in better condition. It also provides a more direct access to the Aswan Governorate and hence serves for the transport of commodities between it and the Red Sea Governorate.

b. Rail

i. The Upper Egypt Line

The Upper Egypt line has historically been a fundamental transport link between Upper and Lower Egypt. It serves most of the settlements in the Nile Valley en route.

The line is dualled as far as Assiut and by 1983 and 1988, respectively, a double track should be completed to Naga Hamadi and Aswan. The line carries most of the passengers between Upper and Lower Egypt and 14 percent of commodity shipments.

ii. Abou Tartour/Qena/Safaga Line

Between Qena and Safaga a new rail link is under construction by the Ministry of Industry. Large parts of the earthworks are in place and the line is expected to be completed by 1983. By 1985, an additional link is planned between Qena and Abu Tartour which would permit the exploitation and export of phosphates via Safaga. A rail connection to the port and opportunities for shipment of alumina and aluminum products as well as phosphates are under study.

iii. Sugar Cane Rail Network

An extensive network of narrow gauge rail lines exists in the study area for the transport of sugar-cane to the refineries at Naga Hamadi, Disha, Qos, and Armant.

The network's function is to transport the cut cane to the refineries within the critical

period in which it must be processed (24 hours). However, considerable losses occur due to handling procedures and the deteriorated network. The system is in need of upgrading and alternative means of transport should be envisaged to reduce losses.

c. Waterways

Despite its historic tradition and the relatively low cost of utilization, the Nile is not fully exploited as a transport facility. The principal problems of inter-regional transport include needed improvements in docks, ports, mechanized handling facilities, and a greater fleet.

In the Qena/Naga Hamadi region, river transport is used primarily for the transport of molasses, petroleum, aluminum and cement. Inter-regional transport also carries phosphates, fertilizers, iron ore and other commodities handled in bulk.

The principal ports in the study area include:

- The Qena Public Port which includes three concrete piers;
- Qena Oil Port is a barge fitted with pumps and connected via a pipeline to storage tanks north of Qena;
- Naga Hamadi Sugar Factory Port includes a 75 m quay and rail and pipeline connections to the factory;
- Naga Hamadi Aluminum Factory Port includes a quay of 200 m length with a pipeline connection to the factory. It handles primarily coke and oil products

d. Safaga Port

The Safaga port is the principal port in the Red Sea Governorate serving the study area, although other smaller specialized ports exist for petroleum and phosphates. The Safaga port is in a well sheltered harbor and is well-situated with respect to the project area. It will play an increasingly important role for the handling of alumina and aluminum products, cereals, petroleum and fertilizers. Planned improvements are under way.

e. Airports

Luxor Airport is the primary facility serving the study area. It can now carry Boeing 737 and 707 jet liners and is to be upgraded to an international airport. It is within one and one-half hour's drive from Qena/Naga Hamadi. The airport will serve any expected demand associated with development of the study area.

Likewise, the Hurghada Airport is expected to meet the needs of the Safaga port. It is located at a distance of 57 km or 50 minutes' driving time to the north of Safaga.

2. Physical Infrastructure

Systems for the provision of water and the disposal of sewerage and solid waste have suffered from a long period of neglect. The principal problems with these facilities in the study area include:

- Water:
- Obsolete, inadequate, and difficult to maintain plants and networks;
 - Significant losses;
 - Highly mineralized ground sources - lack of purification and treatment plants;
 - Inadequate pumping and storage facilities;
 - Contamination by sewage and solid wastes;
 - Lack of a resource management scheme.
- Sewage:
- Lack of sewage networks and treatment capacity in urban areas.
- Solid Waste:- Lack of reliable and efficient schemes.

a. Water Supply

Water supply systems in the Qena Governorate are in poor condition due to the lack of investment in recent years. Improvements in Qena, Naga Hamadi, and Luxor are, however, under way.

Water supply for Qena and Luxor is provided by both surface and ground sources. However, Naga Hamadi, and most other smaller settlements, relies completely on ground water which has a high salt content. These

areas, furthermore, are presently without any purification plants.

Other problems with urban networks include low water pressure due to inadequate reticulation systems, poorly maintained standpipes and surface drainage and lack of spare parts for maintenance.

The plants and supply networks are obsolete and inefficient, while proposed improvements will only benefit a limited service area. Rural areas are presently being provided with new electric pumps to replace outmoded and irregular diesel pumps.

b. Electricity and Telecommunications

The Nile Valley Governorates are served by the Unified Power Grid with integrated linkages between each governorate. Relatively minor modifications are required to upgrade the system.

Telecommunications in the study area, on the other hand, are particularly poor and below the already unsatisfactory national level of service.

i. Electricity

Current sub-station capacity is judged sufficient by local officials to meet expected demands until 1990. However, due to rising demand in Luxor, shortages could arise elsewhere in the Governorate until a new sub-station is provided.

Most problems in the current network are associated with transmission and distribution. The lines are lengthy and overloaded which results in voltage irregularities.

The principal consumer of electricity in the Governorate is the Aluminum Plant which consumes 12.6 percent of annual energy supplied to all of Egypt. Tariffs for energy use at the smelter are currently lower than that for domestic use, though plans are being made to increase them. This increment should substantially improve cost recovery, although, it would have a decidedly negative impact on profitability of the plant, unless the price of the plant's output is sufficiently high to cover the increased costs.

The rural electrification program has also contributed to increased supply demands. By

1984, more than 90 percent of all villages in the Governorate are to be served.

ii. Telecommunications

Due to past levels of investment, telecommunications in the study area are inadequate and in a deteriorated condition. In rural areas the problem is particularly acute with respect to difficulties in requesting emergency aid.

Currently Qena, Naga Hamadi, and Luxor have only 1,000, 1,189 and 800 telephone lines respectively, although, by 1982 and 1991, plans exist to double and triple the number of lines. Whether these improvements will provide a sound enough base for required economic development is yet to be determined. However, advances in technology should minimize these problems in the long run.

Nevertheless, it is important that vital links between the major metropolitan areas, Nile Valley Governorates and the Red Sea be improved if the study area is to realize its potential.

3. Social Infrastructure: Housing, Health, and Education

Social infrastructure is largely in better condition than the physical infrastructure. In fact, many of the trouble areas are more a function of the latter's deteriorated status. Housing, for example, functions well as a means of shelter but lacks proper planning and suffers from poor utility service levels. Health problems also are often related to unsanitary conditions. Nevertheless, improvements are required. The situation with respect to housing is summarized in the following sections.

a. Housing

Although housing supply in the study area seems to be keeping pace with household formation, most of its production appears to be uncontrolled, even in the larger urban areas. One of the main reasons for this uncontrolled development is the lack of development strategies for the urban areas which would provide planned areas into which the city could expand. It was found, for example, that much less illegal development has occurred in Naga Hamadi, which had a planned extension than Qena which did not. In addition, government standards for subdivisions and building construction are too high to be affordable

by the majority of households. For example, the New Qena and Salaam City Projects would require direct or indirect subsidies of about L.E. 4,322 and L.E. 6,193 per unit respectively to be affordable by median income households. (See Appendix E).

Locally manufactured brick from topsoil is the chief building material in the Governorate. Brick-making kilns are numerous in the rural areas. They provide a much needed source of income for small farmers. Although the use of topsoil is prohibited, there is no alternative to its use. There are plans for the development of a cement industry and shale brick factory to satisfy this need. However, the bricks will require a sophisticated process which cannot be duplicated locally. Hence, it is likely that unless alternative low-technology materials and brick-making techniques can be developed, continued loss of topsoil will occur.

At the time of the Study Team's visit, the Municipality of Naga Hamadi had not received its government quota of subsidized cement for several months. This typifies the shortages faced by this program. It has also contributed to the use of topsoil bricks. Nevertheless, it is doubtful that the provision of subsidized building materials has greatly assisted in controlling illegal development.

Government housing schemes, including that of the Aluminum Plant, are not well adapted to local conditions. In these cases, a 3-5 storey walk-up flat is simply sited in the local environment with little regard for climate or socio-cultural values. Furthermore, achieved densities are low, particularly with regard to traditional housing. They also do not afford the comfort of private space and courtyards. They are also costly and heavily subsidized. In the future, government should focus on providing serviced land and leave construction of housing to the private sector. It should, however, provide financial assistance and demonstration units which do meet local requirements. It could also ensure that building materials which have been allocated for a project are actually delivered in a more timely fashion.

Income levels in the study area are likely to be lower than in other parts of urban Egypt. Consequently, problems of appropriate design, levels of service, and planning standards are likely to be more difficult.

b. Health

Improvements in infrastructure, notably the provision of adequate communications, rural roads, pumping stations, and improved sewage and solid waste disposal, would do much to alleviate health problems.

Ambulances and nurses are particularly needed to improve health services. Hospitals are found in most major settlements. However, they are old and in need of upgrading and are inadequate to meet needs. It is estimated that 300 additional beds are required.

Bilharzia is an acute problem in heavily irrigated areas. A special clinic is required in the region.

Rural health clinics are often without water due to inadequate capacity in rural water networks. In addition, a greater number of facilities is required.

c. Education

There is a shortage of secondary schools, although an adequate number of preparatory schools does exist. Only 18,000 of 52,000 eligible secondary students are presently enrolled. Lack of transportation in outlying villages could contribute, to this problem. Qena will soon be the seat of a new university with three faculties and a total enrollment of 5,000 students. Construction is behind schedule, the reasons for this delay could not be determined.

The university could provide an economic boost to the city and provide much needed opportunities for local students.

Qena Governorate, like others in the Nile Valley has a large illiterate population. This problem is recognized and the 1978-82 Plan has attempted to restructure the educational program through greater emphasis on technical and vocational training. Naga Hamadi and Qena, in particular, have already benefited from this program.

VI. ADMINISTRATIVE AND FINANCIAL IMPLICATIONS OF THE NUPS STRATEGY FOR QENA AND NAGA HAMADI

The organization of the Qena Governorate has evolved with the passage of the Local Government Laws of 1960, 1971, 1975, 1979 and 1981. The governor is the President's representative at the governorate level and supervises the local government

units within the governorate. The Qena Governorate contains 11 districts (*markaz*) each with a town designated as its administrative capital. The governorate local council has six members from each district for a total of 66 members. The districts also elect local councils; 10 members from each district capital and six members from each other local unit (339 members). Cities and villages also elect local councils, and in the case of the Qena Governorate account for 198 and 816 members, respectively. It is purported that all local councils have been created and members elected. It is not known to what extent they are carrying out their delegated functions. For the purposes of the present Illustrative Development Project our focus will center on the governorate structure itself in addition to the local councils of Qena and Naga Hamadi. Figure 20 presents a schematic of the organizational structure of Qena Governorate and its relation to central government.

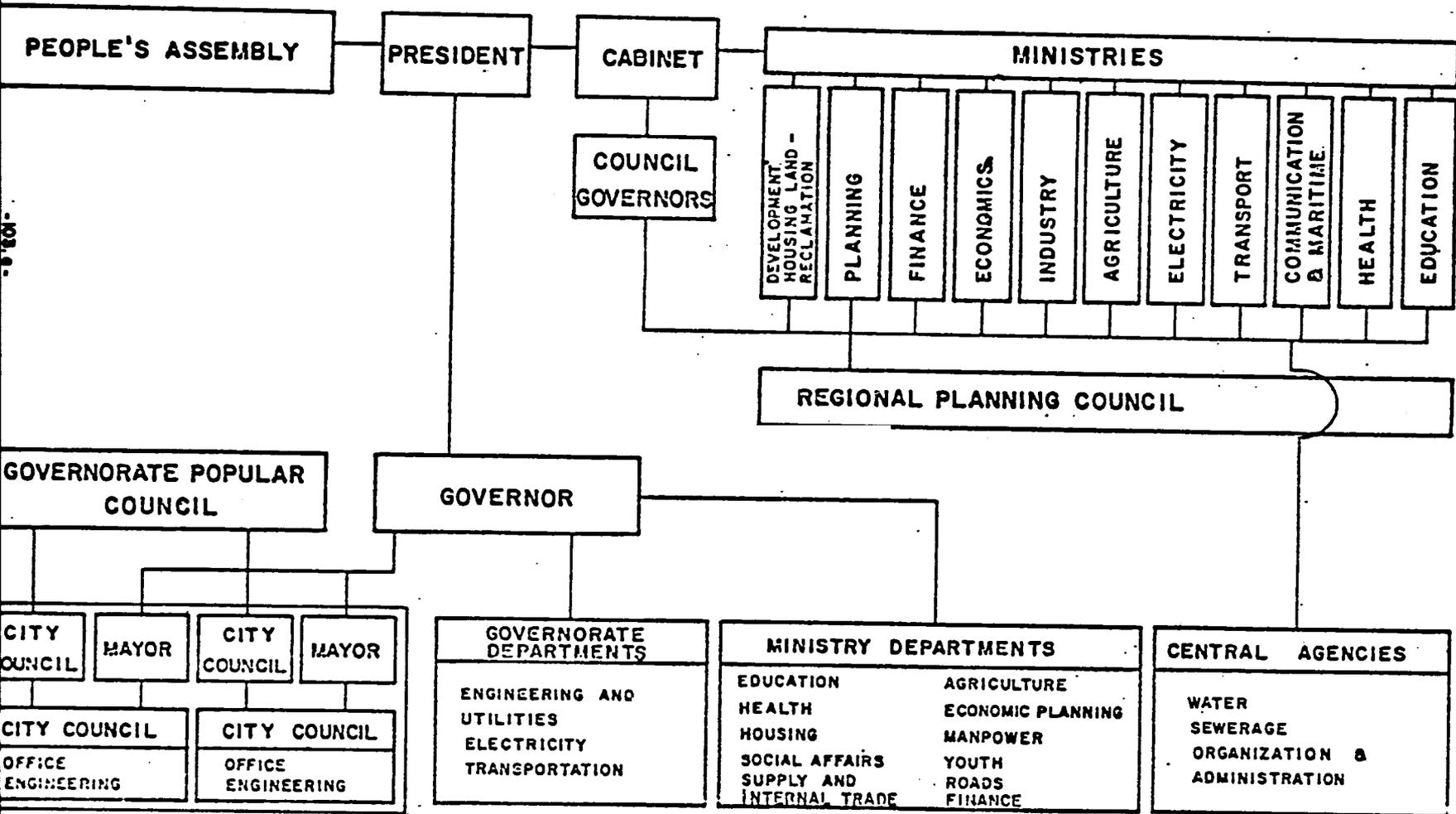
A. Administrative Structure

Figure 18 highlights the functional responsibilities of government agencies affecting NUPS at the local level. While local government laws establish a four- or five-tier hierarchy in the Qena Governorate. With regard to its implications for NUPS, it can be effectively characterized as a two-tier system of government. The Governorate, which is presided over by the secretary general, the highest ranking civil servant at the governorate level, serves four main functions:

- It serves as receptor at the local level for central government policies, programs and projects which are conceived, planned, designed and in some cases implemented directly from Cairo.
- It collects the add-on tax placed on all import and export taxes, movable properties (stocks, bonds, etc.), business profits and the "joint" revenues assigned to local budgets (real estate, motor vehicle and entertainment taxes, and it integrates the capital investment requests (BAB 3) from the towns and villages into a draft governorate plan and incorporates local council BAB 1 and 2 budgets into a draft governorate budget. (The budget is divided into 3 major chapters or "BABs" consisting of salaries, BAB 1; operating expenses, BAB 2; capital investment, BAB 3; and Bab 4, capital transfers).
- It is responsible -- mainly through the Ministry of Development's Governorate Department -- for managing the construction of most public buildings.
- The Governorate's Agriculture Department, as part of a committee formed with representatives of the Ministries

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SCHEMATIC OF QENA AND GHARBIA GOVERNORATES AND THEIR RELATION TO CENTRAL GOVERNMENT



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FIGURE 20

of Housing and Irrigation, has prime responsibility for enforcing Law No. 59 of 1973 which prohibits construction on agricultural land without the Ministry's authorization.

On the other hand, the city councils in Qena and Naga Hamadi perform the following functions:

- Issue permits for buildings, shops, and restaurants.
- Regulate and control building construction.
- Maintain government buildings.
- Street cleaning.
- Maintain parks and public gardens.
- Local road construction and maintenance.

The existing administrative structure and the functions performed by the Qena Governorate and the city councils of Qena and Naga Hamadi pose constraints to implementing the NUPS Preferred Strategy:

- There exists no planning framework or capacity at the governorate level to assist in the identification and review of projects to be planned and designed by central government physical development and infrastructure ministries.
- There exists little capacity to effectively use the budget as a programming and planning tool in order to establish local council needs and to allocate limited local revenues on a pre-determined priority basis.
- There exists a lack of middle level professionals and technicians with sufficient urban management skills.
- The committee headed by the Ministry of Agriculture's Governorate Department, in conjunction with the local council engineering departments, has had uneven success in preventing the illegal subdivision and development of agricultural land for building purposes.

The present section examines the functions of local government with respect to each administrative deficiency and makes recommendations on how improvements might be achieved.

B. Project Cycle For Physical Development

The major functional responsibilities of the main local government units are outlined in Table 26. It is readily

TABLE 26
 MAJOR FUNCTIONAL RESPONSIBILITIES OF GOVERNMENT AGENCIES AFFECTING MUPS AT LOCAL LEVEL - OETA GOVERNORATE

LEVEL OF GOVERNMENT	SECTORAL PLANNING, BUDGETING, TAXATION	POLICY, PROGRAMMING AND PROJECT CYCLE: PHYSICAL INFRASTRUCTURE & INDUSTRY				MAJOR RESPONSIBILITIES AND AGENCIES INVOLVED		
						MANPOWER AND TRAINING		ENFORCEMENT
1. CENTRAL								
A. MINISTRIES & AGENCIES	MINISTRY OF PLANNING FINANCE, ECONOMICS	MINISTRY OF DEVELOPMENT, HOUSING & LAND RECLAMATION (INC. GOPP, NEW URBAN COMMUNITY AUTHORITY, & WATER & SEWAGE AUTHORITIES); MINISTRIES OF ELECTRICITY; TRANSPORT, COMMUNICATIONS & MARITIME TRANSPORT; HEALTH; AND EDUCATION	MINISTRY OF INDUSTRY	CENTRAL AGENCY FOR ORGANIZATION AND ADMINISTRATION	MINISTRY OF MANPOWER AND TRAINING	MINISTRY OF AGRICULTURE	OTHER AGENCIES	
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Integrate sectoral plans into comprehensive national plan; - Allocate investment funds and resources to local government units; - Prepare guidelines and review draft final budgets for governorates; - Establish taxation policy. 	<ul style="list-style-type: none"> - Determine all policy matters; - Draft sectoral budgets; - Establish physical standards - Undertake urban physical planning (GOPP); - Plan and design all infrastructure and public facilities; - Supervise implementation of major infrastructure networks. 	<ul style="list-style-type: none"> - Develop all policy matters - Regulate many public sector companies (including licensing); - Make major industrial location decisions. 	<ul style="list-style-type: none"> - Apply Civil Service Law: <ol style="list-style-type: none"> trainings; job classification; organization and methods; other provisions of Civil Service Law. 	<ul style="list-style-type: none"> - Recruit & place pool of college graduates and returning servicemen into public service; - Develop vocational training programs. 	<ul style="list-style-type: none"> - Establish policy guidelines concerning use of agricultural land; - Grant final approval for sub-division permits 		
2. GOVERNORATE								
A. DEPARTMENTS & AGENCIES	ECONOMIC PLANNING AND FINANCE OFFICE	GOVERNORATE ENGINEERING & UTILITIES AND GOVERNORATE LEVEL MINISTERIAL DEPARTMENTS	NO SPECIFIC DEPARTMENT ASSISTANCE TO MINISTRY FROM ENGINEERING & UTILITIES AND ECONOMIC PLANNING & FINANCE OFFICE	GOVERNORATE DEPARTMENTS OF MINISTRY OF MANPOWER AND TRAINING AND OF CENTRAL AGENCY FOR ORGANIZATION AND ADMINISTRATION		GOVERNORATE ENGINEERING & UTILITIES OFFICE AND MINISTRY OF AGRICULTURE DEPARTMENT		
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Collect local, central government and special fund taxes; - Prepare governorate draft economic plan (review SAB 3 investment requests for towns & villages). 	<ul style="list-style-type: none"> - Supervise implementation of most infrastructure and public facility projects; - Operate certain public facilities (health, education, electricity). 	<ul style="list-style-type: none"> - Select specific industrial sites (committee including local council participation). 	<ul style="list-style-type: none"> - Administrate central government policies and programs. 	<ul style="list-style-type: none"> - Oversee local recruitment and placement; - Operate vocational training programs. 	<ul style="list-style-type: none"> - Review requests for building & subdivision approvals on agricultural land and use of topsoil for brick making (joint committee of representatives from Governorate departments of agriculture, housing and irrigation) Issue building permits for buildings costing more than L.E. 5,000. 		
3. CITY COUNCIL								
A. DEPARTMENTS	FINANCE OFFICE	LOCAL COUNCIL ENGINEERING AND UTILITIES OFFICE	-	-	-	LOCAL COUNCIL ENGINEERING & UTILITIES OFFICE		
B. RESPONSIBILITIES	<ul style="list-style-type: none"> - Develop draft budgets for SABs 1 and 2. 	<ul style="list-style-type: none"> - Create and maintain water sewerage works; - Maintain government buildings, local roads, parks and gardens. 				<ul style="list-style-type: none"> - Issue building permits for buildings costing less than L.E. 5,000 - Enforce building code and issue permit violations; - License cinemas, restaurants and other forms of entertainment. 		

SOURCE: Discussions with local officials

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apparent that both local units have limited influence in the identification, planning and design of policies, programs and projects to be sited in the Governorate. This is especially true with respect to physical infrastructure and public facilities. All public housing and water, sewerage, electrical and transport networks and facilities are presently planned and designed by the respective ministries and authorities in Cairo. As a result, there is little opportunity to design for local climatic or site conditions, or to take advantage of local building materials or customs. The Governorate Department of the Ministry of Development, in conjunction with the local city councils, does have the responsibility for locating site-specific public facilities (housing blocks, schools, hospitals, vocational schools, etc.) and for the supervision of the construction of these facilities.^{2/}

Physical infrastructure, such as water supply and sewerage systems, in addition to being planned and designed in Cairo, is often implemented directly from Cairo with minimum local participation. The construction of the new Qena sewerage system is an example of this procedure. The local Council Engineering Department's first formal contact with the project design will be when the system is turned over to it for operation and maintenance although it may have provided initial project data.

While the siting of public facilities within the Governorate is usually undertaken with sufficient local council participation, the process is not occurring in an orderly fashion. Due to the deficiency in physical planning capacity at the local level, along with the lack of any master or physical development plan to guide the cities' growth, physical growth on land suitable for development (i.e., desert land or low productivity agricultural land) is occurring in a haphazard manner. In Qena, low-grade agricultural and desert land to the east of the Cairo-Aswan highway is being poorly utilized. New industry and public services (city market, schools, a military installation and a dump) have been sited in an unplanned and piecemeal way. Public facilities such as housing blocks and a hospital are also being constructed on fertile agricultural land in other parts of the city.

The site planning for specific public facilities also leaves much to be desired. Due to a lack of up-to-date mapping or sufficient surveying capacity, site planning is done in a cursory fashion.^{3/} As a result, potential problems associated with poor soil conditions, topography, distribution of usable land between buildings, roads and open space are not confronted until construction is under way or until the site is occupied.

The Governorate and local council's administrative problems vis-a-vis the control of and the planning for physical development in Qena are quite different, and in many ways much simpler, than the challenging and difficult alternatives for guiding physical growth confronting Naga Hamadi. Over the past 15 years, physical growth within the Naga Hamadi city boundaries has occurred in an orderly fashion due to a formal plan for physical expansion. Growth has occurred mainly on arable land. Now little land remains for subdivision. As existing city boundaries are not contiguous to desert land, future expansion of the present city boundaries will inevitably result in the loss of arable land.

These points have not been lost on national or local officials. The conclusions drawn from an analysis of the availability of land for future expansion has earmarked substantial new development to take place on non-arable land on the desert plateau 7-8 kilometers to the south of the city. Already a major aluminum smelting plant and a power sub-station have been constructed and are in operation. In addition, plans already exist for a cement plant and a planned new community (El Salaam City) to be located in the same general area.

From discussions with aluminum plant officials, and on examination of the master plan for the new town, it is apparent that each is planned as a self-sufficient community for its workers or residents. Each development provides for housing, shopping, recreation, and in the case of the aluminum plant, land for agricultural production. At present there appears to be little interest in developing the various projects in an integrated fashion with a common set of housing and commercial facilities. Obviously, the Naga Hamadi City Council has no legal jurisdiction, or even if it did, little technical capacity to undertake this type of integrated development. To a lesser extent, but also quite evidently, the Governorate has little overall control over development on the desert plateau due to its limited influence over public sector industrial planning decisions being taken in Cairo. For this reason, the Governorate's plan for the new town at El Salaam City is being done while taking little cognizance of the existing and proposed development going on around it.

C. Sectoral Planning, Budgeting and Taxation

The local government sectoral planning and finance system in Egypt has been dealt with in great detail in many previous studies and reports.^{4/} The present section briefly reviews how they function at the local level and highlights their implications for the Qena Governorate.

Like other governorates, Qona has two sources of revenue, the first is what is allocated to the governorate in the central budget -- budgetted expenditures equal to locally raised funds plus central grants-in-aid or subsidies. The second source of revenues is the special funds which are raised locally and do not enter into the budget balancing process at the central level. The Qona Governorate Finance Office is responsible for reviewing and integrating each local council's budget requests (BABs 1, 2 and 4) into a draft governorate budget. Copies of the draft budget are sent to the Ministry of Finance and the Secretariat General of Local Government. An additional copy of the BAB 3 budget (capital investment) goes to the Ministry of Planning for review and comment. A final draft budget approved by the Ministry of Finance, in consultation with the respective ministries and Qona's Governor, is sent to the Cabinet for final discussion, negotiation and approval. The Ministry of Finance notifies the governor of the final budget items, and it is the governor's responsibility to distribute the budget to the local government units. Qona's financial resources were not available locally from the governorate Finance Office. The Secretariat General for Local Government in Cairo was able to supply information on the governorate's revenues and expenditures for the years 1978 and 1979. However, information on special funds, a potentially important local government financial resource, was not provided in Qona and was not available in Cairo.

The Economic Planning Office in the Qona Governorate presently serves a very limited function. It is responsible for integrating the draft sectoral plans of the governorate's ministerial departments into a comprehensive draft plan. The ministerial departments directly prepare the sectoral budgets with little coordination with the Planning Office. The Planning Office does review, but generally does not modify or discuss, BAB 3 investment requests which come from the local government units. It serves mainly as a conduit between the local and central government systems.

1. Expenditures

Local council budgets which are reviewed and consolidated at the governorate level are generally forwarded to the Ministry of Finance without trimming any items and with minimal discussion with the local council officials. When notice of budget approval finally arrives from Cairo, more often than not the amount of funds earmarked for investment projects (BAB 3) has been reduced. Inherent reductions in budget requests has led to a "shopping list" mentality at the local council level when preparing budgets. The engineering office of

the Naga Hamadi City Council has repeatedly requested a feasibility study for a sewerage system for the town with no apparent results. Budget cuts of this nature are made without consultation with local level.

On the other hand, in interviews with local officials, it was determined that budgets do not reflect the needs of local residents. Budget preparation was found to be largely based on previous year requests, and does not take into account the changing needs of the local government units. There is little attempt to prioritize needs within a specific city council, or to prioritize budget allocations among competing city councils. Qena Governorate's Economic Planning and Finance Offices presently have little capacity to rectify this situation.

Examining the expenditures for the Qena Governorate from the years 1978 and 1979 contained in Table 27, the small amount of funds earmarked for investments is startling. BAP 3 investments are L.E. 2.3 million and L.E. 2.0 million, respectively, for the years 1978 and 1979. These figures represent only 9.4 and 6.8 percent of total Governorate expenditures for the two years. By far the largest expenditure item is for salaries and wages (BAP 1). This budget item equals 70.4 and 74.7 percent of total expenditures for the two years. Within Qena's Governorate departments, education receives the largest share of total expenditures, almost 50 percent for the two years. It should be noted that all investment in the governorate does not show up in the budget. Investment in major infrastructure -- water, sewerage and electricity -- appears on the respective authority or agency's budget in Cairo. Industrial investment in public sector companies is counted in the budget of the responsible ministry (i.e., industry in the case of Qena's aluminum smelter and spinning mill, agriculture for the Food Security Programs in poultry and dairy farms). Funds for public housing which are now raised locally through the Economic Housing Fund (1979) also do not appear on the governorate's budget. We were unable to determine the total capital investment in Qena Governorate.

2. Revenues

The Qena Governorate has three sources of budget revenue: (1) revenues which are collected locally including revenues from special funds; (2) the governorate's share of joint revenues (taxes on business profits and customs duties, and from movable property -- stocks, bonds, etc.) which is collected nationally but which is counted as local revenue before the central government grants-in-aid are added; (3) central govern-

TABLE 27

ODIA GOVERNORATE EXPENDITURE - 1978 AND 1979

ITEM	BAS I				BAS II				BAS III				BAS IV							
	SALARIES AND WAGES				CURRENT EXPENDITURES				INVESTMENTS				CAPITAL TRANSFERS				TOTAL			
	1978		1979		1978		1979		1978		1979		1978		1979		1978		1979	
DEPARTMENTS	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$	L.E. (000's)	\$
Headquarters	3,320	20.0	4,437	20.0	1,971	36.4	1,840	34.2	934	39.8	1,626	80.4	84	97	6,509	26.0	8,000	27.0		
Education	9,150	52.0	11,430	51.6	1,687	33.8	1,903	35.4	850	36.2	-	-	-	-	11,687	46.7	13,333	44.9		
Health	3,010	17.1	3,799	17.1	965	19.7	1,176	21.9	534	22.8	318	15.7	-	-	4,529	18.1	5,293	17.8		
Housing	464	2.6	632	2.9	120	2.4	126	2.3	-	-	-	-	-	-	584	2.3	758	2.6		
Social Affairs	304	1.7	402	1.8	113	2.3	144	2.7	28	1.2	52	2.6	-	-	445	1.8	598	2.0		
Supply & Internal Trade	115	0.6	156	0.7	14	0.3	30	0.5	-	-	-	-	-	-	129	0.5	186	0.6		
Agriculture	961	5.5	1,203	5.4	88	1.8	145	2.7	-	-	-	-	-	-	1,049	4.2	1,348	4.6		
Miscellaneous	89	0.5	111	0.5	16	0.3	18	0.3	-	-	27	1.3	-	-	105	0.4	156	0.5		
TOTAL	17,613	100.0	22,170	100.0	4,994	100.0	5,382	100.0	2,345	100.0	2,022	100.0	84	100.0	25,036	100.0	29,671	100.0		

Columns might not add up due to rounding

SOURCE: Secretariat of Local Government

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ment grants-in-aid or subsidies. It is apparent from Table 28 that the governorate derives very little in its total budget from locally raised revenues. This is especially true when one considers that 36.5 percent of all "locally" raised revenue is in fact an allocation by central government of joint revenues collected nationally. Including all local revenue as presently calculated by the Ministry of Finance, the Qena Governorate is still able to raise only slightly more than 10 percent of its total budgetted expenditures. It raises none of its own BAB 3 investment budget. All revenues raised locally go into salaries and current expenditures (BABs 1 and 2). One potential source of increased local revenue -- Board of Governors' authorization to tax up to 15 percent of after-tax profits of public sector companies -- is thwarted in Qena's case due to non-profitability of existing public sector industries (aluminum plant, sugar factories, spinning mill).^{5/} As mentioned previously, information concerning revenues collected and controlled locally through the special funds was not made available to the NUPS Study Team.

3. Manpower

The Qena Governorate suffers at the same time from a large bureaucracy and a lack of qualified middle level staff. This lack of qualified staff is particularly acute in terms of the administrative changes and reorientation called for in the implementation of the NUPS strategy at the local level. As of 1979, the governorate had more than 40,500 employees (See Table 29) of which almost 11,200 (over 27 percent) were employed in the headquarters. Of the almost 29,400 employees of the ministerial service departments, less than 7,000 or 17 percent have university degrees. Most of these are school teachers connected with the governorate's Education Department. The majority of governorate employees are in the craftsman, clerk and supporting staff categories.

The department heads met on the NUPS Study Team trip to Qena were generally of a high quality and dedicated to their work. Most of these top grade officials were either born in the Governorate or in Upper Egypt and feel a strong sense of duty to improve local conditions. This is less true for many middle-level personnel. Middle level staff has often been assigned to the Qena Governorate from Cairo or other posts in Lower Egypt. Commitment to the area is often lacking. This problem is compounded by the fact that many middle level civil servants have been placed in the Governorate by the

TABLE 2B

QENA GOVERNORATE BUDGET REVENUES - 1978 and 1979

REVENUE SOURCE	1978		1979	
	AMOUNT (L.E.000'S)	PERCENTAGE (%)	AMOUNT (L.E.000'S)	PERCENTAGE (%)
<u>RAISED LOCALLY</u>				
Land Tax	747	3.0	748	2.5
Building Tax	27	0.1	30	0.1
Entertainment Tax	10	0.0	12	0.0
Vehicle Licences	190	0.8	248	0.8
Joint Revenues *	10	0.0	13	0.0
Utilities Administered				
by Governorate	677	2.7	205	0.7
Other Local Fees & Taxes	245	1.0	302	1.0
Quarries	26	0.1	26	0.1
General Revenues	188	0.8	142	0.5
Other Local Revenues	222	0.9	300	1.0
SUBTOTAL	2,342	9.4	2,026	6.8
Local Share of Joint Revenues	872	3.5	1166	4.0
SUBTOTAL LOCAL REVENUE	3,214	12.9	3,192	10.8
<u>GOVERNMENT SUBSIDIES</u>				
Current	19,393	77.5	24,360	82.1
Action of Used Property	4	0.0	1	0.0
Sale of Lands & Buildings	4	0.0	2	0.0
Other Finance Sources	382	1.	-	0.0
Investment	1,885	7.5	2,014	6.8
Share of Loans from Foreign Governments	154	0.6	101	0.3
SUBTOTAL GOVERNMENT SUBSIDIES	21,822	87.1	26,478	89.2
TOTAL BUDGET ** REVENUES	25,036	100.0	29,670	100.0

* Joint revenues refer to taxes on business profits and custom duties, and income from stocks, bonds and similar wealth.

** Revenues from Special Funds are excluded from these Totals. This data was not made available to the NUPS Team.

SOURCE: Secretariat of Local Government

TABLE 29

GRADES OF CIVIL SERVANTS - ODMA GOVERNORATE HEADQUARTERS AND SERVICE DEPARTMENTS 1979

GRADE	HEADQUARTERS		SERVICE DEPARTMENTS*														TOTAL	
	NO.	%	EDUCATION NO.	%	HEALTH NO.	%	HOUSING NO.	%	SOCIAL AFFAIRS NO.	%	AGRICULTURE NO.	%	MANPOWER NO.	%	SUPPLY & INT. TRADE NO.	%	NO.	%
Top Management**	3	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0.0
Technical & Management Professional	241	2.2	4,479	26.9	1,629	20.6	72	7.0	159	16.6	341	14.6	64	27.7	4	1.6	6,989	17.2
Technicians	1,235	11.0	7,629	45.7	1,654	21.0	246	23.9	265	27.7	1,017	43.4	5	2.2	55	22.5	12,106	29.9
Craftsmen	1,068	9.5	490	2.9	1,062	23.6	396	38.5	67	7.0	173	7.4	20	8.7	14	5.7	4,090	10.1
Administration	328	3.5	150	0.9	21	0.3	19	1.9	63	6.6	15	0.6	4	1.7	76	31.0	736	1.8
Clerks	1,997	17.9	1,064	6.4	350	4.4	110	10.7	184	19.3	117	5.0	92	39.8	57	23.3	3,971	9.8
Supporting Staff***	6,256	55.9	2,872	17.2	2,373	30.1	185	18.0	218	22.8	678	29.0	46	19.9	39	15.9	12,667	31.2
TOTAL	11,188	100.0	16,684	100.0	7,889	100.0	1,028	100.0	956	100.0	2,341	100.0	231	100.0	245	100.0	40,562	100.0

* Beginning in 1980 the Service Departments of Youth and Roads have been added to the governorate structure.

** Top management of Service Departments are considered as personnel of their respective ministries.

*** Including "General" staff and security guards

SOURCE: Ministry of Local Administration

Ministry of Manpower and Training as part of its responsibility to act as the employer of last resort for college graduates and returning servicemen. In addition, the Civil Service salary schedule as specified in Amended Law No. 47 of 1980 is inadequate to act as an incentive to attract and hold the best people to government service. A middle management professional assigned to the Qena Governorate makes less than L.E. 2,000 per year with a 30 percent allowance for working in Upper Egypt. A professional in the private sector in Cairo could easily make double that amount. (See NUPS "Urban Growth and Urban Data Report". Part IV).

Finally, there exists a lack at middle management levels of managers and technicians with sufficient urban management skills. Little base-line data is collected, and less is processed or used. Management techniques which would assist in the identification of potential target groups for public services, the affordability of existing and proposed public services and programs by the users, the determination of needs and priorities in the allocation of resources among competing local councils, the proper planning and programming of the budget, and the evaluation and review of ongoing programs are lacking.

D. Enforcement of Prohibitions on the Use of Agricultural Land

In the Qena Governorate's Ministry of Agriculture Department in conjunction with a committee including representatives of the Ministries of Irrigation and Housing is responsible for enforcement of Agricultural Law Nos. 59 of 1973 and 1978, amending Basic Agricultural Law No. 53 of 1966. This law establishes the procedures for converting agricultural land (both inside and outside city boundaries) to private residential use and agro-industrial projects.^{6/} Since the city council Engineering Departments are responsible for the issuance of the building permit, they also play an important role in the overall enforcement process.

The law, as amended, states that the usage of agricultural land within city limits may be changed as long as the land is used for the benefit of the town itself (i.e., public facilities) or for the sole dwelling unit of a property owner. Approval of the above uses, as well as permission to subdivide agricultural land within city limits, are initially made at the Governorate's Agricultural Department and then sent to the national level for final approval. Building permits should not be issued by the city council engineering departments before approval is given.

The same basic provisions apply to use changes on agricultural land outside city boundaries. However, in this

case, subdivision for private residential use is prohibited. Only land required as a sole residence, for a public use or an agro-industrial project is permissible. In addition, the amending laws contain specific provision prohibiting the use of top soil for making bricks except with the permission of the Ministry of Agriculture.

Based on field trips to Qena Governorate and discussions with local officials, it is apparent that only large tracts of land are being legally subdivided. Since 1950, only four subdivisions have been approved within the Qena city limits. The four total 86 feddans (36.1 hectares), and range in size from 6 to 30 feddans. Since passage of Law No. 59 of 1973, no subdivisions have been approved. Yet field visits reveal that subdivision (or at least illegal building by individuals) continues at a rapid pace. This activity is occurring on agricultural land between the city center and the Nile River along one of the main entrances to the city, and to the east of the Cairo-Aswan road. It was not possible to determine the exact size of land holdings being developed, but a local real estate broker estimated that most illegal building is presently taking place on plots smaller than 1 feddan. An issue that will need further investigation is whether the small plots are being illegally subdivided and built upon, or whether individual owners of small plots are simply building illegally. Whatever the method, the head of the Qena City Council's Engineering Department estimated that between 1950 and 1980 approximately 200 feddans were illegally developed for residential use. This figure represents 2.3 times the amount of land legally subdivided.

In comparison to the Qena City Council, Naga Hamadi has had somewhat greater success in controlling the illegal conversion of agricultural land. Most physical growth in Naga Hamadi over the past 15 years has been of a planned nature. This is due in large part to the existence of a physical development plan for a new section of the city. This expansion has taken place on land which belonged to the royal family prior to the 1952 Revolution and subsequently passed into private hands. The six tracts of land which have been legally subdivided since 1968, 41 feddans or 17.4 hectares, correspond very closely to the new planned area of the city. In fact, the last tract to be added to the city's planned expansion (1.4 feddans in 1979) received Ministry of Agriculture approval in compliance with law No. 53 of 1978. According to Naga Hamadi officials, with the exception of a limited amount of illegal development taking place on the northern fringe of the city, all subdivision has been done legally. Very few parcels remain to be subdivided within the city boundaries.

According to the Agricultural Law cited previously, building permits should be issued by the local council

engineering department for construction on agricultural land only after approval has been obtained from the Ministry of Agriculture. An analysis of the number of permits issued by the Qena City Council over the past 10 years was not possible due to variations in the available source material. The City's chief engineer did estimate, however, that approximately 30 percent of all units constructed in Qena are built illegally. With all the illegal land subdivision taking place (estimated at 70 percent), the figures are probably much higher.

Naga Hamadi's building permit information tends to agree between sources, and therefore, was examined in somewhat greater detail for the incidence of illegal building. The chief of Naga Hamadi's Engineering Department believes that most building taking place within the city boundaries is legal. Available information tends to substantiate his claim. Only 44 violations have been issued over the period 1969-1980. 7/ He mentioned that the incentive for obtaining a building permit is that a permit holder is entitled to buy building materials at government subsidized prices. Recently, one of his main problems has been a lack of government subsidized cement.

A quick quantitative estimate of the amount of informal construction (only without a building permit) which has occurred in Naga Hamadi between 1969 and 1980 compares an estimate of the number of residential housing units constructed over the period with the number of residential building permits issued plus the number of public housing units constructed. Allowing for a certain amount of permits issued for home improvements (which would not provide additional dwelling units), the analysis conclude that almost all of Naga Hamadi's residential building has taken place legally. As is shown in Table 30, between 12 and 25 percent of the estimated number of dwelling units constructed between 1969 and 1981 were constructed without building permits

Illegal use of agricultural land and top soil for bricks is also occurring in rural villages and along the governorate's main highways. Land along the main routes connecting Luxor and Qena is developing at an especially rapid pace.

In conclusion, the Ministry of Agriculture, working in conjunction with the local councils of Qena and Naga Hamadi, has had uneven success at halting the illegal use of agricultural land for building purposes. In the case of Qena where the problem is most severe, the Ministry's representative in the Qena Governorate attributes his department's inability to control subdivision and building on small land parcels to three factors. 8/ He sees the main issue as one

TABLE 30

ESTIMATE OF ILLEGAL BUILDING IN NAGA HAMADI, 1969-1981

YEAR	NUMBER OF RESIDENTIAL BUILDINGS 1/	NUMBER OF DWELLING UNITS 2/	CHANGE IN NUMBER OF DWELLING UNITS	NUMBER OF RESIDENTIAL PERMITS 3/	NUMBER OF CORRESPONDING DWELLING UNITS 2/	ESTIMATED NUMBER OF UNITS WITHOUT PERMITS 4/
1969	956	1797				
			254	418	786	-
1970	1091	2051				
			288	108	203	-
1971	1244	2339				
			327	224	421	-
1971	1418	2666				
			374	128	241	133
1973	1617	3040				
			427	233	438	-
1974	1844	3467				
			485	190	357	128
1975	2102	3952				
			534	268	504	50
1976	2397	4506				
			305 (555)	317	596	-
1977	2559 (2692)	4811 (5061)				
			325 (622)	65	122	208 (500)
1978	2732 (3023)	5136 (5683)				
			346 (700)	214	402	- (298)
1979	2916 (3395)	5482 (6383)				
			370 (784)	263	494	- (290)
1980	3113 (3812)	3852 (7167)				
			395 (881)	216	406	- (475)
1981	3323 (4281)	6247 (8048)				
TOTAL	-	4450 (6251)	4450 (6251)	2644	4970	514 (1,563)

1/ Assumes annual increase in number of residential buildings of 12.3 percent between 1969-1976 and 6.75 percent between 1977-1981. Numbers in parenthesis assume a continued 12.3 annual increase between 1977-1981.

2/ 1976 Census of 1.88 dwelling units per residential building for Naga Hamadi.

3/ Naga Hamadi Engineering Department, 1981.

4/ The Change in Dwelling Units minus the number of dwelling units represented by buildings permits.

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of facilitating the provision of a sufficient number of affordable housing solutions to meet the demand. He readily admits, however, that in the short-term there is corrective action that can be taken in two areas. Presently, many owners of illegally subdivided agricultural land or individual owners who wish to build on agricultural land are going directly to the city council engineering offices for permit approval. In circumventing the Ministry of Agriculture's procedures, these owners are, in effect, building legally on land whose change of use has not been approved. By the time the Ministry becomes aware that a permit has been issued, the building is under construction. The Ministry will file a complaint against the violator, and eventually the case comes before a judge. The problem is compounded and control over growth is effectively lost due to the fact that the local judges will only issue fines for such a violation, and in many cases the fine is not paid. In the Qena Governorate, no building has been demolished as a result of illegal building.

VII. Recommendations: NUPS Illustrative Development Strategy

A. Introduction: NUPS Direct Investment Proposals

The successful pursuit of a policy of phased decentralization as has been proposed by NUPS to the Qena-Naga Hamadi area, requires that a higher level of investment in job creation occurs in those settlements than in other regions, to support a more rapid population growth than would occur if that policy were not being followed. It also requires, in most cases, that some structural change occur in the urban employment base of the settlements. Usually employment in manufacturing industries must play a much greater role in the settlement's employment structure than it has previously.

A comparison of the National Urban Policy Study proposed investment in job creation in the Qena-Naga Hamadi area with proposals for Greater Cairo and the national urban average distribution is shown in Table 31. In both Qena and Naga Hamadi, employment growth rates are projected to increase at rates much faster than both Greater Cairo and the national urban average, due to the NUPS policy of phased decentralization to those settlements. Furthermore, the sectoral share of employment in mining, manufacturing and construction (the primary urban non-service sector employment) is projected to change dramatically as the result of this policy. In Qena, 1985 employment in mining, manufacturing and construction is expected to be roughly 21 percent of the employment base if presently observed trends continue. Under NUPS proposals, this structure will

TABLE 31

COMPARISON OF NUPS DIRECT INVESTMENT IN JOB CREATION IN QENA-NAGA HAMADI
WITH GREATER CAIRO AND NATIONAL URBAN AVERAGE COSTS

	1980-1985 POPULATION CHANGE (000's)	CHANGE IN EMPLOY- MENT ('000's)	EMPLOYMENT ANNUAL GROWTH RATE	AVERAGE COST		1979 PRICES
				OF URBAN EMPLOYMENT PER JOB (L.E.)	TOTAL COST (L.E. MILLIONS)	PERCENTAGE OF END PERIOD URBAN EMPLOYMENT IN MINING, MANUFACTURING & CONSTRUCTION (%)
-1985						35.3
1986-1990	1,922	781	1.049	5,854	4,572	37.7
1991-1995	2,250	1,139	1.056	6,063	6,906	43.7
1996-2000	2,621	1,733	1.064	6,862	11,892	49.8
<u>QENA</u>						
-1985						20.6
1986-1990	28	11	1.058	7,381	81	28.0
1991-1995	31	16	1.065	7,027	112	37.3
1996-2000	38	25	1.077	7,567	189	55.2
<u>NAGA HAMADI</u>						
-1985						19.2
1986-1990	22	9	1.061	7,965	67	25.7
1991-1995	27	14	1.073	7,337	103	36.7
1996-2000	31	21	1.081	9,545	158	53.7
<u>NATIONAL URBAN</u> ^{1/}						
-1985						32.5
1986-1990	3,565	1,449	1.047	5,997	8,689	35.3
1991-1995	4,462	2,107	1.054	6,162	12,984	41.9
1996-2000	4,886	3,231	1.063	6,939	20,421	48.4

SOURCE: NUPS analysis. See NUPS Final Report, Appendix I

^{1/} Settlements with 1976 urban populations greater than 50,000.

change to the point where by 2000, roughly 55 percent of employment will be in the mining, manufacturing and construction sector. Similarly, Naga Hamadi's share of employment in mining, manufacturing and construction is projected to increase from 19 percent in 1985 to 54 percent in 2000. However, to accomplish these structural changes in employment, greater investment per job is necessary in Qena-Naga Hamadi than in either Greater Cairo or the national urban average. Thus as is shown in the Table, the average costs of job creation are higher in both Qena and Naga Hamadi than in Greater Cairo and in urban Egypt as a whole. This higher cost per job results from changes needed in the structure of the employment base and the projected growth rate of employment. A more complete description of the methodology for calculating these costs is found in the appendices to the National Urban Policy Study Final Report. (Appendix II.B).

The following sections discuss in more detail industrial prospects in Qena and Naga Hamadi.

B. Long Term Industrial Development Prospects.

In the long-term, industrial growth prospects of this development region will be greatly affected by:

- The investment priorities aimed at the modernization of the existing industries;
- Efforts aimed at maximizing the regional economic gains from existing industries through building up and creating new industries that fully utilize their linkages to induce further growth.
- The allocation of new industries located in the region on the basis of the following locational factors: natural resources already exploited in the region; the existing industrial base; the assumption that sufficient demand will materialize for these industries' output as the market size of South Upper Egypt expands.

Some of the most important possibilities are discussed below.

C. Recommended Industrial Development

1. Large-Scale Industries

a. Sugar Based Industries.

Prefeasibility studies are needed to determine the net gains from alternative ways of utilizing sugar-

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canoe baggase. Currently the sugar plants use the baggase to generate steam power. Alternatively, the baggase could be used in the manufacture of paper pulp and wood fibre. This industrial use, in turn, would stimulate further industries such as furniture and printing. The conversion of baggase to paper pulp and wood fibre proved successful in stimulating secondary employment in both Kem Onko and Effou in Aswan Governorate. The baggase of Qena Governorate's four sugar plants might prove sufficient to support a similar industry. Further investigation is warranted.

Molasses could be fermented into alcohol and yeast. Sectoral studies already undertaken for food processing industries suggest an expansion in the production of yeast. Also, increased alcohol production could be used in the pharmaceutical and perfume industries.

b. Building Material Products

The cement plant with its production scale of 1.5 million tons a year could supply adequate cement for the production of a range of concrete products including blocks, panels, pipes, and tiles.

c. Textile Products

The existing spinning mill in Qena, in combination with the plans for its further expansion could support the establishment of a weaving mill which in turn could support a local ready-made clothing industry.

d. Metallic Products

The aluminum plant is currently isolated, its benefits to the local area are still quite limited. To strengthen the role of the plant in the industrial development of the region it is proposed that emphasis should be directed toward establishing aluminum-based industries. These industries could include the manufacture of holloware, die casting (valves, taps, window catches, locks, hinges), and aluminum extrusions (window and door sections). These industries should be located in close proximity to the aluminum plant.

e. Animal Feed Stuff

The Governorate has launched a new development program for commercial poultry, dairy and livestock

production. These projects are in their early stages and are still limited to areas adjacent to Qena City along the Safaga desert road. Local plans propose the expansion of the livestock sector and encourage the financing of these projects by private investors. This type of project will necessitate a significant increase in the provision of animal feedstuff. The availability of molasses from existing sugar factories could encourage the expansion of the local production of the needed animal feedstuffs. The process would necessitate mixing the molasses with other additives.

f. Mining Industries.

Mining activities in the area, especially along the Qena-Safaga desert road, could contribute to the development of industrial projects in the manufacture of ceramics, porcelain, pottery, tableware products. These types of industries are typical of those with high labor absorption rates and strong regional linkage effects. There is also a wealth of marble, which if exploited, could support employment in cutting and polishing. The marble could be used as an ornamental stone serving both a domestic and foreign market.

g. Agricultural Machinery Plant.

Given the dominance of agricultural activities in the region, the fragmentation of land holding and the necessity to integrate agricultural with industrial development, the feasibility of establishing an agricultural machinery plant in the region should be investigated. This type of industry is relatively footloose, not being tied to any particular location. Its proximity to large agricultural markets in South Upper Egypt would be advantageous. Such a plant, if located in the region, should be sited in close proximity to the existing aluminum plant. The proposed plant should limit its production to the fabrication and assembly of the lighter types of agricultural equipment that would be appropriate to small farm holdings. The product line could comprise plows, seed and fertilizer drills, sprayers, cultivators and hand tools.

2. Small Scale Industries.

A successful industrial development strategy for the Qena-Naga Hamadi region should emphasize, not only large-scale, capital-intensive industries, but also should encourage the establishment of small-scale

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industries to generate sufficient employment opportunities.

Small-scale and service industries are mostly suited for products that serve local markets. The NUPS team identified certain small-scale industries that would have a potential to grow in the region:

- a. Leather dying and footwear industries. Indications exist that a sufficient supply of raw material will become available with the implementation of the proposed expansion of the livestock industry;
- b. Carpets and woollen mats;
- c. Canning of molasses syrup;
- d. Plastic bags, straps and containers;
- e. Confectionaries;
- f. Fabricated metal products (tin cans, hand and edge tools, enamelware and nuts and bolts);

The basic advantages of these types of industries are:

- Ease of adoption to local market conditions;
- Relatively high job creation;
- Ability to generate substantial linkages;
- Ability to provide productive channels for local savings.

However, based on interviews and discussions with local investors, the NUPS Team found that small-scale industries in the Qena-Naga Hamadi region suffer from a number of problems:

- a. Shortage of local skilled workers. An owner of a newly established small-scale metallic industry at Naga Hamadi indicated that his main source of recruiting skilled labor is the Cairo area. To attract workers he offers them highly competitive wages of seven pounds per day. This wage is in addition to other generous fringe benefits such as free accommodation on the plant's site, extra time off and monthly free transportation to Cairo. Most of the skilled workers attracted from other areas come without their families and with no intention of remaining in the area for long periods of time. This complicates sustained production. Local training institutions are unable to fill this gap. Currently, there are three secondary industrial schools with a

total enrollment of 5,333 students located in Qena and Naga Hamadi. Most graduates eventually find employment in government or the public sector service. There also exist vocational training facilities at the aluminum plant, the sugar factories and the spinning mill for satisfying their own immediate needs. This is in addition to training programs conducted by the Handicraft Industries and Cooperative Organization (HIPCO) which has training facilities in welding, sheet metalwork and forging .

- b. Lack of credit and finance institutions which are responsive to local needs.
- c. Deficiency in transport and marketing network.
- d. Government regulations concerning insurance on trainees and employees. Employers are forced to pay 19 percent of paid wages for insurance premiums. In many cases as an incentive to attract qualified labor, they are forced to pay the employees' contribution which amounts to 11 percent.
- e. Social attitudes toward working women. It is customarily not acceptable for women to work in a factory-type setting.
- f. Lack of incentives for trainees during their training period who are usually paid relatively higher wages for non-skilled work in the agricultural sector and thus are not attracted to training programs.

Strengthening the role of the small-scale industry in the region would need government support through incentives, these incentives could include:

- i. Subsidization of on-the-job training in order to compensate for differences in prevailing wage rates between the agricultural sector and the trainees' stipends. Subsidies could be channelled either through direct cash payments to small business or through income tax deductions;
- ii. Modifications of the existing insurance laws to permit lower insurance payments on current employees and to waive insurance payments for trainees for two years, rather than the current six-months period;
- iii. Allocation of special funds or long-term financing of small-scale industries;
- iv. Tax exemptions for the first five years after industry's start-up;

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- v. Provision of technical assistance to help potential investors define the most appropriate financing plan to start a small scale industry and to select locations with potential positive ratios of return and cost advantages.

For the case of Upper Egypt, in order to create economies of agglomeration, minimize public overhead capital and direct the growth of small-scale industry, it is proposed that the establishment of industrial estates should be thoroughly examined.

Another policy measure which would definitely stimulate the region's rapid expansion of small-scale industry would be to assure the sufficient supply of specific skilled workers through the expansion of formal vocational training facilities and the reorientation of existing training programs to fit local needs. There presently exists a shortage of skilled workers in the areas of car maintenance and repair, electric wiring, air conditioner and refrigerator repair, and telephone repair. Furthermore, the district labor offices and governorate planning divisions should improve their functions in order to better identify local labor market conditions, current shortages of skilled labor and training programs required to meet these needs. In addition, local council technical educational departments, industrial establishments and the Governorate planning division, should better coordinate their efforts at the local level. The latter should improve its professional capability in order to better identify projects and guide potential investors (See appropriate Sections of Administrative Recommendations).

D. Physical Development

1. Qena City Strategy

Throughout NUPB work, emphasis has been placed on rehabilitation of existing infrastructure and housing as well as construction of new infrastructure. A part of the responsibilities of the strengthened Physical Planning Unit of the Governorate (See Administrative Recommendations below) would be working with the local council Engineering and Utilities Offices to determine the extent of rehabilitation necessary. As is discussed in the Administrative Recommendations, evaluation of requirements for rehabilitation can be done through aerial photo interpretation and field surveys of existing areas. However, for the purposes of NUPB housing and infrastructure estimates, it was assumed that roughly 27 percent of the total infrastructure investment would be allocated to rehabilitation of

existing infrastructure in Qena over the 1986-2000 period.

Details of NUPS proposed investment in housing and intra-urban infrastructure are shown in Table 32 while the standards of these proposals are shown in Appendix E.

A second major component of the work of the Physical Planning Unit would be developing up-to-date maps of existing built areas from which opportunities for infill of existing areas can be determined. More up-to-date maps, Landsat data and sub-*kiama* population data permitted the NUPS Team to estimate the extent to which existing built areas could absorb additional population either through vertical expansion or infill of existing sub-*kiama* in the Tanta Illustrative Development Project. The lack of that base line data for both Qena and Naga Hamadi meant that similar estimates of population absorptive capacity could not be made for the built areas of Qena and Naga Hamadi. However, the procedures used in the Tanta Illustrative Development Project could be used by the proposed Physical Planning Unit of the Governorate to determine this capacity. This procedure included obtaining up-to-date "official" sub-*kiama* maps of Tanta (in the case of Qena and Naga Hamadi where sub-*kiama* do not exist, other physical boundaries could be developed) and comparing them with census data to determine sub-*kiama*'s gross densities. The next step was to map the built areas of the sub-*kiama* as shown by Landsat data (aerial photos would be a more accurate tool, but were not available to the NUPS team) and then determine the vacant area remaining in the sub-*kiama*. The population absorptive capacity of the sub-*kiama* then becomes the additional population which can be absorbed through either densification of existing *kiama* or through development of vacant infill areas of the sub-*kiama*.

Future development of Qena should be confined to the desert area east of the city. Arable land development restrictions should be enforced to halt development to the north, south and west.

Due to the current uncontrolled development in the eastern desert area, physical planning activities must structure future, as well as existing, development. This will be particularly difficult due to the wide variety and distribution of current land uses in the area most of which are not adequately located on city maps:

- old and expanding cemeteries on either side of the old Safaya road;

TABLE 32

NUPB PROPOSED INVESTMENT IN HOUSING AND

INTRA-URBAN INFRASTRUCTURE: QENA

(L.E. Millions in 1979 prices)

	1986-1990	1991-1995	1996-2000	TOTAL 1986-2000
1. PHYSICAL INFRASTRUCTURE				
Water	7.8	4.5	3.4	
Sanitation	7.8	3.7	3.0	
Circulation	5.1	4.3	3.6	
Power (Distribution)	6.0	6.8	8.2	
Others	0.3	0.3	0.4	
SUBTOTAL	27.0	19.5	18.6	65.1
2 HOUSING	14.4	16.2	19.8	50.4
3. SOCIAL INFRASTRUCTURE				
Education	3.0	3.1	3.4	
Health	10.5	12.0	14.6	
Other Social and Administrative Infrastructure	1.3	1.4	1.7	
SUBTOTAL	14.8	14.6	19.8	51.2
4. TOTAL BASE COSTS	56.1	52.3	50.1	166.5
5. ADJUSTED TOTAL COSTS <u>1/</u>	67.7	59.5	64.2	191.4
6. ADJUSTED TOTAL COSTS PER CAPITA (L.E.) <u>2/</u>	434.3	310.4	285.5	
7. REHABILITATION <u>3/</u> (L.E. Millions)	18.3	16.7	16.1	51.1

SOURCE: NUPB Final Report, Appendix IV.A, Tables IV.33 to IV.35.

1/ Includes adjustments to reflect regional variations in construction costs.

2/ Based on end period populations.

3/ Rehabilitation investment requirements are discussed in the NUPB Final Report, Appendix IV.A., p.IV.A.27.

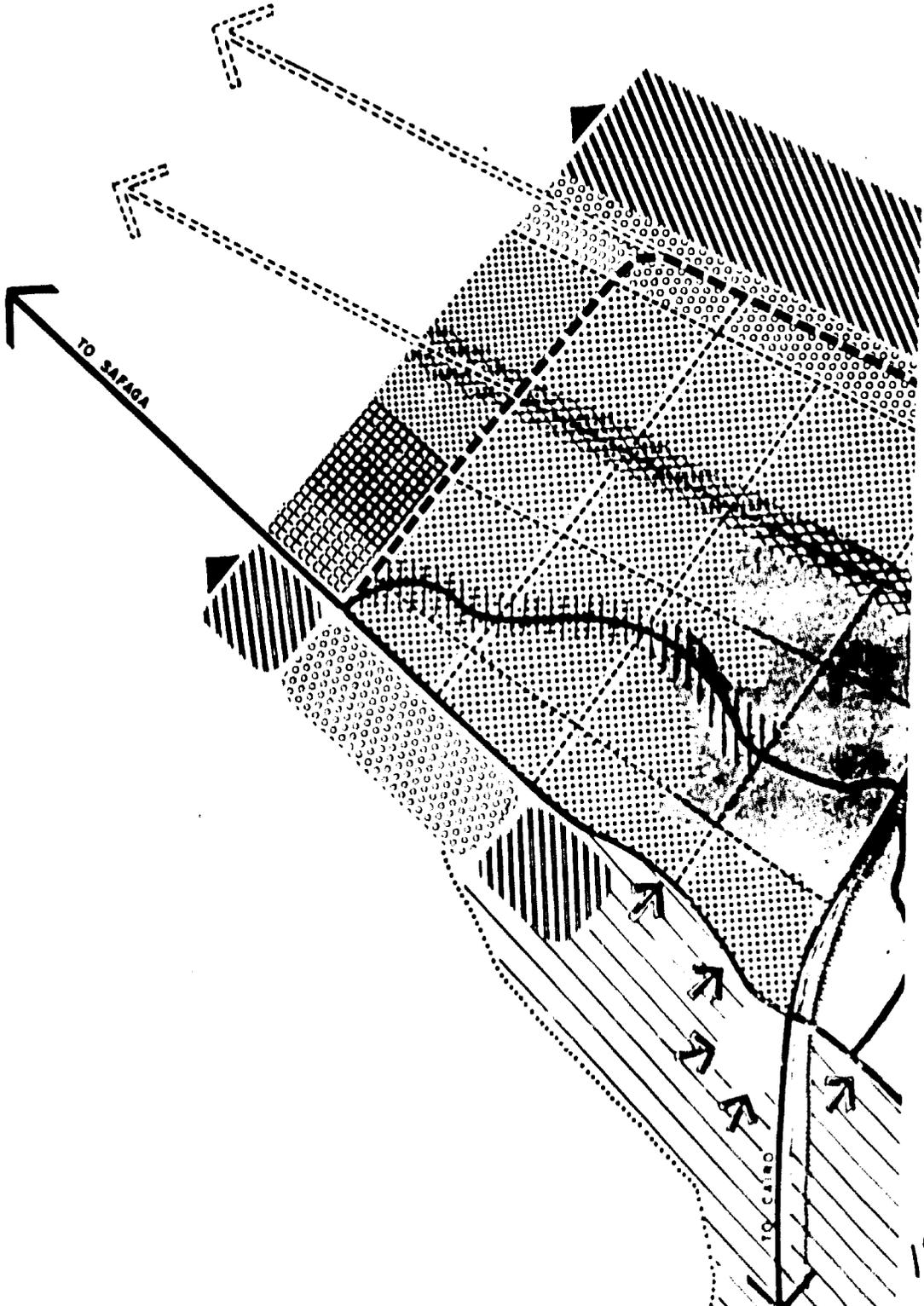
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- a city dump;
- irrigated land;
- irregular urban and rural residential areas;
- piecemeal siting of industry and public services;
- military and police installations;
- pottery manufactures;
- the university;
- the planned "New Qena";
- the waterworks serving Red Sea settlements.

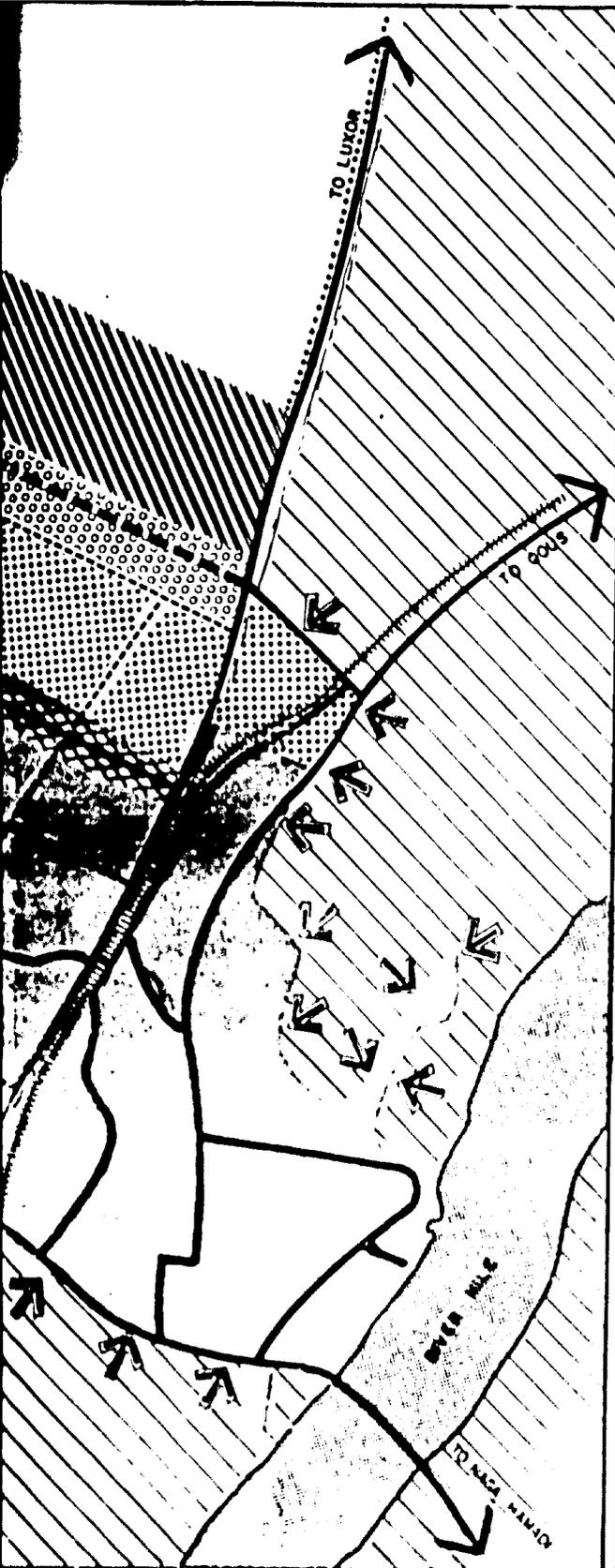
Of primary importance is a road network to knit these various elements together. It is proposed that a "ring road" be developed. It would originate to the east of the stadium, swing around existing development to the northeast, and link up with the Old and New Safaga roads. This primary road will provide the framework for development of secondary and tertiary roads within and outside the area.

A schematic plan for the development of Qena is presented in Figure 21. It emphasizes expansion of the built area to the northeast. Development would be bounded on the west by the existing new Qena-Safaga Road. The "Qena Forest" shown as a recreational area on the concept plan would provide a further definition to the northeast urban edge. As is shown in the concept plan, the forest would provide a major recreational area for the city which now lacks formal open space. Residential areas are envisioned to be developed to the northeast along the wadi in desert areas. Residential areas on the west are bounded by a second green area providing a buffer between residential areas and an industrial park. Ultimately, the site of the New Qena New Town would become part of the new urban fabric of Qena as urban expansion moves towards it. The New Qena New Town site, however, is viewed as a longer term development and would be built only when the urban edge of Qena reaches its boundaries.

The schematic plan shown in Figure 21 is presented as a means of providing guidance to future growth of Qena. The lack of topographic and up-to-date maps of most of the existing urban area necessitate presentation of it in less than final form. When more detailed maps are available, the proposals shown in Figure 21 should be



QENA CONCEPT PLAN



-  RESIDENTIAL (EXISTING)
-  PROTECTED ARABLE LAND (EXISTING)
-  QENA UNIVERSITY (EXISTING)
-  INDUSTRY AND PUBLIC FACILITIES (EXISTING)
-  MAIN HIGHWAY (EXISTING)
-  RAILWAY LINE (EXISTING)
-  DESERT BOUNDARIES
-  RESIDENTIAL (PROPOSED)
-  INDUSTRY (PROPOSED)
-  GOVERNMENTAL AND ADMINISTRATIVE CENTER (PROPOSED)
-  RECREATION (PROPOSED)
-  PUBLIC FACILITIES (PROPOSED)
-  QENA RING ROAD (PROPOSED)
-  SECONDARY ROADS (PROPOSED)
-  HIGHWAY EXTENSION (PROPOSED)
-  URBAN GROWTH CONTAINMENT

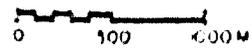


FIGURE 21

re-evaluated regarding the actual land areas available for development, measures required for protection from flooding and other physical and topographic constraints which might affect the urban expansion.

2. Growth Strategy for the City of Naga Hamadi

Only a limited amount of growth can occur within the existing boundaries of Naga Hamadi without expansion on arable land. Most growth should be diverted to the desert plateau near the aluminum factory. However, Naga Hamadi will continue to grow. This growth should be accommodated primarily through infill and densification.

The greatest opportunity for infill appears to lie to the south of the city, between the railroad and the sugar factory. Several opportunities exist for infill in this area, and in fact, the municipality is planning to site new service facilities in one of the largest vacant areas located there. Based on the Study Team's estimate, approximately 25,000 inhabitants could be accommodated in this area.

To the north, renewal and densification is required. Though no figures are available regarding current densities in this area, the city's average urban density of 560 persons/hectare, suggests that an additional 15,000 could be accommodated to the north if densities of the same order are achieved over time.

Some fringe expansion, particularly along the old and new Cairo Aswan highway is likely to occur due to locational advantages.

3. Desert Plateau Development Strategy

Due to the various existing land uses on the desert plateau which include the aluminum factory and electrical sub-station, as well as constraints imposed by the location of cemeteries, villages, and the power lines, it will be difficult to knit together a cohesive urban fabric.

However, an additional industrial and residential development is planned on the plateau, an effort should be made to piece these various elements together. This will permit economies in infrastructure and public services as well as enhance commercial and service functions in the private sector. (See further discussion of this topic in the Administrative Recommendations Section).

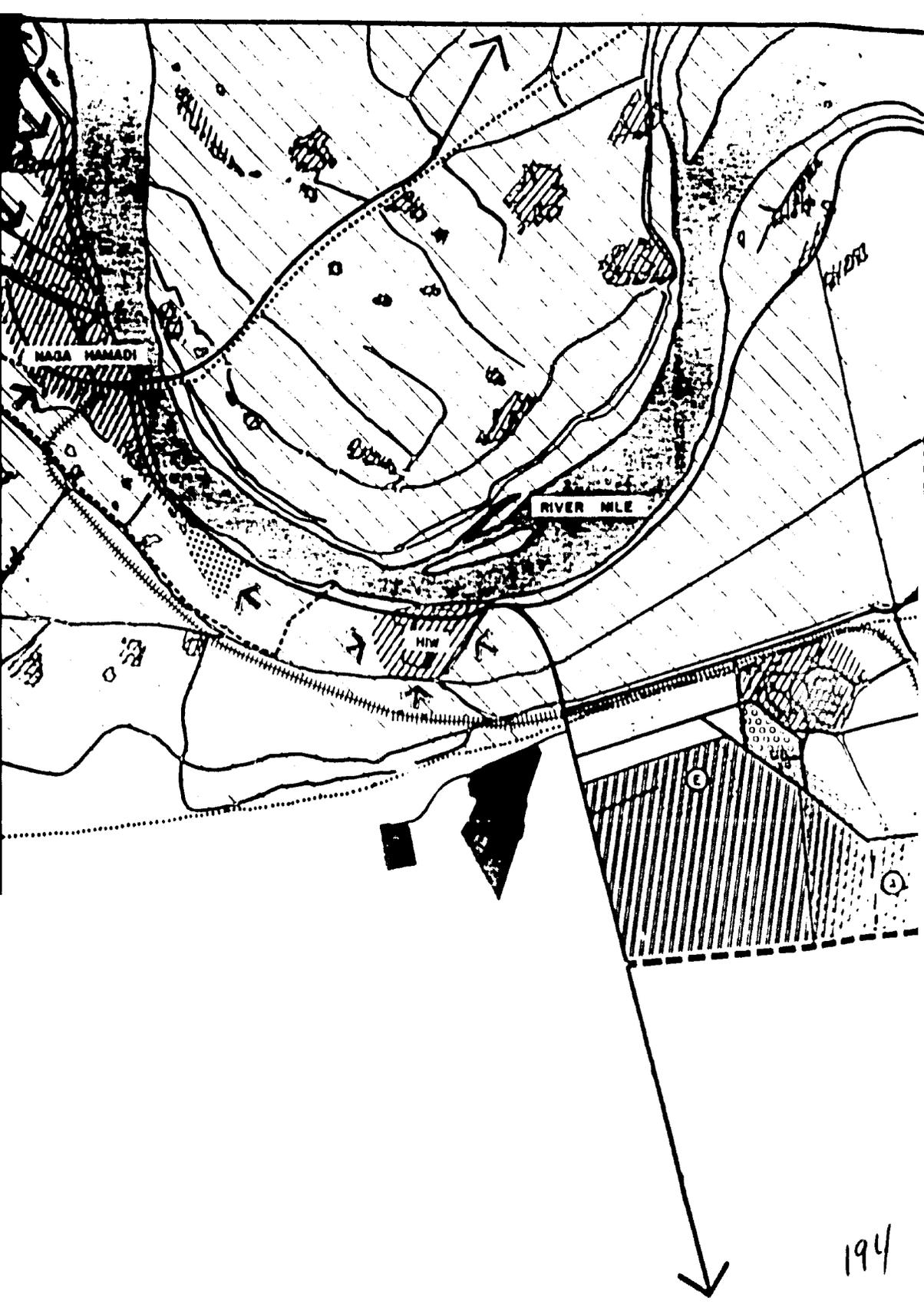
The Study Team recommends that the residential development of the aluminum factory, electrical sub-station,

proposed cement plant and expansion of Naga Hamadi/Hiw which cannot be accommodated in infill areas, be unified into a single whole urban area rather than be distinct entities. The lack of topographic and up-to-date maps of existing built areas meant that the Study Team could not fully evaluate the absorption capacity of existing built areas and thus the requirements for future residential expansion on the desert plateau. If the existing residential areas can absorb the populations described above, the existing settlement of Naga Hamadi would have a year 2000 population of 86,900. Thus, housing on the desert plateau would have to be developed to accommodate roughly 88,100. If further analysis of existing built areas reveals that it would not be desirable to add the populations proposed above, the desert plateau should be developed to accommodate the overspill population. In all cases, industrial expansion should occur only on the sites proposed in the desert plateau as are shown in Figures 22.a and 22.b.

Two very schematic concept plans of development of the desert plateau are presented in Figures 20.a and 20.b. Given the lack of topographic data and uncertainties about the absorption capacity of existing areas, both concept plans should be viewed as indicative of the type of development which could occur. However, both would require further refinement of the amount of land required for various uses, physical constraints and other land use restrictions which might result once more detailed physical data is available.

Linkages between the existing settlement area and the desert plateau development will need to be further studied as the desert plateau develops. In particular, the need for intra-urban transport facilities will need to be studied. In the RUPB Final Report, a standard of public buses serving Naga Hamadi, of 3 buses per 10,000 additional population is proposed. This standard would provide the settlement with a fleet of approximately 30 buses by the year 2000 if the upper population target is reached. Improvements in telecommunications have also been proposed both within the Naga Hamadi area and the Qena Governorate as a whole. Both of these recommendations are aimed at improving the linkages among the urban areas of the Governorate. Such projects should, however, be the subject of careful feasibility studies prior to embarking on major investment programs. Details of these proposals are shown in Table 33.

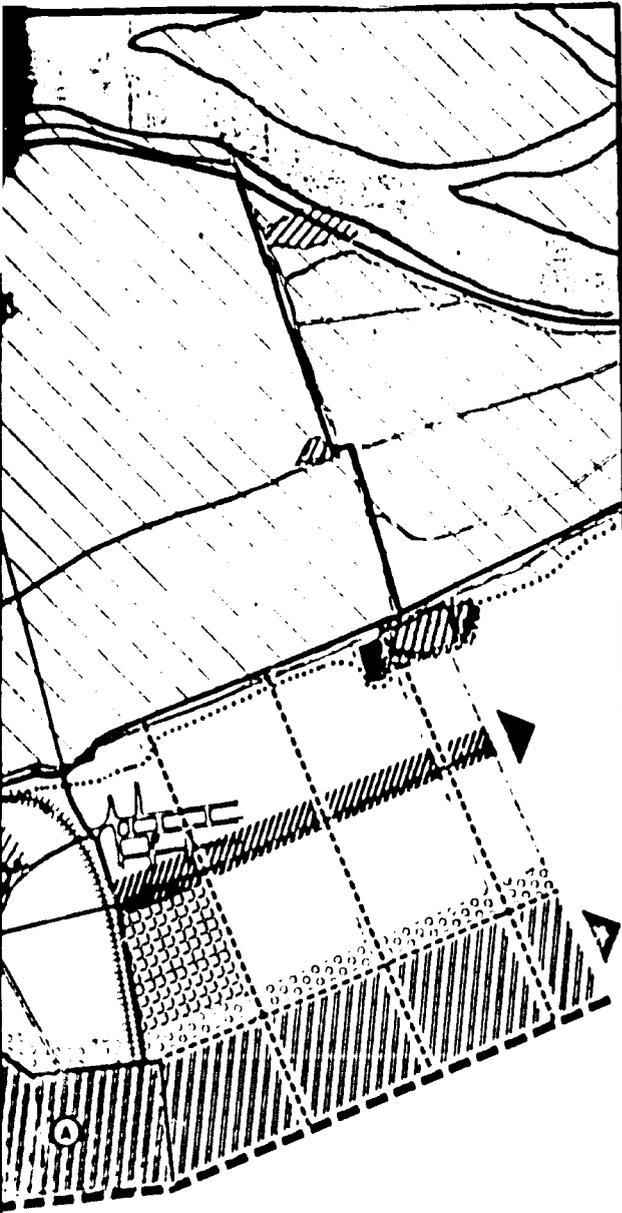
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NAGA MAMADI

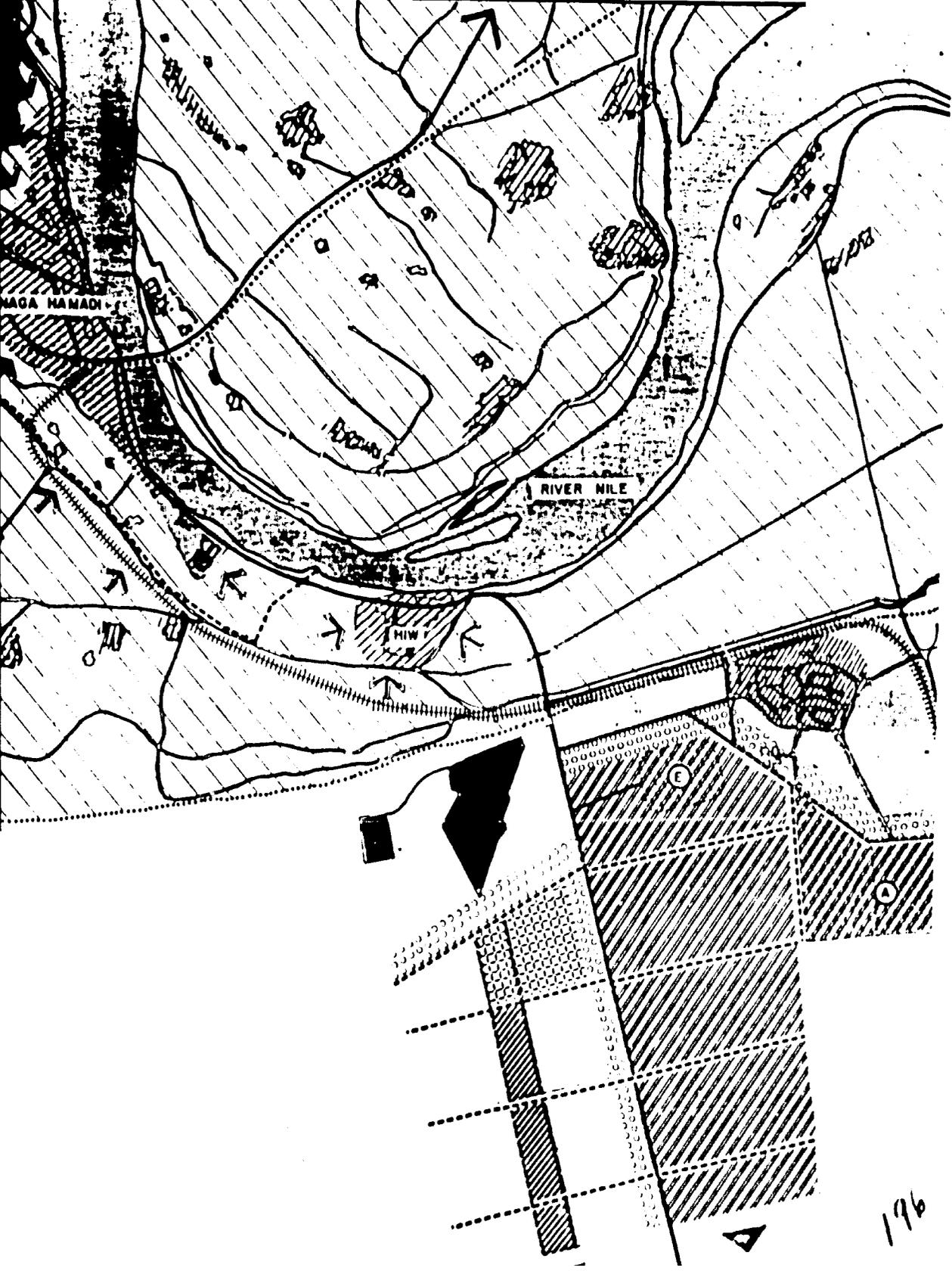
RIVER MILE

CONCEPT PLAN I DESERT PLATEAU DEVELOPMENT NAGA HAMADI



-  RESIDENTIAL (EXISTING)
-  AGRICULTURAL LAND (EXISTING)
-  ALUMINUM SMELTING PLANT (EXISTING)
-  SUGAR REFINING PLANT (EXISTING)
-  500KV ELECTRICAL SUB-STATION (EXISTING)
-  MAIN HIGHWAY (EXISTING)
-  SECONDARY HIGHWAY (EXISTING)
-  RAILWAY LINE (EXISTING)
-  ALUMINUM PLANT PRIVATE RAILWAY LINE (EXISTING)
-  CEMENTERIES (EXISTING)
-  RESIDENTIAL (PROPOSED)
-  INDUSTRIAL AREA (PROPOSED)
-  PUBLIC SERVICES (PROPOSED)
-  ADMINISTRATIVE (PROPOSED)
-  RECREATION (PROPOSED)
-  FUTURE DIRECTIONAL GROWTH
-  GROWTH CONTAINMENT
-  MAIN HIGHWAY (PROPOSED)
-  SECONDARY HIGHWAY (PROPOSED)





MAGA HAMADI

RIVER MILE

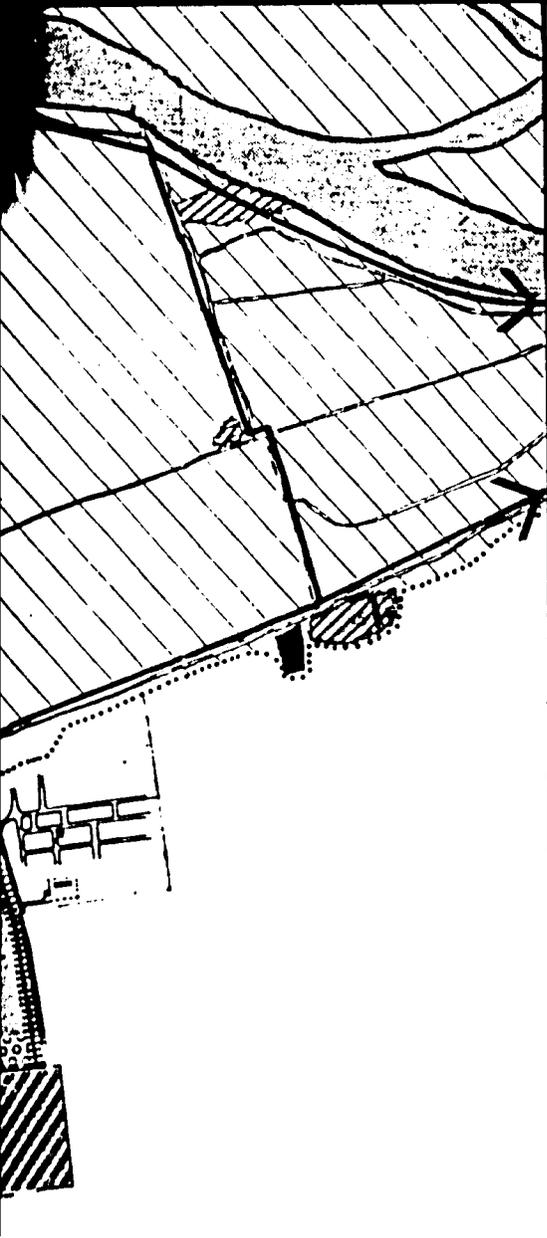
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E

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CONCEPT PLAN 2 DESERT PLATEAU DEVELOPMENT NAGA HAMMADI



-  RESIDENTIAL (EXISTING)
-  AGRICULTURAL LAND (EXISTING)
-  ALUMINUM SMELTING PLANT (EXISTING)
-  500 K.V. OVERHEAD ELECTRICAL LINES (EXISTING) *
-  500 K.V. ELECTRICAL SUB.STATION (EXISTING)
-  MAIN HIGHWAY (EXISTING)
-  SECONDARY HIGHWAY (EXISTING)
-  RAILWAY LINE (EXISTING)
-  ALUMINUM PLANT PRIVATE RAILWAY LINE (EXISTING)
-  CEMETERIES (EXISTING)
-  RESIDENTIAL (PROPOSED)
-  INDUSTRIAL AREA (PROPOSED)
-  PUBLIC SERVICES (PROPOSED)
-  ADMINISTRATIVE (PROPOSED)
-  RECREATION (PROPOSED)
-  FUTURE DIRECTIONAL GROWTH
-  GROWTH CONTAINMENT
-  SECONDARY HIGHWAY (PROPOSED)
- * UNSURE OF EXACT LOCATION OF OVERHEAD ELECTRICAL LINES



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FIGURE 22 d

TABLE 33

NUPS PROPOSED INVESTMENT IN HOUSING AND
INTRA-URBAN INFRASTRUCTURE: NAGA HAMADI

(L.E. Millions in 1979 Prices)

	<u>1986-1990</u>	<u>1991-1995</u>	<u>1996-2000</u>	<u>TOTAL</u> <u>1986-2000</u>
1. PHYSICAL INFRASTRUCTURE				
Water	4.2	2.3	2.4	
Sanitation	4.8	2.5	2.2	
Circulation	1.6	1.9	2.2	
Power (Distribution)	4.6	5.7	6.6	
Others	0.2	0.3	0.3	
SUBTOTAL	15.5	13.2	13.7	42.4
2 HOUSING	11.2	13.7	16.0	40.9
3. SOCIAL INFRASTRUCTURE				
Education	2.3	2.5	2.7	
Health	8.1	10.0	11.7	
Other Social and Administrative Infrastructure	1.0	1.2	1.4	
SUBTOTAL	11.4	13.7	15.8	40.9
4. TOTAL BASE COSTS	38.1	40.6	45.5	124.2
5. ADJUSTED TOTAL COSTS <u>1/</u>	44.6	45.3	49.9	139.8
6. ADJUSTED TOTAL COSTS PER CAPITA (L.E.) <u>2/</u>	381.0	314.6	284.9	
7. REHABILITATION <u>3/</u> (L.E. Millions)	11.8	11.8	12.1	35.7

SOURCE: NUPS Final Report, Appendix IV.A, Tables IV.33 to IV.35.

1/ Includes adjustments to reflect regional variations in construction costs.

2/ Based on end period populations.

3/ Rehabilitation investment requirements are discussed in the NUPS Final Report, Appendix IV.A., p.IV.A.27.

E. Administration and Finance

1. The Role of Local Government

Based on the allocation of functional responsibilities previously presented in Table 26, local government in the Qena Governorate presently has little say in the determination of policy issues which would affect the implementation of a NUPS strategy at the local level. In addition, local government has minimal input into the identification, planning and design aspects of the project cycle for the development of physical infrastructure or the decision-making process leading to the siting of a public sector company in the Governorate. The planning and finance functions of the Governorate are mainly ones of collection and budget processing.

The Governorate and its associated city councils are mainly responsible for carrying out central government policies, programs and projects, the operation and maintenance of government buildings and physical infrastructure, and the licensing and enforcement of laws dealing with changes in agricultural land use, land subdivisions, and residential building. Administrative and financial recommendations for the Qena Governorate are based on the principles underlying the preferred NUPS strategy as presented in the Second Round Alternatives. 9/ Specifically, the recommendations are underpinned by the following three principles:

- Efficiency in the use of scarce human and financial resources;
- Integration of local government within the framework of decisions taken at national level with regard to spatial, infrastructure and industrial policies and plans;
- Implementing central government policies and programs (budgeting, sectoral planning, etc.) at local level in a way to realistically reflect the needs and desires of local population.

The following sections highlight what are believed to be the most critical areas for both short- and medium-term intervention required to effectively implement a growth encouragement strategy for the Qena and Naga Hamadi region. While in most cases, the problem issues identified are specific to the Qena local government structure, the nature of the recommendations is sufficiently general to be applicable to other growth encouragement centers in Upper Egypt.

- a. Establish planning framework to guide and control physical growth in Qena Governorate;
 - b. Reorient functions of Qena Governorate economic planning and finance units to make the Governorate budgetary process more efficient and responsive to the needs of the local population;
 - c. Improve technical and managerial capacity of Governorate middle management staff to perform the duties required in the implementation of NUPS strategy at local level;
 - d. Strengthen the Governorate/local council capacity to enforce Agricultural Law No. 59 of 1973.
2. The Need to Establish a Planning Framework to Guide and Control Physical Growth in Qena Governorate

The following recommendations are intended to establish the framework for controlling and guiding physical development in the Qena Governorate over the NUPS planning period to the year 2000.

- a. Maintain major policy, planning and design responsibilities for economic planning and public finance, physical and industrial development and infrastructure, manpower and training, etc. at the central government level. (See Sections II and IV of Chapter V of the "NUPS Final Report" for recommended policy and planning changes at the national level). Such functions are highly specialized in nature requiring skills which are not necessary in the day-to-day activities of government at the governorate level. Furthermore, such functions require cross sectoral and inter-regional coordination if they are to be successful. For example, development of major inter-regional transport requires both sectoral and regional coordination which can only occur at the national level. However, to successfully develop such national level policies and programs, a much greater level of interaction with local government is necessary. Therefore, the following recommendations for strengthening local level capacity are necessary.
- b. Organize within the Qena Governorate's Ministry of Development Department a physical planning unit whose scope would include implementation of planning-related decisions taken by central level ministries and authorities. At the same time, it would formally represent local interests in the discussions leading to these centrally taken decisions. The unit would serve as the conduit which links central level physi-

cal plans and projects with local needs, customs and practices. In this capacity, the unit would work closely with the GOPP in the preparation of all physical planning for the Governorate. It would review all major infrastructure and public building designs and site locations. It would provide major guidance in the siting and preparation of development plans for public sector companies to be located in the Governorate. It would review and provide assistance to the local councils in the preparation of site plans for public facilities. It should also have sufficient socio-economic and engineering capacity to survey existing service levels of physical infrastructure and programs, and to identify potential target groups for future programs. It should have sufficient technical capacity to undertake pre-feasibility studies for any recommended programs or projects.

- c. In its capacity as the physical planning body in the Qena Governorate, the planning unit should obtain an up-to-date set of aerial photos (preferably at a scale of 1:5000) of all existing and future development areas. It should oversee the preparation of topographic maps for Qena and Naga Hamadi and their surrounding districts. These maps will allow the planning unit to undertake its proposed physical planning role. The maps will also serve to map existing infrastructure, undertake accurate site planning, etc.
- d. Contingent upon the completion of the necessary mapping, and in coordination with the establishment of the proposed planning unit within the Governorate, the GOPP would prepare development plans for Qena and Naga Hamadi. In addition to specific sectoral recommendations for the two urban centers, the development plans would provide a framework for the planned physical growth of the cities and their surrounding districts.

The existing and proposed development of the desert plateau south of the city of Naga Hamadi poses a particular challenge to central government's implementation of the NUPS Preferred Strategy. A growth inducement strategy offers an excellent opportunity for controlling and guiding future growth onto desert land which would otherwise certainly occur across legal boundaries of settlements in the absence of a clearly articulated and implemented strategy.

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3. Alternatives for Growth Inducement in Naga Hamadi

There are at least five alternative ways in which this growth issue can be addressed administratively:

- a. Maintain existing situation; i.e., no coordination of future growth;
- b. By authorization of the Committee of Administrative Divisions of the Secretariat General of Local Government, extend the boundaries of Naga Hamadi to include the several small villages and desert land where development is occurring. (This is the solution chosen by the Qena City Council to integrate under one jurisdiction the new development taking place along the Safaga Road on desert land);
- c. Establish through Law No. 59 of 1979 (New Urban Communities) a new community which would encompass all new development envisaged for the area;
- d. Through application of and/or amendment to the Local Government Law No. 50 of 1981, coordinate and administer the development of Naga Hamadi, its proximate villages and desert land directly at the Naga Hamadi district level.
- e. Within the context of the proposed planning unit and development planning recommended for the Qena Governorate, authorize the planning unit, working in close coordination with central government professionals at the GOPP and the Ministry of Development authorities, to integrate the new development envisaged for the Naga Hamadi district in such a way as to avoid the duplication of public services and housing and to optimize "urban service" potential.

4. Evaluation of Growth Inducement Alternatives

The five alternatives were designed to illustrate the possible administrative strategies for the desert area surrounding the aluminum plant. While it is not the intended purpose of this exercise to select a particular strategy for this area, it is useful to highlight the differences between alternatives with respect to a set of performance criteria responsive to the NUPS growth encouragement program. For simplicity, the performance criteria used by the NUPS staff in a prior exercise 10/ were applied to the five administrative alternatives. The performance criteria used are grouped into four categories:

- Social Effectiveness
- Economic Efficiency

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- Ease of Management and Implementation
- Risk Elements

The alternatives were evaluated for each of the criteria on the basis of a score of good, fair or poor. Table 34 presents the preliminary conclusions, and details the specific criteria included in each category. Without drawing any final conclusions, it is obvious that Alternatives 1 and 2 do not perform very well based on the inability to halt encroachment on arable land, excessive costs due to duplication of public services and housing, and risks to the environment and to exceeding financial constraints. Alternative 4, while doing reasonably well on cost effective criteria and offering the opportunity for integrated urban development, raises major questions with respect to management and implementation and the inherent risks involved. Alternative 4 calls for expanding the district council's administrative and technical capacity at a time when the same goals are being sought for the governorate and city council units. To attempt to achieve these goals simultaneously, the Qena Governorate would stretch already scarce financial and managerial resources to the breaking point. This leaves Alternatives 3 and 5. Both provide the potential for guiding physical development in a cost and socially effective manner. Both also provide an adequate framework for management and implementation performance. The major difference between the two is highlighted by the fourth performance criterion, the risk factor. Alternative 3, the establishment of a new community, would function on an ad hoc basis outside the mainstream of the local government structure with its own management team and with the authority to offer a number of tax and investment incentives. Alternative 5 calls for strengthening the decentralization functions of local government. Both alternatives would expend additional scarce financial and management resources. However, while the new community approach undoubtedly provides the best short-term solution to the problem confronting integrated development on the desert plateau, the increased planning capacity and overall development control proposed for the Governorate Planning Unit fits more closely central government policy for decentralization. At the same time, it further provides a cost efficient model for replication in other Upper Egypt growth encouragement centers.

Regardless of which alternate administrative strategy is eventually selected, there presently exists a statutory measure which establishes the mechanism for introducing integrated planning into the desert plateau with a maximum of community participation. Articles 110-111 of Law No. 50 of 1981 concerning amendment of the Law of Local

TABLE 34

EVALUATION OF ALTERNATIVE MODIFICATIONS TO GOVERNORATE ADMINISTRATIVE FRAMEWORK
IN ORDER TO INTEGRATE PHYSICAL DEVELOPMENT IN NAGA HAMADI DISTRICT

<u>OPTION CRITERION</u>	<u>MAINTAIN EXISTING SITUATION (1)</u>	<u>EXTEND NAGA HAMADI BOUNDARIES TO INCLUDE DEVELOPMENT AREA (2)</u>	<u>ESTABLISH NEW COMMUNITY (LAW 59/1979) TO ENCOMPASS ALL NEW DEVELOPMENT ON AREA (3)</u>	<u>COORDINATE DEVELOPMENT IN AREA BY EXPANDING AUTHORITY & TECHNICAL CAPACITY OF NAGA HAMADI DISTRICT COUNCIL (4)</u>	<u>PROPOSED PLANNING UNIT WITHIN MEM. OF DEV.'S GOV. OFFICE, IN COOPERATION WITH GOFP, TO PREPARE PLANS & COORDINATE & MONITOR DEV. AT NAGA HAMADI DIS. LEVEL (5)</u>
1. Social Effectiveness ^{1/}	Poor	Poor	Good	Fair	Good
2. Economic Efficiency ^{2/}	Poor	Fair-Poor	Fair	Fair	Fair-Good
3. Management and Implementation ^{3/}	Poor	Fair-Good	Good	Fair-Poor	Fair
4. Risk Elements ^{4/}	Fair-Poor	Poor	Fair	Poor	Good

1/ Social Effectiveness

- Ability to absorb additional urban population at acceptable service levels
- Minimum intrusion on arable land
- Least social disruption: Maintenance of family and cultural ties

2/ Economic Efficiency

- Least Cost
- Encouragement of private investment
- Ability to attract foreign assistance

3/ Management & Implementation

- Minimize administrative cost
- Ability to sustain implied settlement growth rate
- Ease of management

4/ Risk Criteria

- Risks of exceeding financial constraints
- Risk of exceeding management constraint
- Risk environment damage

Government promulgated by the Decree of Law No. 43 of 1979 provide for establishing industrial zones in a governorate which would be administered by a service committee. It is the responsibility of a service committee to provide all the necessary services for industrial areas and supervise the implementation of development proposals in the zone. The industrial zone and committee are formed by Governor Decree. The committee is composed of members chosen by the local council to which the industrial zone belongs, heads of concerned local units, industrial leaders and representatives of workers and trade unions in the governorate. The formation of such an industrial zone -- it could possibly be organized to include Naga Hamadi, Hiw and the desert plateau -- and its committee offer an excellent opportunity to begin discussing the issues of integrated physical development in the area. In addition, the formation of such a committee would buy time to allow the GOPP and the proposed planning unit to begin to map and develop plans for the area. The professionals initially assigned to the planning unit could begin to participate in the discussions at an early date, and as capacity increases, take a greater leadership role within the committee.

5. Reorientation of Functions of Qena Governorate Economic Planning and Finance Units

The functions of the Governorate Economic Planning and Finance Offices are primarily ones of control and accountability. Its main emphasis is on the processing of local unit investment plans and budgets and the collection of taxes. It is more concerned with the goods, services and facilities that are to be purchased and accounted for than with viewing the budgets as a planning and programming tool. On the financing side, central government subsidies cover approximately 90 percent of the Qena Governorate budget including Special Funds. Because the Governorate does not benefit directly if local revenues increase, little incentive exists to improve revenue collection.

Present efforts by government and foreign assistance agencies tend to emphasize improved tax collection and administration at both the central and local government level as a means to improve local government fiscal autonomy. The use of special funds to increase local resources is also a step in the right direction. Attempts should be made to increase profitability of public sector companies as a means of increasing local revenues given the option to levy a 15 percent tax on after-tax profits. All of these efforts are obviously laudable.

The implicit assumption of these proposals is that increased local revenues will lead to improved public services. It should be noted, however, that the Qena Governorate collects approximately L.E.3 million per year in "local" revenues (including local share of joint revenues); none of these funds are presently going into investment projects. The total of locally raised funds would, therefore, have to be increased many times in order to provide a local pool of revenue for investment in public services.

Even if local government units had access to unlimited investment resources, there presently does not exist the administrative framework to efficiently make use of an expanded resource base. The existing local economic planning and budgeting framework lacks the means for clear delineation of responsibilities for program initiation and planning, for setting initial budget constraints, and for prioritizing the allocation of scarce resources between competing projects or local units. Therefore, the present recommendations concentrate on how, given existing constraints, this Governorate could make more efficient use of the budget as a planning and programming instrument.

The functions of the Qena Governorate Economic Planning and Finance Offices with support from the Ministries of Planning, Finance, and Economics, should be refocused to make more efficient use of existing financial resources.

The Central Planning and Finance Ministries, in addition to providing guidelines and special procedures to be used by local government in developing budgets (mainly BABs 1 and 2), should begin to assist and train the Governorate Planning Office in the preparation of investment budgeting (BAB 3). The ministries should provide the Governorate Planning Office with rough estimates of the amount of capital investment funding to be made available by each ministry for budgeting of programs and projects at the local level. Currently in Qena Governorate, most ministries' budgeting takes place in Cairo with the local Economic Planning Office simply integrating final sectoral budgets into a single governorate document. Due to a lack of technical capacity at the local level, this practice should continue for the foreseeable future. However, changes which will lay the foundation for future local functional responsibility should be initiated.

The limited investment resources available for local government budgeting should be allocated among competing local government units on the basis of pre-determined priorities. Presently, resource allocation is primarily

on the basis of the Executive Regulations for Local Government (Decree No. 707 of 1979). This decree calls for resource allocation on the basis of the hierarchy of local government units (i.e., a governorate capital receives a certain level of public facilities, a district capital a slightly lower level, and so forth down to the village level). The NUPS Preferred Strategy would urge an ever greater prioritization of resource allocation. As a result of that strategy, investment allocations have been made in higher amounts in special emphasis settlements to further rationalize service functions and encourage job creation.

It is recommended that the Planning and Finance Offices work closely with the Governorate ministerial departments to ensure that locally proposed budgets, albeit limited, reflect the needs of the local units. Discussions should be held with the local units in order to prioritize project and program needs when it is apparent that sufficient resources are not available to cover all requests. The Economic Planning Office should consult with the proposed Physical Planning Office in order to identify and discuss those major infrastructure projects earmarked for the Governorate which do not go through the normal governorate budgetary process. In addition, the proposed Physical Planning Unit will be able to assist the Economic Planning Office in the preparation of feasibility studies to justify investment in competing capital projects.

It is beyond the scope of the Illustrative Development Project to examine in detail the merits of providing a similar level of public services at each different level of local government as called for in the Executive Regulations. However, based on what will certainly continue to be a fierce competition for scarce resources at the local level, it might be prudent to differentiate between district capitals and local city councils in the distribution of resources for public services. 11/

In conclusion, while the control and accounting functions of the Governorate sectoral planning and finance offices are essential to sound fiscal management, the budgetary process should begin to be viewed as a means to reflect and respond to the needs of the various units within the local government structure.

Improve Technical and Managerial Capacity of Governorate Middle Management Staff

The lack of an adequately trained middle management staff is a severe constraint to carrying out the NUPS strategy at the local level. Specifically, additional

skilled manpower, or at a minimum the retraining of present staff, will be required to establish the proposed Physical Planning Unit within the Governorate's Ministry of Development Department. New urban management skills are also called for in order to achieve the new functions envisaged for the Governorate's Economic Planning and Finance Offices. Quality, interest and dedication, rather than a major recruitment effort based on pure numbers, is required for the new managerial teams. Ideally, some of the slots for the proposed planning unit could be filled from the existing staff of the Ministry of Development Governorate Department or local council engineering departments. Presently, the Ministry's department employs 23 engineers and one architect, while the Qena City Council employs 5 engineers. These professionals should be evaluated for possible selection for the planning unit. The head of the unit should be a professional with a strong planning orientation, and with close ties to the Governor and the Director General of the Department. He should preferably be from the Qena Governorate, but definitely from Upper Egypt.

The planning unit should be kept as small as possible. However, in order to carry out its specifically defined functions, it should include professionals with a planning orientation and backgrounds in engineering, architecture, sociology, and economics. The specific tasks of the planning unit were discussed in a previous section. Based on the obvious dedication of the present governorate department heads, who are from the Qena Governorate, an aggressive campaign should be organized to recruit the required professional talent for the planning unit from middle management professionals born in Qena, but who are presently working in government in other areas of Egypt. This recruitment program should be coupled with an attractive remuneration package which would offer top civil service grades a special salary scale with incentive bonuses, and housing and transportation allowances. The proposed Planning Unit would be a key office within the Governorate, but not necessarily a large one. The additional cost involved in recruiting the best staff possible therefore, should not be prohibitive.

However, such recruitment would require modifications in national civil service regulations which prohibit governors from recruiting new staff outside their present governorate staff. A governor can promote existing governorate staff to new positions, but new personnel can only be recruited through the Ministry of Manpower and Training. Similarly, modifications would also be necessary in civil service remuneration policy to permit

special salary scales and bonuses. However, if a policy of growth inducement to selected settlements as described in the introduction is to become a successful component of national urban policy, these special incentives must be developed to attract the qualified personnel necessary to implement the strategy. The exact nature of the incentives necessary will require additional study, but these incentives would probably have to be equal to salaries paid in private sector firms to attract qualified personnel.

The new directions indicated for the Governorate's Economic Planning and Finance Offices require training for certain technical, administrative and financial personnel in order to substantially increase these offices' capacity to begin to effectively use the budget as a planning and programming tool. No massive influx of new personnel is envisaged. Perhaps a few key people will have to be brought in to provide these offices with the new orientation.

The training program should emphasize management skills which would prepare the professional staff to undertake the following tasks:

- a. Surveying functional capacity of all local government units in the Governorate;
- b. Collecting, processing and analysing of base-line data to determine implications for future programming of current service levels of public facilities;
- c. Identifying local investment needs and services (determined in conjunction with local unit officials and professionals from the proposed Planning Unit);
- d. Prioritizing needs within and between local government units;
- e. Rationalizing allocation of governorate resources between competing local units;
- f. Reviewing and evaluating of ongoing programs;
- g. Instituting up-to-date budgeting, bookkeeping, and auditing techniques.

As much as possible, the training envisaged should take place on-the-job, and should be linked to similar type training being provided at the central government Ministry of Planning, Finance and Economics. If the proposed re-orientation in the Governorate's Economic Planning and Finance Offices is to be achieved, the

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training program requires sustained technical support with Arabic capacity, working in situ with functioning local teams.

7. Protection of Arable Land

a. Strengthen the Governorate/Local Council Capacity to Enforce Agricultural Law No. 59 of 1973

Similar to the situation in other governorates, the Qena Governorate, in conjunction with local council engineering offices, has little capacity to enforce Laws No. 59 of 1973 and 1978 dealing with the conversion of agricultural land. What is surprising, however, is that illegal encroachment on arable land apparently varies widely between local councils. Admittedly, while the present exercise has looked at only two cities in the Qena Governorate, the incidence of illegal subdivision and building apparently differs greatly between the two. Qena has had a very poor record over the past 10-15 years, while Naga Hamadi has been able to minimize illegal growth. The obvious response could be that the quality of staff and the dedication of enforcement is much better in the latter case. Field visits to Qena and Naga Hamadi do not substantiate this hypothesis. The major difference between the two cases is that the Naga Hamadi City Council did provide for legal growth through planned expansion of the old city. Only further study can verify that this factor did indeed reduce illegal encroachment on arable land. However, it is certainly a step in the right direction.

The present section does not discuss the myriad of possible enforcement recommendations which could be applied in order to control the illegal conversion of agricultural land.^{12/} Rather, the present discussion focusses on rationalizing and strengthening local government's procedures for controlling illegal land conversion within existing legal and administrative capacities, and includes the following recommendations:

b. Provide New, Serviced Areas of Physical Expansion for the Governorate's City Councils

The proposed Physical Planning Unit, in conjunction with the GPP and the Governorate's Economic Planning and Finance Offices, should provide the necessary plans, engineering designs and financing required to develop new areas of the city councils in a planned and orderly fashion. Expansion should take place in accordance with a development strategy being proposed

for the cities, at levels capable of absorbing the projected population growth and at standards affordable by the future population.^{13/}

c. Coordinate Activities Between the Governorate's Agricultural Department and the Various City Councils on the Issuance of Building Permits

Law No. 59 of 1978, amending the Basic Agricultural Law of 1966, prohibits the issuance of building permits for construction on agricultural land without the prior approval of the Ministry of Agriculture. In practice, due to a lack of communication and coordination among the departments within the Governorate, the local council engineering departments often issue building permits without the proper authorization. This practice can be curtailed by requiring that the person seeking a building permit present written approval from the Governorate's Agricultural Department stating that the piece of land in question has either been legally subdivided or that the proposed dwelling will be the owner's sole home. This simple procedure should be easy to implement and should aid in reducing the illegal subdivision of small parcels of land, at the same time legalizing what is technically illegal building. The Agricultural Department's present staff can accommodate this recommended procedure. The governorate level committee charged with controlling the conversion of agricultural land (composed of representatives of the Ministries of Agriculture, Housing and Irrigation) must insist that the local council engineering departments comply with this regulation.

d. Strengthen Specific Enforcement Procedures for Laws No. 59 of 1973 and 1978

Even though violators of Laws No. 59 of 1973 and 1978 are subject to jail sentences, fines and demolition of whatever buildings have been illegally erected, the courts at the local level have, in many cases, suspended imposed fines and have never ordered the demolition of an illegally constructed building. By themselves, fines, or even the threat of jail sentences, have not deterred land owners from building illegally. The Governor should take an active role requiring the local courts to act quickly when a complaint has been issued by the Governorate's Agricultural Department and to impose the full penalty as called for in the law. If needed the Governorate should be supplied with the necessary equipment to rapidly carry out a demolition order.

ILLUSTRATIVE DEVELOPMENT PROJECT - QENA AND NAGA HAMADI

FOOTNOTES

- 1/ For comparative purposes for the period 1960-1976, Qena's and Naga Hamadi's population grew at annual rates of 3.12 and 2.21 percent, respectively.
- 2/ In discussion with the department's managers, it was estimated that approximately 90 percent of the technical staff's time is spent on construction management.
- 3/ The NUPS Team which visited Qena observed the results of the site planning for a public housing project done by hand on the back of a letter.
- 4/ "Decentralization in Egypt: Law and Practice", NUPS Working Paper, Cairo, October 1980; "Cairo Governorate: An Administrative Profile", NUPS Working Paper, Cairo, Undated; "The Public Financing Aspects of NUPS", NUPS Working Paper, Cairo, October 1981; "Financial and Management Analysis Report on Local Government Units", Ahmed S. Foda, Ibrahim A. Amar, Said S. Doba, USAID, Cairo, June 1981; "Local Government in Egypt: Some New Change Strategies and Training Opportunities", James B. Mayfield, University of Utah, USAID, Cairo, 1976.
- 5/ The actual profits or losses of public sector companies are not known by governorate staff. This information is available through the Ministry of Industry, but was not released to the NUPS Team.
- 6/ See Sherer's NUPS Working Paper, "The Protection of Agricultural Land: A Legal and Administrative Discussion", March 1981, pp. 12-25, for a more detailed description of the law and its practical application in other parts of Egypt.
- 7/ In comparison, for roughly the same population growth over the period 1969-1981 and for equal enforcement capabilities, Qena's Engineering Department registered 389 violations between 1976 and 1980.
- 8/ Detection of violators is apparently not a problem. The Ministry has five full-time enforcement officers in Qena and

one person in every village. He also mentioned that private citizens in the villages also supply information on illegal building.

9/ "Second Round Alternatives for The National Urban Policy Study", NUPS Working Paper, Cairo, September 1981.

10/ See NUPS Working Paper, "Second Round Alternatives" in the section on "Other Evaluation Criteria", September 1981, pp. 41-49, for a fuller discussion of how these performance criteria were applied to the evaluation for the NUPS spatial alternatives.

11/ For example, in the Qena Governorate, a hierarchy of district capitals could be established on the basis of a set of criteria (i.e., demographic, commercial or where central government wishes to place development emphasis). A three-tier classification could be envisaged -- district capitals A, B and C. On this basis, Qena, being the Governorate capital and also the capital of the Qena District, and Naga Hamadi, as a city earmarked for special emphasis development would be Class A cities implying a certain level of public services. The next tier of Governorate district capitals -- Dishna, Qos, Luxor and Armant -- would be designated as Class B cities with a corresponding level of government services. Finally, Class C district capitals would have the lowest levels of services. This classification system would offer the opportunity to provide certain Governorate cities with similar service levels to those presently offered or even higher levels of certain services (university education, specialized medical centers, for example) at a lower total budget than presently allocated to the Governorate.

12/ Op. cit. Sherer's NUPS Working Paper.

13/ See also Tanta Illustrative Development Report Section V.E which describes a program for rehabilitating existing built areas and gives guidelines for new urban expansion areas.

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ILLUSTRATIVE DEVELOPMENT PROJECTS

PART III

APPENDIX A

NUMERICAL ANALYSIS OF THE EFFECTS OF PROJECTED 2000

POPULATIONS ON TANTA CITY'S REMAINING AGRICULTURAL LAND

INTRODUCTION AND BACKGROUND

Any expansion of Tanta's built-up area will be on arable land, therefore an analysis of the quantity of land required to meet year 2000 NUPS population targets was conducted to determine that requirement. NUPS projects that the year 2000 population will range between 525,000 and 575,000. The analysis described in the following sections is based mainly on the results of population censuses for the years 1960, 1966 and 1976 and Landsat photos taken of the Tanta area in 1972 and 1978. Tanta's *sub-kiams*, used by the census office and the local police for districting purposes, have been chosen as an areal accounting device.

Table A.1 reviews the population and growth rates of Tanta's *sub-kiams* between 1960-1976. The 1976 Population Census registered 284,600 residents for the city. Three general groupings of growth rate are noted:

1. The old, central core *sub-kiams* generally declined in population or grew at very small growth rates between 1960 and 1976 (Sidi Marzouk, Kafr Sharkia, Sabri);
2. The first tier of older *sub-kiams* surrounding the central core and not containing land for expansion grew at rates of between 1.0 and 1.5 percent for the same period (Borsa, Dawaween, Ali Agha);
3. The remaining peripheral *sub-kiams* (with available agricultural land) grew at rates of approximately 2.75 to 3.75 percent between 1960 and 1976 (Kobri El Mahata, Wabur El Noor, Salahana, etc.). Kafr Seigar grew at a rate of 6.8 percent between 1966 and 1976 (no census data available for 1960).

The entire city increased in population at an annual rate of 2.75 percent between 1960-1976.

Based on the *sub-kiams* boundaries, Table A.2 divides Tanta's *sub-kiams* into their built-up and agricultural land components for the years 1972 and 1978. Total land area within the city remained constant over the period 1972-1978 at 1,457.9 hectares. Of this total, 964.3 and 776.7 hectares were built-up in 1978 and 1972,

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TABLE A.1

COMPARISON OF POPULATION AND GROWTH RATES, 1960-1976

KISM	SUB-KISM	TOTAL POPULATION			GROWTH RATE (%)		
		1960	1966	1976	1960-1966	1966-1976	1960-1976
TANTA 1	Borsa	10,943	10,526	13,666	-0.65	2.65	1.40
	Dawaween	19,372	19,965	23,884	0.50	1.81*	1.32*
	Kafr Seigar	-	8,118	15,662	-	6.79	-
	Kobri El Mahata	27,259	33,987	45,472	3.74	2.95	3.25
	Sidi Marzouk	8,789	8,952	8,404	0.31	-0.63	-0.28
	Midan Saah	14,502	15,369	11,625	0.97	-2.75*	-1.37*
	Wabur El Noor	20,306	24,520	34,045	3.19	3.34	3.28
	SUB TOTAL	101,171	121,437	152,758	3.09	2.32	2.61
TANTA 2	Sabri	4671	4,225	4056	-1.66	-0.41	-0.88
	Kafr Shoukr	8686	9,233	8804	1.02	-0.47	0.08
	El Amarai	16159	20,062	25,325	3.67	2.36	2.85
	Salahana	7766	9932	14,019	4.19	3.51	3.76
	Ali Agha	28,401	31,145	33,220	1.55	0.65	0.98
	El Malaga	17445	20,933	27,383	3.08	2.72	2.86
	Kahafa	-	12,011	17,278	-	3.70	-
	Urban Population Outside of Admin. Boundary	-	-	1793	-	-	-
	SUB TOTAL	83,128	107,541	131,878	4.38	2.06	2.93
TOTAL	184,299	228,978	284,636	3.68	2.20	2.75	

Taking into account a possible boundary shift between Dawaween and Midan Saah, the combined population increase for the two sub-kisms over the period 1966-1976 was 0.05 percent. The two sub-kisms grew at a combined annual rate of 0.30 percent between 1960 and 1976.

SOURCE: NUPS Elaboration of 1960, 1966 and 1976 population censuses.

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TABLE A.2

AREAL DISTRIBUTION OF TANTA'S SUB-KISM 1972 AND 1978

SUB-KISM	AREA (HA)-1978			AREA (HA)-1972		
	TOTAL	BUILT-UP	AGRICULTURAL	TOTAL	BUILT-UP	AGRICULTURE
TANTA 1						
Borsa	18.51	18.51	0.00	18.51	18.51	0.00
Dawaween	45.21	45.21	0.00	45.21	45.21	0.00
Kafr Seigar	206.21	107.91	98.30	206.21	59.47	146.74
Kobri El Mahata	245.49	92.37	153.12	245.49	65.92	179.57
Sidi Marzouk	16.38	16.38	0.00	16.38	16.38	0.00
Midan Saah	26.64	26.64	0.00	26.64	26.64	0.00
Wabur El Noor	246.13	199.95	46.18	246.13	138.03	108.10
TANTA 2						
Salahana	111.0	67.66	43.34	111.00	54.43	56.57
El Amarai	206.72	110.68	96.34	206.72	91.33	115.39
Kafr Sadrakia	20.51	20.51	0.00	20.51	20.51	0.00
El Malaga	122.36	101.46	20.90	122.36	101.46	20.90
Sabri	14.64	14.64	0.00	14.64	14.64	0.00
Ali Agha	50.76	49.41	1.35	50.76	49.41	1.35
Kahafa	127.32	92.94	34.38	127.32	74.75	52.57
TOTAL	1457.88	964.27	493.61	1457.88	776.69	681.19

SOURCE: NUPS Elaboration.

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respectively. Old records show that the area of Tanta's core occupied 180 feddans or 75.6 hectares in 1875. The change in built-up area between 1875 and 1978 represents an 2.50 percent increase per annum. For the period 1972-1978, the built-up area increased at an annual rate of 3.67 percent. Excluding two new major developments (The Tanta University Medical Center and The Army Regional Induction Center) totalling over 23 hectares, Tanta's built-up area grew at an annual rate of 3.25 percent. All present expansion of the city comes at the expense of agricultural land. Total agricultural land remaining within the city's boundaries equalled 493.6 hectares in 1978, or roughly 34 percent of the total area. This figure declined from 681.2 hectares in 1972, a loss of 187.6 hectares.

It is interesting to note in Table A.3 that of the total amount of agricultural land lost to development between 1972 and 1976, 51.2 hectares, or over 27 percent, went for other than private residential uses (i.e., individual dwelling unit construction). As mentioned previously, the central government in the form of the Medical Center and the Induction Center was the prime user. Other non-private users included a new cemetery, a slaughterhouse and a market, public housing and a tire factory.

Based on estimated populations for 1978 (the last year of the Landsat photos) and the areas presented in a previous table, gross densities were calculated for the sub-*kisms*' total and built-up areas (See Table A.4). As can be seen from the table, built-up area densities range from 169 to 778 persons per hectare. The highest densities are found in the sub-*kisms* surrounding the old central core, with the lowest densities (roughly 150-300) generally found on the city's periphery. The city's oldest areas have gross densities ranging from 250-500 persons per hectare. Parts of the central core, which have experienced declining populations between 1960 and 1976 and which have deteriorated physical structures, have been selected for redevelopment by the Governorate's Engineering Department.

CAPACITY TO ACCOMMODATE PROJECTED 2000 POPULATION

The analysis of the capacity of the area within Tanta's current boundaries (1,457.9 hectares) to accommodate projected 2000 population through absorption and/or expansion is contained in Table A.5. Beginning with the 1978 population estimates for Tanta's sub-*kisms*, each sub-*kism*'s population is projected to the year 2000 on the basis of an assumed high and low annual growth rate. The selected growth rates, which were adjusted through analysis of potential densification within the *kism*, reflect 1960 through 1976 growth trends and yield 2000 populations which range between 525,000 and 575,000. On the basis of various assumptions dealing with absorptive capacity (See Table A.5 for a detailed description of assumptions), an estimate of total population absorbed by sub-*kism* to the year 2000 is calculated. The difference between projected 2000 population and the 1978 population plus absorbed population is allocated, where possible (i.e., available agricultural lands) to expansion of the built-up area. Projected absorptive capacity by sub-*kism* is checked against a

TABLE A.3
USES OF AGRICULTURAL LAND, 1972-1978
(EXCLUDING PRIVATE RESIDENTIAL)
TANTA CITY

<u>TYPE</u>	<u>HA.</u>	<u>FEDDANS</u>
New Cemetery	4.58	10.90
Slaughterhouse Market	7.48	17.80
Public Housing	10.51	25.01
Rubber Factory	2.97	7.07
Army Induction Center	10.97	26.11
Public Housing - 2	1.29	3.07
Public Housing - 3	1.16	2.76
Medical Center	12.26	29.18
TOTALS	51.22	121.90

SOURCE: NUP; Elaboration.

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TABLE A.4

DENSITY OF TANTA'S SUB-KISM 1978

SUB-KISM	POPULATION 1976	POPULATION GROWTH RATE 1960-1976 (%)	ESTIMATED ANNUAL POPULATION GROWTH RATE 1976-1978 (%)	ESTIMATED POPULATION 1978	GROSS DENSITY (1978)	
					TOTAL AREA (PERS/HA)	BUILT-UP AREA (PERS/HA)
TANTA 1						
Borsa	13,666	1.40	1.4	14,000	778	778
Dawaween	23,884	1.32	1.0	24,400	540	540
Kafr Seigar	15,662	6.79*	7.9	18,200	88	169
Kobri El Mahata	45,472	3.25	4.4	49,600	802	537
Sidi Marzouk	8,404	-0.28	-0.5	8,300	507	507
Midan Saah	11,625	-1.37	0.5	11,700	439	439
Wabur El Noor	34,045	3.28	4.2	37,000	150	185
TANTA 2						
Salahana	14,019	3.76	4.0	15,200	137	225
El Amarai	25,325	2.85	4.0	27,400	133	248
Kafr Sharkia	8,804	0.08	-0.5	8,700	424	424
El Malaga	27,383	2.86	3.0	29,100	238	287
Sabri	4,056	-0.88	-0.5	4,000	273	273
Ali Agha	33,220	0.98	1.0	33,900	668	686
Kahafa	17,278	3.70*	4.0	18,700	146	200
Urban Population Outside of Admin. Boundary	1,793	-	-	-	-	-
TOTAL	282,843	2.75	3.02	300,200	312	311

* Growth Rate for Period 1966-1976
SOURCE: NUPS Elaboration

TABLE A-3

CAPACITY OF EXISTING (1942) TANITA CITY BOUNDARIES TO ACCOMMODATE PROJECTED 2000 POPULATION

SUB KISH	ESTIMATED 1978 POPULATION	ESTIMATED AVERAGE ANNUAL COMPOUND GROWTH RATE TO 2000		ESTIMATED 2000 POPULATION		SOURCE OF POPULATION INCREASE, 1978-2000			POTENTIAL POPULATION INCREASE OF 1978 BUILT-UP AREA THROUGH ABSORPTION ^{7/}	REQUIREMENT OF AGRICULTURAL LAND TO MEET EXPANSION ACCORDING TO		CAPACITY TO ATTAIN PROJECTED 2000 POPULATION WITHIN EXISTING CITY BOUNDARY ^{8/}		
		LOW	HIGH	LOW	HIGH	ABSORPTION LOW & HIGH	EXPANSION			LOW	HIGH	ABSORPTION	EXPANSION	
							LOW	HIGH					LOW	HIGH
Barsa	14,400	<u>1/</u>	<u>1/</u>	14,400	14,400	-	-	-	-	-	-	-	-	-
Devasan	24,400	<u>1/</u>	<u>1/</u>	24,850	24,850	450	-	-	450	-	-	YES	-	-
Katr Salgr	18,200	6.4	7.2	71,300	84,000	19,550 <u>3/</u>	33,550	46,250	30,350 <u>6/</u>	95.85	132.14	YES	NO	NO
Katrl El Nahata	49,600	3.1	3.6	97,100	108,000	1,200 <u>4/</u>	46,300	57,200	1200 <u>4/</u>	163.43	163.43	YES	NO	NO
Si el Marzouk	8,300	<u>1/</u>	<u>1/</u>	8,300	-	-	-	-	-	-	-	-	-	-
Midan Sakh	11,700	0.5	0.5	13,100	13,100	1,400 <u>5/</u>	-	-	2,950	-	-	YES	-	-
Waher El Moor	37,000	3.1	3.6	72,400	80,600	33,000 <u>3/</u>	2,400	10,600	53,000 <u>6/</u>	6.86	30.29	YES	YES	NO
Salahna	15,200	3.5	4.1	32,400	36,800	8,450 <u>3/</u>	8,750	13,150	15,200 <u>6/</u>	25.00	37.57	YES	NO	NO
El Amral	27,400	2.8	3.3	50,300	56,000	11,300 <u>3/</u>	11,600	17,300	22,350 <u>6/</u>	33.19	49.43	YES	YES	YES
Katr Sharkia	8,700	-0.3	-0.3	8,200	8,200	-500 <u>2/</u>	-	-	-	-	-	-	-	-
El Mataga	29,100	2.7	3.1	52,300	57,000	6,400 <u>3/</u>	16,800	21,500	16,550 <u>6/</u>	48.00	61.43	YES	NO	NO
Sabri	4,000	1.7	1.7	5,850	5,850	1,850 <u>2/</u>	-	-	-	-	-	-	-	-
All Agha	33,900	<u>1/</u>	<u>1/</u>	34,650	34,650	-	750	750	-	1.35 <u>1/</u>	1.35 <u>1/</u>	-	YES	YES
Kahafa	18,600	3.5	3.9	39,700	43,200	13,950 <u>3/</u>	7,150	10,650	23,250	20.43	30.43	YES	NO	NO
TOTAL ^{9/}	300,300			529,000	575,000	97,500	127,200	177,200	165,300	399.06	506.07	-	-	-

* These totals do not add due to rounding

^{1/} Sub-kishs with gross densities at or exceeding 550 persons/ha and with no appreciable agricultural land for expansion.

^{2/} Assumes a final density after development of 400 persons/ha.

^{3/} Assumes year 2000 gross density of 350 persons/ha of 1978 built-up area.

^{4/} Assumes year 2000 gross density of 550 persons/ha of 1978 built-up area.

^{5/} Assumes annual growth rate to year 2000 of 0.5%.

^{6/} Based on maximum attainable gross density of 450 persons/ha in built-up area.

^{7/} Assumes a maximum gross density of 400 persons/ha for expansion on agricultural land within city boundaries.

^{8/} Assumes a gross density of 350 persons/ha for expansion on agricultural land 1978-2000.

^{9/} Compares projected absorption with potential absorption, and the land requirements for expansion with the amount of available agricultural land in 1972. (See Table A-2).

SOURCE: NUPS Elaboration.

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maximum absorptive density that might be anticipated. This check substantiates that proposed absorption can, in fact, take place.

Land requirements for expansion is another matter. Gross densities on land projected to be occupied through expansion to the year 2000 are estimated at an urban gross density of 350 persons per hectare. At this density, which includes all future urban uses but excludes agricultural uses within the proposed urban boundaries, roughly 506 hectares of new built area will be required to accommodate the roughly 177,200 new urban population which could not be accommodated within the boundaries of the 1978 built-area if Tanta achieves its high population projection. At this minimum density, all of the arable land within Tanta's boundaries as measured by the 1978 Landsat data (roughly 439 hectares) would be required for new urbanization. Thus, the immediate conclusion is that Tanta would probably not reach 2000 population without major unplanned encroachment on agricultural land outside the city's boundaries. Furthermore, as is indicated by recent growth in the villages directly to the north of Tanta's built-area, this growth would probably occur in low density sporadic developments

PROPOSED TANTA CITY BOUNDARY CHANGE

In order that Tanta can accommodate projected 2000 population in a planned and orderly manner, an extension of the existing (1942) boundaries is recommended. With a few exceptions, the proposed changes follow closely the proposed boundary changes of 1958 which have not yet been approved by the Ministry of Agriculture. The major differences involve the inclusion of the villages of Kafr El Hima and Mit Hibeish-El Bahariya within the recommended boundary extension. These two villages are developing at a rapid pace and should be brought within the confines and control of the municipal boundaries.

The proposed boundary modifications can be seen in Figure 7 while Table A.6 details the additional area to be included within the new boundaries. This proposed boundary would increase the city's total area by 835 hectares, 823 hectares of which would be protected agricultural land. Under the Zone V classification, no development would be permitted on this land except for farm buildings. Once detailed soil fertility maps are prepared, the areas suggested by NUPS for protection from urbanization should be reviewed to ensure that the most fertile areas are indeed protected. This proposed boundary change would provide almost 506 hectares of land to accommodate the city's population as well as non-residential urban uses to the year 2000. It would also provide an expansion area for post-2000 development.

While this proposed boundary change does result in some arable land loss, if density restrictions are imposed as has been suggested, this loss will be considerably less than the loss which would have occurred if existing trends persisted to the year 2000. For example, if all of the 275,000 new population which will be added to Tanta's population between 1978 and 2000 were housed in built-area extensions

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TABLE A.6

AREAS FOR PROPOSED TANJA CITY BOUNDARY CHANGES

SUB KISM	AREA WITH EXISTING (1942) TANJA CITY BOUNDARY (HA)			ADDITIONAL AREA BASED ON PROPOSED BOUNDARY CHANGES (HA)			TOTAL AREAS INCLUDED WITHIN PROPOSED NEW TANJA CITY BOUNDARIES (HA)		
	TOTAL	BUILT-UP	AGRICULTURE	TOTAL	BUILT-UP	AGRICULTURE	TOTAL	BUILT-UP	AGRICULTURE
Borsa	18.51	18.51	0.00	0.00	0.00	18.57	18.51	18.51	0.00
Dawseen	45.21	45.21	0.00	0.00	0.00	45.21	45.21	0.00	0.00
Kafr Saigar	206.21	107.91	98.30	100.04	3.64	96.40	306.25	111.55	194.70
Kabri El Mahata	245.49	92.37	153.12	19.96	2.71	17.25	265.45	95.08	170.37
Sidi Marzouk	16.38	16.38	0.00	0.00	0.00	0.00	16.38	16.38	0.00
Midan Saah	26.64	26.64	0.00	0.00	0.00	0.00	26.64	26.64	0.00
Wahur El Noor	246.13	199.95	46.18	30.96	6.68	24.28	277.09	206.63	70.46
Salahana	111.00	67.66	43.34	0.00	0.00	0.00	111.00	67.66	43.34
El Amara	206.72	110.68	96.04	62.02	5.48	56.54	268.74	116.16	152.58
Kafr Sharkia	20.51	20.51	0.00	0.00	0.00	0.00	20.51	20.51	0.00
El Malaga	122.36	101.46	20.90	0.00	0.00	0.00	122.36	101.46	20.90
Sabri	14.64	14.64	0.00	0.00	0.00	0.00	14.64	14.64	0.00
Ali Agha	50.76	49.41	1.35	0.00	0.00	0.00	50.76	49.41	1.35
Kahafa	127.32	92.94	34.38	16.93	13.13	3.80	144.25	106.07	38.18
SUB TOTAL	1457.88	964.27	493.61	229.91	31.64	198.27	168.79	995.91	691.88
PROPOSED NEW SUB KISMS									
Kafr Isam	N.A	N.A	N.A	179.25	33.41	145.84	179.25	33.41	145.84
Kafr El Hima	N.A	N.A	N.A	158.67	9.13	149.54	158.67	9.13	149.54
Mit Hebeish	N.A	N.A	N.A	213.67	56.57	157.10	213.67	56.57	157.10
EL Baharia									
SUB TOTAL	1457.88	964.27	493.61	551.59	99.11	452.48	551.59	99.11	452.48
TOTAL	1457.88	964.27	493.61	781.50	130.75	650.75	2239.38	1095.02	1144.36

SOURCE: NUPS Elaboration

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at densities similar to those of Tanta's most rapidly expanding sub-*kiams* of Kafr Geigar, Wabur El Noor and Kahafa (average built-area density in 1978 of 184 persons per hectare), roughly 1,492 hectares of arable land would be consumed by new urbanization. However, if the programs to densify existing built-areas are successfully combined with allowing built-area expansion at minimum urban gross densities of 350 persons per hectare, only 506 hectares of arable land will be used. This represents a saving of 976 hectares of arable land or 66 percent of the land which would be consumed if present trends persist.

APPENDIX B

CENTRAL CORE REDEVELOPMENT PROJECT - TANTA

Due to its age, the central core area of Tanta has deteriorated seriously, as a result of rent control which has allowed tenants to retain flats while paying sub-economic rents, the continued existence of non-conforming urban uses (such as stables, etc.), and the original condition of the structures many of which are of unfired mud brick. Although surrounding newer development is of 3 or 4 storey structures, this deteriorated core area is comprised of mainly 1 and 2 storey structures. In spite of the fact that the area is run-down, it does contain a vibrant community structure consisting of small scale industries and repair shops, small businesses engaged in retail and other commercial trade and residential uses, all intermingled with one another.

The Charbia Governorate Utilities and Engineering Office, in conjunction with the Tanta City Local Council Engineering Office, have initiated a central core area redevelopment scheme within portions of the deteriorated core, in an attempt to redevelop the area at higher densities and replace structures in poor condition with multi-storey buildings more in keeping with the rest of Tanta's urban fabric. The following is a description of the physical surveys which have been conducted by the Governorate Engineering Office and their proposals for redevelopment of a portion of the area. This data has been summarized in a project document prepared by the Governorate Engineering Office.

1. A. EXISTING SITUATION:

Project Area: 76.89 feddans (314,575 m²)
Project Population: 33,453 persons, 2,792 families (1976)
Family Size: 4.82 persons/family
Gross Density: 420 persons/ha. or 100 persons/feddan

TABLE B.1
CONDITION OF EXISTING BUILDINGS

QUALITY	NUMBER OF BUILDINGS	PERCENT OF TOTAL BUILDINGS (%)	AREA OF BUILDINGS (m ²)	PERCENT OF TOTAL BUILDING AREA (%)	PERCENT OF TOTAL AREA (%)
Good	236	14.0	38,476	20.2	12.2
Fair	217	13.5	26,900	14.2	8.6
Poor	1,147	71.7	124,772	65.6	39.7
TOTAL	1,600	100.0	190,148	100.0	60.5

SOURCE: Charbia Governorate Utilities and Engineering Office.

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TABLE B.2

EXISTING LAND USE

USE CATEGORY	NUMBER OF OCCUPIED BUILDINGS BY USE	PERCENT OF OCCUPIED BUILDINGS	AREA OF BUILDINGS	PERCENT OF TOTAL PROJECT AREA
		BY USE (%)	(m ²)	(%)
Residential *	931	73.8	94,270	29.9
Commercial	242	19.2	63,357	20.1
Workshop	29	2.3	6,307	2.0
Industrial	26	2.1	10,097	3.2
Government	5	0.4	11,900	3.8
Education	3	0.2	1,292	0.4
Religious	11	0.9	3,532	1.1
Garage	14	1.1	400	0.1
Vacant (Gov't)	-	-	13,000	4.1
Vacant (Pri.)	-	-	14,337	4.6
Circulation	-	-	96,690	30.7
TOTAL	1,261	100.0	314,575	100.0

Includes 30 workshop/residences, 11 industrial/residences and 288 commercial/residences.

SOURCE: Gharbia Governorate Utilities and Engineering Office

TABLE B.3

NUMBER OF STOREYS PER BUILDING

NUMBER OF STOREYS	NUMBER OF BUILDINGS	PERCENT OF TOTAL BUILDINGS
1	608	37.9
2	565	35.3
3	301	18.8
4	101	6.3
5	25	1.0
6	2	0.1
TOTAL	1,602	100.0

SOURCE: Gharbia Governorate Utilities and Engineering Office

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B. PUBLIC SERVICES

- a. Education - 2 government primary schools with total of 14 classrooms
1 private primary school with 4 classrooms
- b. Health - 1 public health office (offers no medical services)

2. PROPOSED REDEVELOPMENT

- Project Area : Existing street pattern to be maintained
- Population : 28,000 persons
- Additional Population Required : 13,000 (based on 1980 population estimates)
- Family Size : 5.2 persons/family
- Gross Density : 950 persons/ha. or 400 persons/feddan
- Additional Units Required : $13,000/5.2 = 2,500$ units

3. STAGED DEVELOPMENT

- 1st Stage : 800 units constructed on government land and to be occupied by existing project area families
- 2nd Stage : 800 units to be occupied by existing project area families
- 3rd Stage : Same as 2nd Stage
- 4th Stage : Units constructed as need to absorb families from other areas

4. SERVICES

- Education : 2 primary schools with total of 12 classrooms
1 preparatory school with 12 classrooms
- Health : 1 patient out-clinic
1 mother & childcare clinic
- Commercial: 2 supermarkets and ground floor areas reserved for workshops and commercial activities.

5. UTILITIES

- Sewerage : Upgrade collector network to minimum 8 inch pipe diameter
- Water : Upgrade distribution network to withstand pressure of 25 meter head
- Electricity : Replace overhead transmission lines with underground cables

6. Rough Estimates of Costs and Physical Parameters for Project's First Block of Flats to be Constructed on 800 Square Meter Irregularly Shaped Parcel of Government-Owned Land.

Location:	Kafr Sharkia
Site Area:	800 m ²
Apartment Size:	70-80 m ²
Total Number of Units:	59 units distributed between ground and 6 floors. 9 units per floor with 4 units and shops on ground.
Land Cost:	L.E. 150,000 (est.) or L.E. 188/m ²
On-Site Infrastructure:	N.A.
Construction Cost:	L.E. 75/m ² of floor area (est.)

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APPENDIX C

MIT HIBEISH COOPERATIVE HOUSING PROJECT

The following annex reviews the physical parameters of a proposed cooperative housing project which will be constructed in the village of Mit Hibeish-El Bahariya and briefly analyzes its affordability by a family at the median income for Tanta.

<u>LOCATION:</u>	On the Tanta-Zefta highway approximately 1.5 kilometers to the east of the intersection of this road with the Cairo-Alexandria highway.								
<u>SITE AREA:</u>	27 feddan site (25 feddans according to information supplied by <u>El Ghalig Prefabricated Housing Company</u> divided into 19.8 feddans or 83,200 square meters housing project area and 7.2 feddans (30,150 square meter) area for a prefabricated housing component factory.								
<u>APARTMENT SIZE:</u>	Units of 50 and 70 square meters.								
<u>TOTAL NUMBER OF UNITS:</u>	2,640 units; 1,560 of 50 square meters type and 1,080 of 70 square meter type. 110 housing blocks (ground plus 5 floors).								
<u>COMMUNITY SERVICE AND OPEN SPACE:</u>	<table><tr><td>Community Services (schools, government offices, mosque, supermarket, market and shops)</td><td>5,617 m² (6.75 percent of total housing project area)</td></tr><tr><td>Open Space</td><td>4,663 m² (5.60 percent of total housing project area)</td></tr><tr><td colspan="2"><hr/></td></tr><tr><td>TOTAL</td><td>10,280 m² (12.35 percent of total housing project area)</td></tr></table>	Community Services (schools, government offices, mosque, supermarket, market and shops)	5,617 m ² (6.75 percent of total housing project area)	Open Space	4,663 m ² (5.60 percent of total housing project area)	<hr/>		TOTAL	10,280 m ² (12.35 percent of total housing project area)
Community Services (schools, government offices, mosque, supermarket, market and shops)	5,617 m ² (6.75 percent of total housing project area)								
Open Space	4,663 m ² (5.60 percent of total housing project area)								
<hr/>									
TOTAL	10,280 m ² (12.35 percent of total housing project area)								

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INTERNAL CIRCULATION: 14,292 m² (18.38 percent of total housing project area)

RESIDENTIAL: 57,628 m² (69.26 percent of total housing project area)

GROSS URBAN DENSITY: Assuming 4.9 persons per unit @ 2,640 units equals 12,936 potential residents, divided by total housing project area at 8.32 hectares equals a gross urban density of 1,555 persons/ha.

LAND COST: L.E. 32,000/feddan or L.E. 7.62/m² which is to be recovered in the following manner:

50 m² flat @ L.E. 150
70 m² flat @ L.E. 200

ON-SITE INFRASTRUCTURE: Recovered at a rate of L.E. 100 per flat. This total equals L.E. 3.17/m² of total housing project area.

CONSTRUCTION COST: L.E. 61.3/m² of floor area (using subsidized prices for cement and steel) or L.E. 73.5/m² at unsubsidized prices.

TOTAL UNIT COSTS:

<u>Flat Size (m2)</u>	<u>Costs (L.E.)</u>			<u>Total (L.E.)</u>
	<u>Super-Structure</u>	<u>Infra-Structure</u>	<u>Land</u>	
50	3,065	100	150	3,315
70	4,291	100	200	4,591

FINANCING TERMS
(COOPERATIVE HOUSING):

Interest = 4 percent/year
Repayment Period = 30 years
Downpayment = 50 percent

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MEDIAN HOUSEHOLD INCOME/MONTH FOR TANTA (1980): L.E. 85/month

MONTHLY COST TO USER (COOPERATIVE HOUSING FINANCING TERMS):

Flat Size (m2)	Repayment Amount (L.E.)	Monthly Payment (L.E.)	Percent of Median Household Income (%)
50	1,657.5	7.91	9.3
70	2,295.5	10.96	12.9

FULL COST RECOVERY

FINANCING TERMS:

Interest = 12 percent
 Repayment Period = 30 years
 Downpayment = 10-12 percent

MONTHLY COST TO USER (FULL COST RECOVERY FINANCING TERMS):

Flat Size (m2)	Repayment Amount (L.E.)	Monthly Payment (L.E.)	Percent of Median Household Income (%)
50	2,983.5 (10% downpayment)	30.69	36.1
	2,817.8 (15% downpayment)	28.98	34.1
	2,652.0 (20% downpayment)	27.28	32.1
	(50% downpayment)	17.05	20.1
70	4,131.9 (10% downpayment)	42.50	50.0
	3,902.4 (15% downpayment)	40.14	47.2
	3,672.8 (20% downpayment)	37.78	44.4
	(50% downpayment)	23.61	27.8

SUMMARY:

With respect to the subsidized financing terms applied to the purchase of cooperative housing at the Mit Hibeish Project, the 50 and 70 square meter units are affordable at the median household income assuming a 20 percent rule-of-thumb of household income available to be spent on housing. The percentages in this case equal 9.3 and 12.9 percent respectively. On the other hand, at more economic market financing terms (30 years, 12 percent interest, 10-20 percent downpayment) and using the 20 percent rule, neither of the units is affordable at the median income for any of the financing options. The percent of household income required for the 50 square meter flat varies from 32.1 to 36.1 percent, while for the 70 square meter flat, it varies from 44.4 to 50.0 percent.

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APPENDIX D

TECHNICAL PROFILES: QENA-NAGA HAMADI

A. GENERAL DATA

TABLE D.1.a

QENA GOVERNORATE
POPULATION STRUCTURE AND DISTRIBUTION

- Total Population 1976		2,017,000
Urban (448,000)	= 22 percent	
Rural (1,549,000)	= 78 percent	
<hr/>		
2,017,000	= 100 percent	
- Total governorate population as a percentage of Egypt's total population (1976)		4.7 percent
- Age Distribution (1976)		
o Under 12 years		32.5 percent
o 12-64 years		66.5 percent
o Over 64 years		3.0 percent
- Percentage distribution by sex at the governorate level		
o Male		50.3 percent
o Female		49.7 percent
- Density and size of households		
o Inhabitants/sq km		945.00
o Household/sq km		190.00
o Size of household		4.57
- Housing types in Qena Governorate		
o Apartment		30 percent
o Houses		70 percent

SOURCE: Governorate Data and "An overview of Infrastructure in Region 8 Sohag, Qena Aswan and the Red Sea".

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TABLE. D 1.b

GENERAL DATA

QENA, NAGA HAMADI

URBAN DATA: QENA

1. Area inside city limits 1980 <u>1/</u>	-	3,400 feddans
2. City population 1976 <u>2/</u>	-	93,700 persons
3. Vacant land in Qena 1980 <u>1/</u>	-	16 feddans
4. Agricultural land inside city limits <u>1/</u>	-	500 feddans
5. Estimated number of dwelling units 1976 <u>2/</u>	-	23,244 dwelling units

URBAN DATA: NAGA HAMADI

1. Area inside city limits 1980 <u>1/</u>	-	817 feddans
2. City population 1976 <u>2/</u>	-	46,900 persons
3. Estimated number of dwelling units 1976 <u>2/</u>	-	9,506 dwelling units
4. Agricultural land inside city limits <u>1/</u>	-	407 feddans

1/ Local Council Engineering and Utilities
Office of Qena and Naga Hamadi

2/ 1976 Census

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B. SETTLEMENT HIERARCHY AND DISTRIBUTION

TABLE D.2.a

**DISTANCE BETWEEN GOVERNORATE CAPITALS
AND MAJOR CITIES IN UPPER EGYPT**

Beni Suef - El Minya	125 km
El Minia - Assiut	139 km
Assiut - Sohag	115 km
Sohag - Qena	155 km
Qena - Luxor	66 km
Luxor - Aswan	223 km

TABLE D.2.b

**DISTANCE BETWEEN CITIES WITHIN QENA GOVERNORATE
FROM NORTH TO SOUTH**

<u>EAST BANK</u>	<u>POPULATION</u>	<u>DISTANCE KM</u>
Naga Hamadi	46,900	26
Deshna	29,151	26
Qena	93,787	30
Qos	33,139	33
Luxor	92,748	15
Armant	42,214	45
Esna	34,186	
<u>WEST BANK</u>		
Abu Tisht	5,581	16
Naga Hamadi	46,900	6
Hiv	20,000 to 30,000	55
Qena	93,787	30
Qos	33,139	33
Luxor	92,748	

TABLE D.2.c

MARKAZ CAPITALS* WITHIN THE QENA GOVERNORATE IN ORDER FROM
NORTH TO SOUTH

<u>BANK</u>	<u>TOWN</u>	<u>POPULATION</u>	<u>DISTANCE KM</u>
West	Abu Tisht	5,581	16
West	Naga Hamadi	46,900	6
West	Hiw	from 20,000 to 30,000	23
East	Deshna	29,151	26
East	Qena	93,787	30
East	Qos	33,139	33
East	Luxor	92,748	15
West	Armant	42,214	45
West	Eana	34,186	

* All towns are *Markaz* capitals except Hiw

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C. BUILDING PERMIT DATA

TABLE D.3.a

BUILDING PERMITS IN QENA

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Total number of building permits	400	508	422	431	479
Total number of residential building permits	393	495	414	422	464
Total number of industrial building permits	7	13	8	9	15
Total number of building violations issued	70	96	81	82	58
Number of dwelling units	850	1,211	940	904	901

SOURCE: Qena Municipality

TABLE D.3.b

BUILDING PERMITS IN NAGA HAMADI

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Total residential permits	290	65	210	251	215
Building violations	2	-		3	7

SOURCE: Naga Hamadi Municipality

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D. TRANSPORTATION DATA

1. Roads and Bridges

TABLE D.4
PRESENT AND FUTURE ROAD LINK VOLUMES
(Average Daily Trips)

<u>LINK</u>	<u>ADT 79</u>	<u>ADT 87</u>	<u>2000 LOW</u>
Sohag-Naga Hamadi	3,896 2,105	7,599 3,993	14,540 7,540
Naga Hamadi-Luxor	1,391 1,805	2,601 3,400	4,890 6,400
Luxor-Aswan	946	1,955	3,590
Qena-Safaga	637	896	1,730

SOURCE: Egypt National Transport Study, Annex IV
Highways and Road Transport Services, Appendix 7.3

EXPLANATORY NOTE: The 2000 low projections are based on improvements of railway and bus services and a shift from inter-city taxis towards buses and railways.

TABLE D.5
THE AVERAGE DAILY TRAFFIC: (1979)

<u>STATION</u>	<u>PRIVATE CAR</u>	<u>TAXI</u>	<u>SINGLE TRUCK PICK-UP</u>	<u>TRUCK COMBINED</u>	<u>BUSES</u>	<u>TOTAL</u>
Qena-Safaga	41	150	186	206	54	637
Quft-Quseir	136	87	174	10	14	303

SOURCE: Red Sea Governorate Regional Plan,
IX Regional Infrastructure, Part I, Table 5, page 25

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TABLE D.6

ORIGIN DESTINATION COUNTS

	DESTINATION/ORIGIN	SOHAG	QENA	ASWAN	RED SEA
CARS	Assiut	21	14	5	-
	Sohag	4	32	-	-
	Qena	42	146	16	4
TAXIS	Assiut	175	-	-	-
	Sohag	8	110	5	-
	Qena	133	756	12	-
BUSES	Assiut	18	-	-	-
	Sohag	-	16	-	-
	Qena	7	59	7	-
TRUCKS	Assiut	28	11	11	5
	Sohag	-	75	19	29
	Qena	86	180	43	-

SOURCE: Infrastructure overview of Sohag, Qena, Aswan, Red Sea Governorates, Section 2, Chapter 2, Tables 3.1, 3.2, 3.3, 3.4.

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TABLE D.7**ROAD CONDITIONS, LENGTH, AND AREAS IN THE QENA GOVERNORATE - YEAR 1979**

(Table D.7.a) Road Pavement Length, Area and Condition of Primary Road Network					
REGION	ROAD CONDITON	HIGHWAY & BRIDGE AUTHORITY		OTHERS	
		LENGTH (km)	PAVED AREA (1000 sq.m)	LENGTH (km)	PAVED AREA (1000 sq m)
Qena	Good	301	2,255	2	20
	Fair	130	977	-	-
	Poor	442	2,976	-	-
(Table D.7.b) Road Pavement Length, Area and Condition of Secondary Road Network					
Qena	Good	68	411	8	64
	Fair	54	335	10	75
	Poor	759	4,577	30	227
(Table D.7.c) Road Pavement Length, Area and Condition of Other Roads					
Qena	Good	7	33	8	49
	Fair	1	4	47	328
	Poor	81	453	81	461

SOURCE: Egypt National Transport Study, Annex IV, Highways and Road Transport Services, Chapter 1, Tables 1.14/1.15/1.16, pages 1.25, 1.26, 1.27.

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a. Commodities to be transported by the Qena-Safaga Rail Line

- Alumina

At present all the alumina requirements of the Naga Hamadi smelter are imported via the port of Safaga by truck.

The projected alumina requirements for 1987 are in the order of 332,000 tons, which are planned to arrive to Naga Hamadi by the planned railway line

- Aluminum

The Aluminum smelter in 1978 produced 75,000 tons of virgin aluminum which were exported through the ports of Alexandria and Safaga

The aluminum factory exported (in 1978) through the port of Alexandria 30,000 tons of aluminum ingots, of which 15,000 tons were brought to Alexandria by river and 15,000 tons by road.

By 1987, the aluminum factory in Naga Hamadi is projected to export 60,000 tons through the Alexandria port and 40,000 tons through the Safaga port "all exports will be in ingots". All shipments to Alexandria will be by river; all shipments to Safaga are planned to be by rail.

c. The Service Offered

The service scheduled is 4 trains/day in the first stage and 8 trains/day in the second stage to transport phosphates to be exported.

Two trains are also scheduled per direction and per day to transport passengers.

d. Description of the Line

The total length is 524.5 km. From Abu Tartour to Safaga the line will contain 12 stations with a distance between stations of 40 km.

The investment entailed by the project: L.E.14,000,000.

At year 2005 there will be a railway connection between Qena-Safaga-Ras Gharib. The following goods flows are projected (000 t) Qena 3,800 Safaga 1,200 Ghardaka 65.75 Ras Gharib with 4 trains per day.

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As soon as the new line Qena-Safaga comes into service (the connection to the Safaga port is still in the design stage) a total of 88 special aluminum hoppers will be required at an estimated cost of just over L.E. 3.5 million (1979 prices). Timing and specifications are to be determined in cooperation with the aluminum industry in Naga Hamadi (which will have to phase out its truck fleet.

SOURCE: Red Sea Governorate (regional plan, Part 1, pages 28 through 33; National Transport Study, Annex V Railways, Chapter 12, page 12.57; National Transport Study, Annex II Transport Demand Forecasting, Chapter 2, page 2.174

3. Waterway Transport

River (and rail) transport is the lowest cost mode for movements of large volume, bulk cargo between a limited number of origins and destinations, in the future these movements can continue to be expected on the Aswan/Cairo/Alexandria link.

In the future, distribution of cement by river is forecast to become important once the terminals of the cement companies in Cairo and Assiut will become operational. For this reason revitalizing the public ports becomes relevant especially in the middle/Upper Egypt area. For newly built ports simple crane platforms with mooring posts are recommended.

For the year 1987, 315,000 tons of cement are to be transported by river to Qena from the Assiut Cement Factory which is to be constructed by 1987.

SOURCE: Egypt National Transport Study, Main Report, Chapter 6, pages 85, 88, Annex II Transportation Demand Forecasting, Chapter 2, pages 2.72, 2.47.

4. Port Safaga

a. Facilities

The Safaga Port was built in 1969 and consists of a 602 m long quay made of concrete blocks, providing 3 berths. Open spaces, about 100 m wide, extend behind the quay, thus allowing the storage of goods.

The quay is not specialised except for one berth which is devoted to the bulk alumina traffic, the bulk alumina is dispatched to the Naga Hamadi factory by truck.

To the south of the harbour is the Red Sea Phosphate Company's private pier, built in 1912 for exporting phosphates. The activity of the Red Sea Phosphate Company in the

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port is decreasing, and the activities of the Safaga harbour have in the last 5 years developed around the aluminum plant at Naga Hamadi, and the Agro-foodstuffs sector (wheat, fertilizer).

Export of sugar crop produced in the Nile Valley factories (Kom-Ombo and Naga Hamadi) came to an end in 1976.

All the Safaga harbour traffic is directed towards the Far East and Australia.

Wheat is transported to the Nile Valley by truck, the same system of transportation goes for alumina, cement and fertilizer.

The present phosphates mine is 26 km southwest of Safaga and phosphate is carried by metric gauge railway to the port.

The amount exported is on the decrease with a total annual volume of 70,000 metric tons, in 1966 the amount was 175,000 tons. The mine is scheduled to close in 1999.

During the past 5 years, the Safaga harbour traffic has risen from 362,000 tons to 1,035,000 tons. This is for 2 reasons:

- i. The Naga Hamadi aluminum plant starting operations.
- ii. The increasing demand for cereals.

b. Traffic

Traffic connected with the aluminum plant:

- Naga Hamadi plant will yield 160,000 metric tons of finished products per year, 35,000 t/year are consumed locally and 125,000 t/year will be exported.
- 320,000 t/year will be imported through Safaga
- It can be assumed that 50 percent of the total exports will be through Safaga and the rest through Alexandria.

i. Alumina

- Alumina requirement is presently estimated at 332,000 ton;
- The transport of alumina is by truck between Safaga port and Naga Hamadi
- Alumina flows transported from Safaga to Naga Hamadi are:

TABLE D.8

1978	200,000 tons
1983 (Est.)	332,000 tons
1987 (Est.)	332,000 tons
2000/low (Est.)	332,000 tons
2000/High (Est.)	400,000 tons

ii. Traffic of Cereals

- 101,000 tons of wheat were unloaded in Safaga in 1975, which rose to 301,349 tons in 1976.
- The whole of the Australian wheat is unloaded in Safaga.
- Cereal imports will increase at the rate of growth of population living in the Nile Valley between Qena and Aswan plus the Red Sea Governorate.

iii. Wheat (Storage)

- The Master Plan for grain storage and distribution calls for the construction of the following silo's in Upper Egypt.

TABLE D.9

LOCATION	STORAGE CAPACITY (TONS)	YEARLY THROUGHPUT (TONS)
Kafr Ombo	6,400	93,000
Qos	13,300	159,000
Sohag	26,700	376,000
Assiut	13,300	152,000
Minia	13,300	196,000

SOURCE: National Transport Study Annex II 2.126

Transport of wheat from the Safaga port by rail is the cheapest mode of transport.

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c. Extensions in the Safaga Port

1. The wharf will be extended 200 meters in order to berth 60,000 t vessels.
2. Construction of a grain silo with a capacity of 10,000 metric tons to be completed in 1985 will increase the import capacity of Safaga which will reach 1,800,000 ton ph/year in 1986 when the port will rank second for cereal imports after Alexandria.
3. A new phosphate terminal will be located south of the existing installations and should include a new mooring pier in deep water.

d. Impact of Production at the Abu Tartour Phosphate Mines

Projected annual production at the Abu Tartour Phosphate Mines is 7 million tons of which 6 million tons will be exported through Safaga. However, the Abou Tartour project is at present facing some difficulties and its implementation is being reconsidered, but a start will be made on the export of fertilizers before 1986.

e. Capacities of the port of Safaga

After construction of the new silo and the grain wharf, Safaga harbour will be able to handle 2,350,000 tons/year not including the new phosphate terminal.

SOURCE: Red Sea Governorate Regional Plan (Regional Infrastructure Part 2, pp 74, 81, 85, 87; National Transport Study, Annex II, Transportation Demand Forecasting, Chapter 2, pp 2.101, 2.126.

E. ELECTRICAL SUPPLY

1. Existing Situation:

Electricity supply in the Nile Valley region is linked through the Unified Power Grid.

A link is under construction between Qena-Safaga.

Existing and planned sub-station capacities up to 1990 are sufficient.

The Governorates of Sohag and Qena are expected to suffer a shortage, due to new demands in Luxor.

2. Distribution (Regional)

Distribution lines in the Nile Valley are frequently used for transmission (33 kV Network), these are lengthy and overloaded. In the 55 km 33 kV line linking Luxor to the 132/33 kV sub-station in Qena south, voltage regulation reached 17 percent at the Luxor injection point.

Two 500 kV lines link the Nile Valley from Aswan to Cairo, and an intermediate sub-station at Naga Hamadi steps down the voltage to 132 kV with a capacity of 3 x 285 MVA.

Power is provided to the low load consumers by MV/LV step down transformer sub-stations of the pole-mounted (in rural areas) or pad-mounted type.

The main power consumers in the Upper Egypt Region are the aluminum smelter in Naga Hamadi and the Kima fertilizer plant in Aswan which consumed 23 percent of the total electrical energy supplied to the nation in 1977.

Qena Governorate suffers from a high load growth (in Luxor the load has jumped in 2 years from 9 MVA to 15 MVA, while the present capacity is 18 MVA). This is due to the rapidly expanding tourist industry.

By 1984 over 90 percent of the rural villages in the region are to be electrified.

The existing 20 MVA sub-station in Esna should supply the town of Luxor in the short term.

TABLE D.10

PROPOSAL FOR NEW SUB-STATIONS

<u>NAME OF SUB-STATION</u>	<u>RATING (MVA)</u>	<u>VOLTAGES</u>	<u>YEAR OF IMPLEMENTATION</u>
Naga Hamadi	3 x 285	500/220	1990
Qena	3 x 285 3 x 63	500/220 220 x 33	1990 1990
Luxor	2 x 50	220/33	1990

SOURCE: Infrastructure Overview for Sohag, Qena, Aswan, Red Sea Governorate, Section 3, Chapter 4, Table 4.1

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3. Distribution Qena Governorate

A Governorate is fed from a double-circuit transmission line operating at 132 kV. (All 132 kV. lines are designed for operation at a nominal voltage of 220 kV).

A 66 kV double-circuit transmission line feeds some areas north of Naga Hamadi.

Distribution at medium level voltage (220 V) is carried out by underground cables in the urban areas and by overhead lines in the rural areas.

TABLE D.11

HOUSEHOLD ACCESS TO ELECTRICITY
IN URBAN AND RURAL CENTERS 1976

GOV.	HOUSEHOLDS WITH ELECTRICITY (%)			HOUSEHOLDS WITHOUT ELECTRICITY (%)			TOTAL HOUSEHOLDS		
	URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL
Qena	52.7	10.7	20.2	47.3	89.3	79.8	77,470	264,328	34,798

SOURCE: Infrastructure Overview for Sohag, Qena, Aswan, Red Sea Governorates Section 3, Chapter 3, Table 3.4.

TABLE D.12

EXISTING & PLANNED SUBSTATIONS

NAME	EXISTING	PLANNED OR PROPOSED		YEAR OF IMPLEMENTATION
		RATING	VOLTAGES	
Naga Hamadi	3 x 285	3 x 285	500/220	1990
Qena, South	2 x 25	3 x 285	500/220	1990

SOURCE: Infrastructure overview for Sohag, Qena, Aswan, Red Sea Governorates, Section 3, Chapter 3, Table 3.3.

A 220 kV double circuit transmission line between Qena and Safaga, is scheduled to be completed in 1986. This line will connect the Red Sea governorates to the unified power system.

4. Distribution Qena-Red Sea

Safaga would be interconnected via a double 220 kV line to the southern network (Aswan) through Qena; this connection would be a standby.

TABLE D.13

<u>PROJECT</u>	<u>YEARS</u>	<u>COST</u>
Qena-Safaga connection (66 KV and 2 lines)	1991-1992	10.0 m.

SOURCE: Red Sea Governorate Regional Plan, Vol IX Regional Infrastructure page 67.

F. TELECOMMUNICATIONS

The telephone system in the region is not automatic and is mainly based on the cross bar and P.A.B.X. systems, some magneto systems are still in operation. Remote villages generally have a manual switchboard which operates during daylight hours. All units are connected by long distance circuit (many of them open-wire) converging on zone centers linked, by co-axial cables.

ARETO offices generally have P.A.B.X. systems of a few hundred lines with one or two lines to a central office. Central offices usually consist of a P.A.B.X. system of a few hundred lines, with some 20 lines connected to the nearest automatic exchange.

It is planned to make all exchanges in Upper Egypt crossbar and electronic.

A 960 Exchange co-axial cable, installed underground, now links Upper Egypt to Cairo.

G. WATER SUPPLY

1. Qena Water System

In Qena there are two sources for drinking water:

1. The River Nile:

- Supplies Qena, with a total capacity of 200 liters/second.
- Supplies the Qena-Safaga line, with a total capacity of 75 liters/second.

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TABLE D.14

TELEPHONE SYSTEM IN QENA (EXISTING AND FUTURE)

NAME OF EXCHANGE	NO. OF LINES		EXCHANGE CAPACITY			
	OPERATING	WAITING LIST	EXISTING	PROJECTED	TOTAL	YEAR OF COMPLETION
Qena	1,000	1,500	1,000	1,000	2,000	1982
				2,000	4,000	1986
				3,000	7,000	1991
Luxor	800	1,100	800	1,200	2,000	1981
				2,000 *	2,000	1983
				3,000	5,000	1986
Naga Hamadi	(1,189)		600	3,000	8,000	1987
				200	800	1981
				200	500	1981
Qos	(484)		300	2,000	2,000	1985
				600	600	1981

* Electronic Mobile Exchange, all others are of crossbar type..

SOURCE: Infrastructure overview of Sohag, Qena, Aswan and Red Sea Governorates, Section 3, Chapter 5, Table 5.2 .

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ii. Five Artesian wells:

- Supplies Qena, with a total capacity of 100 liters/second.

The water sources (wells and the Nile) are all located near the Nile and the water plant.

The water purification plant in Qena consists of:

- The old Qena water purification plant
- The Qena-Safaga line purification plant: the water is purified by using filters, chloride and copper sulphates, both purification plants are on one site.
- The number of connections to the water network is 12,000.
- The Qena drinking water main pipeline is a 10", 12" pipes.
- The suggested increases in the water purification output capacities are an additional 100 liters/sec.

SOURCE: Municipality.

2. Naga Hamadi: Water System

The sources of drinking water in Naga Hamadi are 8 distributed artesian wells. There is one main plant consisting of a 40 m high water reservoir with a capacity of 300 m³, supplying both Naga Hamadi and Bahgora village, there are two pump stations in the town, one old station and another which began operating in October 1981.

In Naga Hamadi there are no water purification facilities, the water is pumped directly from the wells into the water network, the water is pumped by electrical pumps with a total capacity of 350 m³/hour (10,000 m³/day).

The average number of water connections to the network is 2,441-3,000 connections to separate buildings plus 45 to apartment blocks (with a total of 472 apartments). The percentage of the buildings unconnected to the network is approximately 75 percent. Construction of a new water network began in March 1981 and will be completed in early 1982. This was the first financing the water department received during the last 10 years.

Due to the lack of financing during the past 10 years, the water network was not (and is not) expanded into new residential areas.

The main problems facing the water department are:

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- a. The construction of a purification plant with its intake from the Nile rather than using the artesian wells.
 - b. The construction of a sewerage system, as the present system consists of latrine pits.
 - c. There are large amounts of salt deposits in the water network, if it is not possible to remove these deposits chemically a new system will have to be developed.
3. Existing Water Plants:

TABLE D.15

<u>LOCATION</u>	<u>DESIGN CAPACITY</u> <u>10³ m³/day</u>	<u>REMARKS</u>
Qena	12	Extended in 1960
Naga Hamadi	11	

SOURCE: Infrastructure Overview for Sohag, Qena, Aswan, Red Sea Governorates. Section 4, Chapter 1, Table 1.2

4. Expenditures

TABLE D.16

ESTIMATED CAPITAL EXPENDITURE ON WATER SUPPLY PROJECTS
TO YEAR 2000

(L.E. MILLION AT 1979 PRICES)

	<u>Qena</u>
- Complete works under construction	2.6
- Rehabilitation and associated works	10.8
- New sources	12.4
- New storage and distribution	51.7
- Offices, housing and maintenance centers	6.0
- Land	1.8

SOURCE: Infrastructure Overview for Sohag, Qena, Aswan, Red Sea Governorates Section 3, Chapter 3.

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H. SEWERAGE AND WASTE DISPOSAL

There is no sewage treatment plant in the Qena area.

Provincial towns depend on septic tank vaults and low quality pit latrines.

A major project for a sewage drainage system is presently under construction in Qena; a solid waste treatment plant is to be located in the desert.

I. HEALTH SERVICES

TABLE D.17

QENA GOVERNORATE HEALTH SERVICES

TYPE	NO.	NO.				LOCATION
	(ALL)	(MAIN URBAN)				
Central Hospital	7	Iena	Armant	Luxor	Qos	Dishna, Farshut
Chest Hospital	12	(2)	(2)	(2)	(2)	Qena, Naga Hamadi
Eye Hospital	12	(2)	(2)	(2)	(2)	Qena, Dishna Nag Hamadi
Fever Hospital	7	(2)	(2)	(2)	(2)	Dishna, Farshut Nag Hamadi
Skin Clinic	5	(2)	(2)	(2)	(2)	Dishna, Nag Hamadi
Children's Clinic	9	All major towns				
Bilharzia Clinic		Luxor	Qos	Qena	Naga Hamadi	

SOURCE: Infrastructure overview for Sohag, Qena, Aswan, Red Sea Governorates, Section 5.B, Chapter 1, Part 1.2

TABLE D.18

NAGA HAMADI HEALTH SERVICES

TYPE OF SERVICES	NO. OF UNITS	NO. OF BEDS	NO. OF DOCTORS
General Hospital	1	121	29
Fever Hospital	1	24	2
Mother & Child Clinic	1	-	7
Health Centre	1	-	-
First Aid	1	-	-

SOURCE: Qena Governorate

TABLE D.19

HEALTH SERVICES

QENA CITY

<u>TYPE OF SERVICES</u>	<u>NO. OF UNITS</u>	<u>NO. OF BEDS</u>
General hospital	1	175
Fever hospital	1	40
Chest hospital	1	174
Eye hospital	1	31
Mother and child clinic	1	2
External clinic	3	-

SOURCE: Qena Governorate

J. EDUCATION

In the Qena Governorate there is a shortage of secondary schools.

Partly due to an inadequate number of primary schools and a lack of secondary school bus services, 44,000 children do not attend school.

TABLE D.20

EDUCATIONAL SERVICES

NAGA HAMADI

<u>TYPE OF SERVICE</u>	<u>NO. OF SCHOOLS</u>	<u>NO. OF CLASSES</u>	<u>NO. OF TEACHERS</u>	<u>NO. OF STUDENTS</u>
Primary	6	81	971	3,565
Preparatory	3	41	239	1,690
High school	3	34	101	1,307
Commercial high school	1	23	45	781
Agricultural high school	1	60	74	2,381
Industrial high school	1	60		2,357
Teachers training	1	20	58	769

SOURCE: Qena Governorate

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TABLE D.21

EDUCATIONAL SERVICES

QENA CITY

<u>TYPE OF SCHOOL</u>	<u>NO. OF SCHOOLS</u>	<u>NO OF CLASSES</u>	<u>NO. OF TEACHERS</u>	<u>NO. OF STUDENTS</u>
Primary	177	834	1,841	31,017
Preparatory	24	237	712	9,906
Secondary	5	84	278	3,372
Commercial	4	60	117	1,979
Agricultural	1	46	144	1,359
Industrial	2	85	324	2,976
Teachers' Training	2	43	216	1,572
Adult Teaching	38	90	152	2,700
Classrooms/School	10	12	15	368
Kindergarten	2	4	7	216

NUPS Field Work

SOURCE: Governorate

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APPENDIX E

FEASIBILITY OF THE NEW QENA CITY AND

SALAAM CITY (NAGA NAMADI) PROJECTS

Two proposals have been developed for both Qena and Naga
to accommodate future urban population. Both projects are
to be built on land away from the existing built areas of Qena and
the New Qena project area shown in Figure 15 is intended
to accommodate a population of approximately 39,500 in an area of 800 hec-
tares. The Salaam City project for expansion of Naga Namadi is
to be built on a desert plateau 9 kilometers west of the existing city
and its population is intended to reach 31,000 by the

Two projects are being developed by the Governorate without
the aid of the Ministry of Development or the New Towns Authority.
The design work for the two projects is being done by
the Governorate. Finance for the two
projects is to be through a loan to the Governorate which
will be provided by the National Bank of Egypt. Full details of
the projects have not been finalized, but the Governor envisions that the
projects will be financed by funds made available by European lenders.
A preliminary study by the Ministry of Economy and was
made available to the USAID Team.

The USAID Team has completed master plans for the
two projects. The projects are feasible, although various officials stated
that the projects are not profitable. The plots have already been sold to develop-

The USAID Team has completed a study of the two proposals and a com-
parison of the two proposals with MUPS infrastructure

In addition to the estimates by the project con-
tractors, the USAID Team has estimated the cost of the New Qena and El Salaam
projects. The cost of the New Qena project is estimated to be L.E. 1,500,000 and
the cost of the Salaam City project is estimated to be L.E. 1,000,000. The
projects would require very little infrastructure. However, there is reason to
believe that the cost of infrastructure, including roads, water supply, and
sanitation, would be only 49.4 and 77.5 percent of the total cost of the
projects respectively. The cost of infrastructure for the New Qena project
is estimated to be L.E. 2,560 per person and for the Salaam City project
is estimated to be L.E. 1,710 per person. Also, existing levels of
infrastructure are maintained at cost levels of L.E. 836 and New Qena,
L.E. 710 for public facilities.

TABLE I.1

NEW OCHA CITY - DEVELOPMENT COSTS BY DWELLING UNIT TYPE *

	UNIT	TYPE I	TYPE II	TYPE III	TYPE IV
No. of flats in each type		5 + open area	one flat	one flat	5 + open area
No. of apartments in one floor	unit	4	one apartment	one apartment	3
No. of apartments in each building	unit	20	one apartment	one apartment	14
No. of buildings for each type	building	200	1,500	1,000	100
Total no. of dwelling units	unit	4,000	1,500	1,000	1,400
Land area needed for each type	m sq	1,200	200	320	1,200
Building area for each type (including staircases)	m sq	60	90	125	120
Level of finishing (as limited by Ministry of Housing)		medium	medium	medium	medium lux
Cost of fabrication for one unit apartment	L.E.	6,001	8,000	12,200	10,000
Cost of infrastructure (roads, sewage, water supply, electrical supply, etc...) = 10 percent from apartment fabrication cost	L.E.	600	800	1,220	1,000
Cost of public buildings = 12 percent from apartment fabrication cost	L.E.	720	960	1,460	1,200
General expenses (bank charge, engineering, commission, etc...)	L.E.	180	240	366	300
Total cost per dwelling unit	L.E.	7,500	10,000	15,250	12,500
Total cost for each type building	L.E.	30,000,000	15,000,000	15,250,000	17,500,000
TOTAL DEVELOPMENT COST	L.E.				77,750,000
TOTAL AREA					800 HA
TOTAL NUMBER OF DWELLING UNITS					7,900
GROSS DENSITY ESTIMATE					49.4 PERSONS/HECTARE

* Consultants estimates

SOURCE: Ocha Governorate

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TABLE B.2

"EL SALAAM CITY" NAGA KANADI - DEVELOPMENT COSTS BY DWELLING UNIT TYPE

	UNIT	TYPE I	TYPE II	TYPE III	TYPE IV
No. of flats in each type		5 + open area	one flat	one flat	5 + open area
No. of apartments in one floor	unit	4	one apartment	one apartment	3
No. of apartments in each building	unit	20	one apartment	one apartment	14
No. of buildings for each type	building	200	1,000	500	50
Total no. of dwelling units	unit	4,000	1,000	500	700
Land area needed for each type	m sq	1,200	140	320	1,200
Building area for each type (including staircases)	m sq	68	56	125	120
Level of finishing (as limited by Ministry of Housing)		medium	medium lux	medium lux	medium lux
Cost of fabrication for one unit apartment	L.E.	6,000	6,100	12,200	10,000
Cost of infrastructure (roads, sewage, water supply, electrical supply, etc...) = 10 percent from apartment fabrication cost	L.E.	600	610	1,220	1,000
Cost of public buildings = 12 percent from apartment fabrication cost	L.E.	720	732	1,460	1,200
General spendings (bank charge, engineering, commission, etc...) .	L.E.	180	183	366	300
Total cost per dwelling unit	L.E.	7,500	7,625	15,250	12,500
Total cost for each type building	L.E.	30,000,000	7,625,000	7,625,000	8,750,000
TOTAL DEVELOPMENT COST	L.E.				54,000,000
TOTAL AREA					400 HA
TOTAL NUMBER OF DWELLING UNITS					6,200
GROSS DENSITY ESTIMATE					77.5 PERSONS/HECTARE

Consultants estimates

SOURCE: Qena Governorate

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Nevertheless, even at the consultants' cost levels very few households could afford the units at full cost recovery using conventional financing. In Figure E.1 the costs by type of dwelling unit for each of the projects are shown related to household income group affordability. Household dwelling unit affordability was determined on the basis of how much households at the 20th, 40th, 50th, 60th, and 80th percentiles of national urban income could afford to pay for a dwelling unit. This was based on the assumption that full cost recovery would be achieved through a loan at market terms: an interest rate of 12 percent amortized over 30 years. In addition it was assumed that 25 percent of household income could be used to repay the loan and that households could put up a downpayment on the order of 20 percent of the dwelling unit cost. Thus, based on levels of urban household income, in 1979, the suggested income groups could afford dwelling units at the following costs:

INCOME GROUP AT PERCENTILE OF URBAN INCOME

PERCENTILE	AMOUNT OF INCOME TO		AFFORDABLE DWELLING UNIT (AMOUNT WHICH COULD BE AMORTIZED)	
	ANNUAL INCOME	DWELLING UNIT 25% OF INCOME	NO DOWNPAYMENT	20% DOWNPAYMENT
20	317	79.3	709	797.5
40	675	168.8	1510	1699.0
50	1000	250.0	2238	2517.0
60	1048	262.0	2344	2638.0
80	1527	381.8	3417	3843.0

NOTE: Urban Income Distribution is that of USAID for 1979 based on the CAPMAS 1974-1975 urban household expenditure survey adjusted for inflation. Amount which can be amortized based on loan at 12 percent over 30 years.

Based on the affordable dwelling units by income group using these different levels of affordable dwelling described above - no unit at the New Qena and El Salaam City would be affordable even when the cost of public facilities is not included. (See Figure E.2)

At the planned costs of dwelling units in each of the two Projects, enormous direct and indirect subsidies would be required. If one assumes that the overall project is aimed at the median income of L.E. 1,000 per year, subsidies on the order of 57.85 million and 38.4 million would be required for the New Qena and El Salaam City Projects. Thus, of the total costs of the project 77.75 million for New Qena and L.E. 54.01 million for El Salaam City, only L.E. 19.9 million and L.E. 15.6 million respectively could be recoverable at the median income level.

A major component of the National Urban Policy Study has been to estimate future requirements for housing and intra-urban infrastructure for major urban settlements. These future estimates of infrastructure requirements developed different packages of housing and

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AFFORDABILITY OF NEW QENA AND SALAAM CITY DWELLING UNITS ACCORDING TO TYPE AND INCOME GROUP

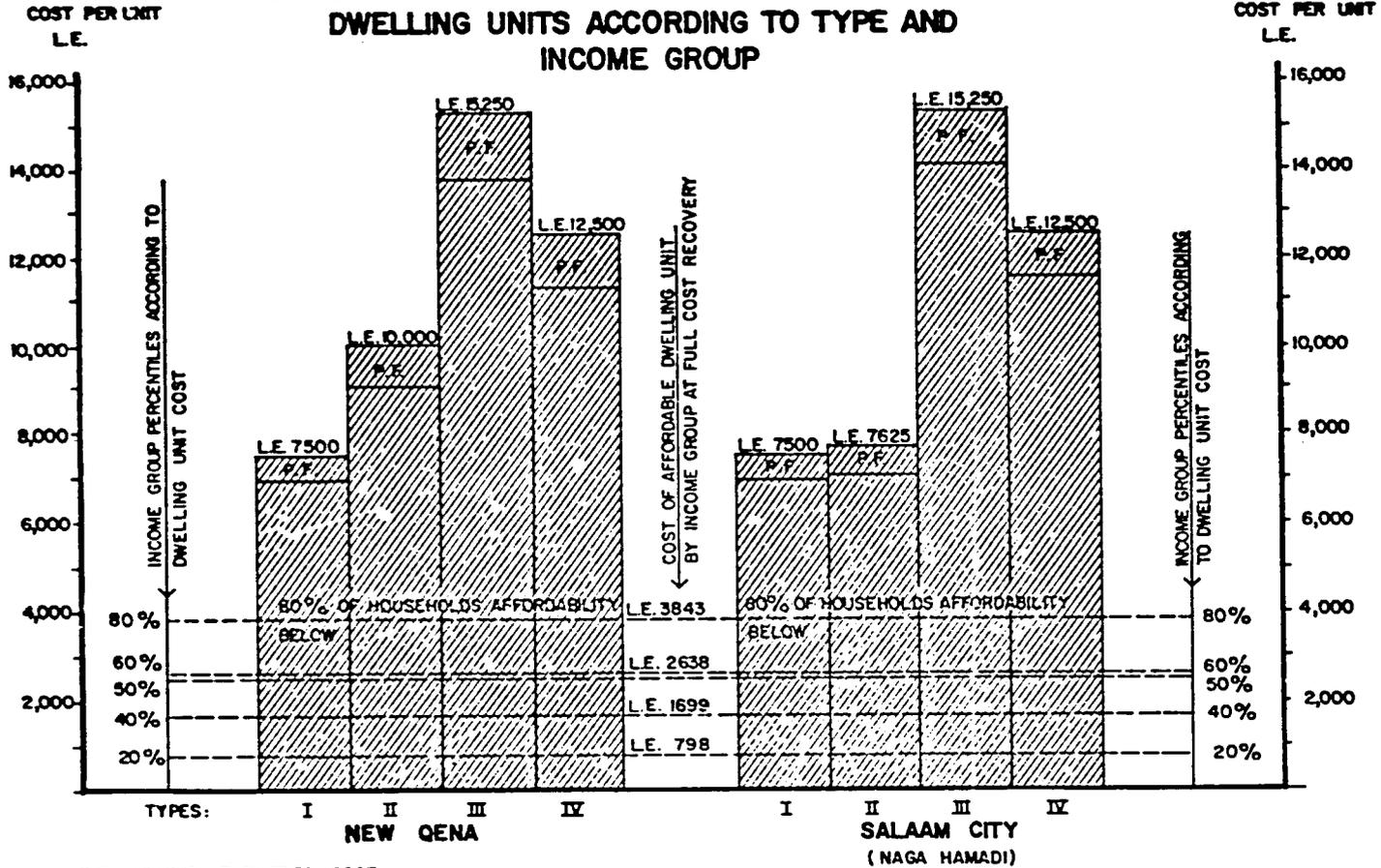


FIGURE E.1

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NEW QENA AND SALAAM CITY DEVELOPMENT COSTS, COST RECOVERY AT MEDIAN INCOME LEVEL AND IMPLIED SUBSIDIES

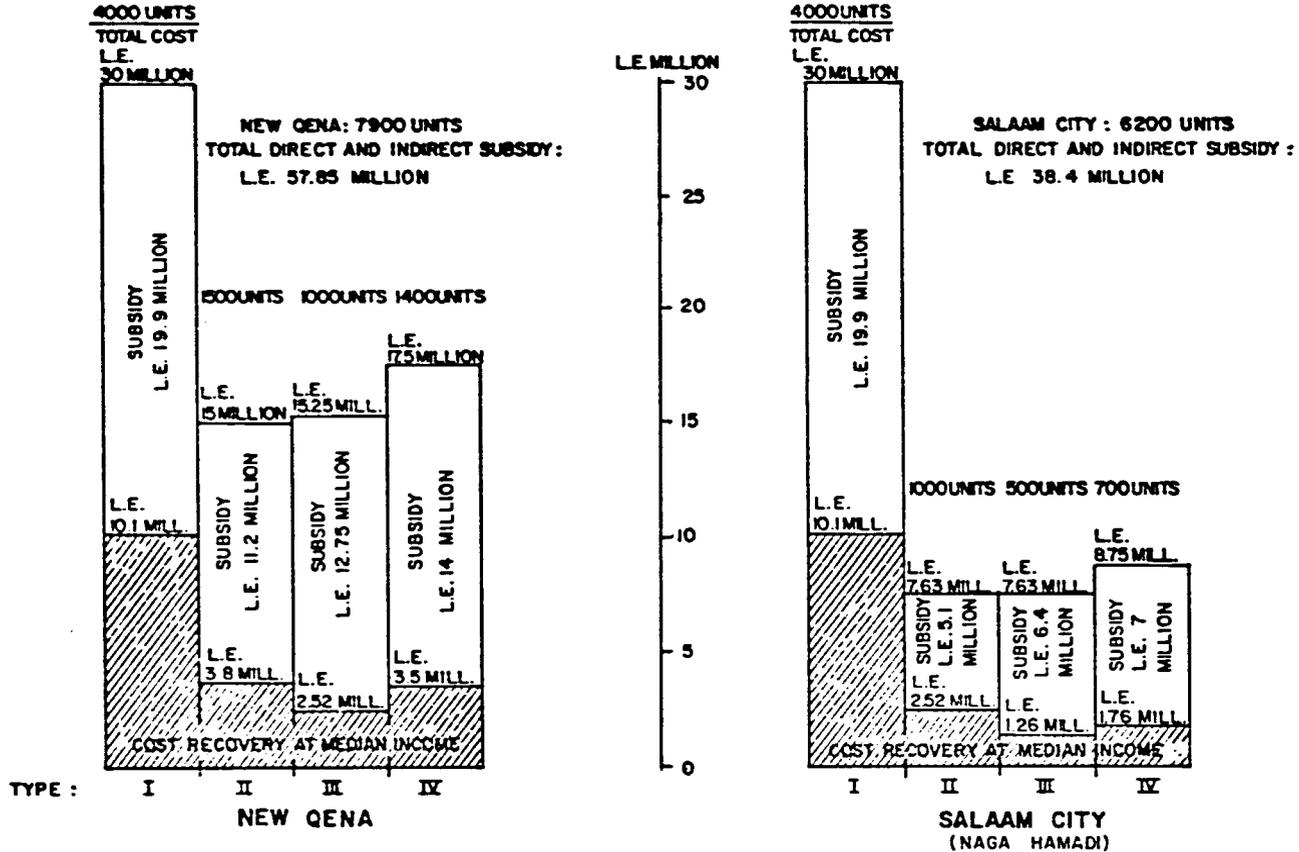


FIGURE E.2

- E.2.b -

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intra-urban infrastructure for different hierarchies or types of settlements. For Qena and Naga Hamadi, settlements which have been identified for special emphasis under NUPS, per capita costs of housing and infrastructure for both rehabilitation and new infrastructure were estimated in Figures IV.A.5 and IV.A.6 in the Appendices to Chapter IV of the NUPS Final Report. These estimates envision that roughly L.E. 1,488 per capita (roughly L.E. 7,443 per household assuming an average household size of 5) would have to be invested to accommodate new population at the standards shown in the figures. These standards, most particularly the housing, represent the average costs of housing and both physical and social infrastructure. These standards have been targeted to households at the median income level to measure affordability. Using the assumptions developed in the NUPS Final Report, i.e. that household incomes could continue to increase at a growth rate of 3.85 percent per annum and that household savings would also continue to grow at similar rates, roughly 43 percent of the Qena total per capita cost would not be affordable to households at the median income level. If increased household savings do not materialize, then up to 74 percent of the costs would have to be subsidized.

Table E.3 gives a comparison of the NUPS average costs for housing and intra-urban infrastructure to serve new population and two estimates of New Qena City development costs. The first New Qena cost estimate was derived from the material supplied by the Qena Governorate (see Table E.1), while the second estimate shows the impact of providing physical and social infrastructure at standards equivalent to those of NUPS, since the data provided in Table E.1 does not give any indication of the standards envisioned for physical and social infrastructure. As is shown in the table, if the costs of physical and social infrastructure estimated for the New Qena Project can be achieved, its average costs will have subsidy requirements which are not substantially higher than the NUPS estimates. However, if standards of social and physical infrastructure are provided at levels proposed by NUPS and the New Qena average dwelling unit costs are maintained, then per capita subsidies will increase 2.2 times from L.E. 748.5 proposed by NUPS to L.E. 1,679.1. Table E.4 shows similar estimates for the Salaam City Project.

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COMPARISON OF NUPS HOUSING AND INFRASTRUCTURE ESTIMATES WITH NEW QENA ESTIMATES

PART III

		NATIONAL URBAN POLICY ESTIMATES		AVERAGE COSTS OF NEW QENA CONSULTANT ESTIMATES 2/		AVERAGE COSTS OF NEW QENA NUPS PHYSICAL & SOCIAL INFRASTRUCTURE 3/	
		QENA 1/		Per Capita	Per Unit	Per Capita	Per Unit
			Per Capita	Per Unit	Per Capita	Per Unit	Per Capita
HOUSING	L.E.	418.0	2,006.0	1,574.7	7,873.4	1,574.7	7,873.4
PHYSICAL INFRASTRUCTURE							
Water	L.E.	92.4				92.4	
Sanitation	L.E.	74.1				74.1	
Electricity	L.E.	147.6				147.6	
Circulation	L.E.	174.0				174.0	
Transport	L.E.	5.7				5.7	
Others	L.E.	5.0				5.0	
SUBTOTAL	L.E.	498.8	2,494.0	152.4	762.0	498.8	2,494.0
SOCIAL INFRASTRUCTURE							
Education	L.E.	41.0				41.0	
Health	L.E.	258.0				258.0	
Others	L.E.	43.0				43.0	
SUBTOTAL	L.E.	342.0	1,710.0	188.9	944.3	342.0	1,710.0
BASE COSTS	L.E.	1,258.8	6,294.0	1,915.9	9,579.7	2,497.1	12,485.5
ADJUSTED TOTAL COSTS	L.E.	1,763.2	8,816.0	1,915.9	9,693.8	2,693.8	13,469.0
PORTION NOT AFFORDABLE	1/	42.5	42.5	47.0	47.0	62.3	62.3
TOTAL SUBSIDY REQUIRED	4/ L.	748.5	3,792.5	901.4	4,507.0	1,679.1	8,395.5

Totals may not add due to rounding.

- 1/ Figure E.3.
- 2/ Table E.1
- 3/ Housing from Table E.1, others from Figure E.3.
- 4/ Based on median per capita household incomes and savings (see NUPS Final Report Chapter IV Section II) and an opportunity cost of capita of 12 percent and a recovery period of 30 years.

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TABLE E.4
COMPARISON OF NUPS HOUSING AND INFRASTRUCTURE COSTS FOR NAGA HAMADI WITH SALAAM CITY ESTIMATES

		NATIONAL URBAN POLICY STUDY ESTIMATES - NAGA HAMADI 1/		AVERAGE COSTS OF SALAAM CITY ESTIMATE TABLE E.2 2/		AVERAGE COSTS OF SALAAM CITY WITH NUPS STANDARDS OF SOCIAL AND PHYSICAL INFRASTRUCTURE 3/	
		Per Capita	Per Unit	Per Capita	Per Unit	Per Capita	Per Unit
HOUSING	L.E.	418.0	2,006.0	1,393.5	6,967.7	1,393.5	6,967.7
PHYSICAL INFRASTRUCTURE							
Water	L.E.	66.0				66.0	
Sanitation	L.E.	60.9				60.9	
Electricity	L.E.	148.9				148.9	
Circulation	L.E.	41.2				41.2	
Transport	L.E.	5.7				5.7	
Others	L.E.	5.0				5.0	
SUBTOTAL	L.E.	327.7	1,638.5	139.4	696.7	327.7	1,638.5
SOCIAL INFRASTRUCTURE							
Education	L.E.	41					
Health	L.E.	258					
Others	L.E.	43					
SUBTOTAL	L.E.	342.0	1,710.0	167.2	835.3	342.0	1,710.0
BASE COSTS	L.E.	1,087.7	5,438.5	1,700.1	8,555.5	2,236.9	11,184.5
ADJUSTED TOTAL COSTS	L.E.	1,488.6	7,443.0	1,700.1	8,500.5	2,236.9	11,184.5
PORTION NOT AFFORDABLE 4/	%	31.8	31.8	40.8	40.8	54.6	54.6
TOTAL SUBSIDY REQUIRED 4/	L.E.	474.0	2,370.0	685.5	3,427.5	1,222.3	6,111.5

Totals may not add due to rounding.

1/ Figure E.4.

2/ Table E.2.

3/ Housing from Table E.2, others from Figure E.4.

4/ Based on median per capita household incomes and savings (see NUPS Final Report Chapter IV Section II).

and an opportunity cost of capita of 12 percent and a recovery period of 30 years.

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1/2
3/4