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TASK 2 DATA ACQUISITION REPORT

EFS TECHNICAL REPORT NO. 24

December 15, 2005

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.

DATA PAGE

Activity Title and Number:	Egypt Financial Services (EFS) Project Contract No. 263-C-00-05-00003-00
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Task:	Task 2: Improve Operation of Urban Registration System in the Ministry of Justice
KRA	KRA 2.2: Automation Design Phase of Business Applications of Pilot System for Registration
Activity:	Activity 2.3.3: Collect and generate datasets
Author:	Quality Standards for Information Technology (QSIT)
Date:	December 15, 2005
EFS Library File	Technical Reports/ REP #24, 2005-12-15, QSIT, Data Acquisition

List of Key Words Contained in Report:

Digital Data

Central Agency for Public Mobilization and Statistics (CAPMAS)

Satellite Imagery

Metadata

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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1. Introduction

1.1 Purpose

The purpose of this report is to present the results of the work conducted by QSIT for the Data Acquisition contract under the Egypt Financial Services Project (EFS). The report will focus on the work methodologies, any special issues that arose during the work, and highlights of results. In addition, four research documents are included in this report as deliverables.

The report includes an introduction followed by sections describing the deliverables as follows:

- Data sources
- Methodology
- Any issues
- Deliverables

In order to complete the work, QSIT prepared a team of digitizers, investigators and data quality control engineers to collect the required data and information from its different sources, and check it. QSIT will provide the EFS project with the data collected from different sources in addition to the deliverables themselves.

1.2 Deliverables

The project deliverables can be summarized as follows:

- National GIS digital data covering all Egypt
- Digital GIS data covering Greater Cairo, consisting of the following
 - Greater Cairo boundary according to different agencies (CAPMAS, ESA, GOPP, and RETD)
 - Registry Office service areas for Greater Cairo
 - Registry offices locations
 - CAPMAS census data of 1986 and 1996
 - Administrative boundaries: Governorates, Districts, and Sub districts, according to CAPMAS Greater Cairo boundaries
 - Administrative boundaries: City, Neighborhoods, and Center, according to CAPMAS Greater Cairo boundaries
 - Base map containing street centerline, and building mass
- Hard copy maps
- Metadata: All digital data will be provided with digital metadata (Arc Catalog)
- Research and supporting documents:
 - History of RO service area boundaries
 - How different administrative boundaries were created and modified
 - Electric subscription data from EEHC
 - CAPMAS surveys conducted after 1996 census

2. National digital data covering Egypt

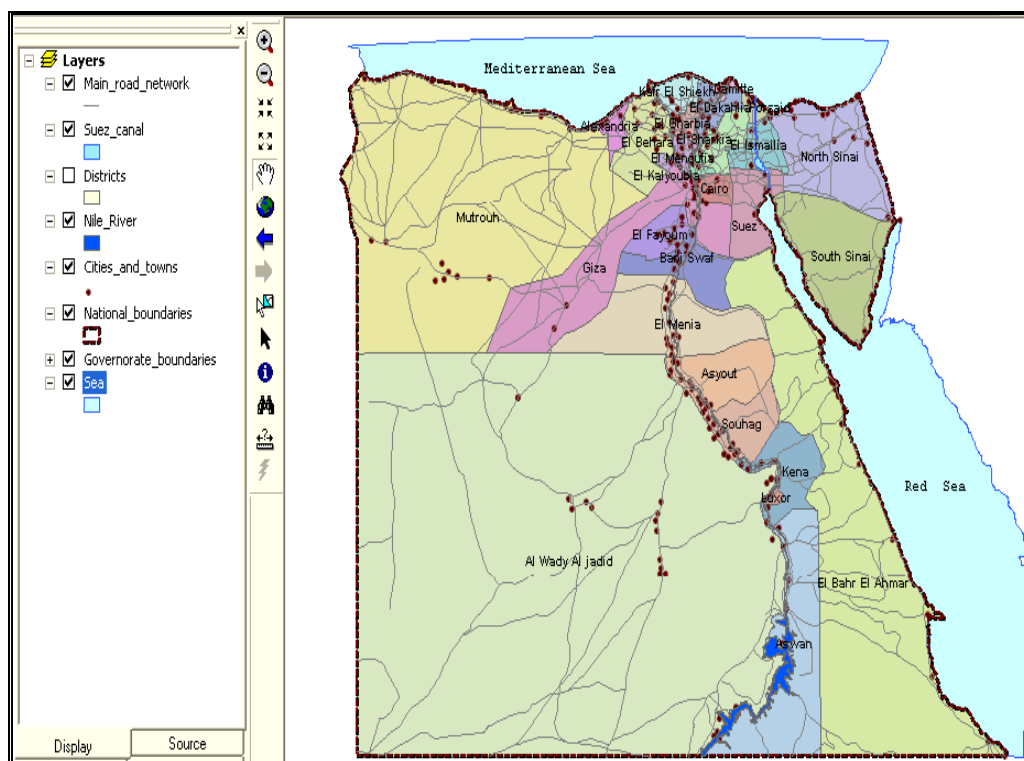
2.1 Data source

The source of this data is a paper map covering all of Egypt produced by ESA, first edition 1999, scale of 1:2 million, with a geographic coordinate system. The digital data was produced from a scanned image using on-screen digitizing.

2.2 Delivered data

The data is submitted as an ESRI Geodatabase in a single projection system (Geographic coordinate system). The figure below provides a thumbnail view of the completed data. The Geodatabase consists of the following layers (feature classes):

- National boundaries.
- Governorate boundaries.
- Cities and towns.
- Main road network
- Nile River.
- Sea.
- Suez Canal.
- Districts (taksimat idarya).



Map of Egypt

3. Digital data covering Greater Cairo

This part of the work contains 7 deliverables; each is covered separately in this section of the report.

3.1 Greater Cairo boundary

Greater Cairo covers the city of Cairo (the capital of the country), the city of Giza, and the city of Shoubra al Khayma in the governorate of Qalyoubiya. However, what precisely is covered by Greater Cairo is not known, and there is no single legal definition of Greater Cairo, as different agencies define the boundaries differently

According to the General Organization of Physical Planning, the Greater Cairo region includes around 43% of the urban areas population in Egypt, and 22% of the entire population of the country. In addition institutions, activities, and services at all levels that serve the whole country are concentrated in Greater Cairo.

3.1.1 Data source

Hard copy maps were collected from five different agencies then they were scanned and the boundary was digitized. Further details are provided below.

A. Egyptian General Survey Authority (ESA)

ESA was established in 1898 to implement a program of survey and mapping. ESA reports to the Ministry of Water Resources & Irrigation. Meetings and discussions¹ were held to discuss Greater Cairo definition and to obtain the Greater Cairo boundary. According to ESA Greater Cairo is the urban agglomerations falling within the regional ring road, and includes parts of three governorates – Cairo, Giza, and Qalyoubiya.

The map including the Greater Cairo boundary that was obtained from ESA consists of one sheet, at 1:70,000 scale, dated 1999, and in Egyptian Transverse _ Mercator (ETM) with ellipsoid Helmert 1906 projection.

B. Central Agency for Public Mobilization and Statistics (CAPMAS)

CAPMAS was established in 1964 to provide all agencies such as universities, research centers and international organizations with all required reports and census to support planning, development and decision making. CAPMAS reports to the Ministry of Planning. CAPMAS appears to include in Greater Cairo only urban areas, but also includes parts of the three governorates.

The hard copy map including the Greater Cairo boundary that was obtained from CAPMAS consists of one sheet, at 1:100,000 scale, dated 2000, and in Universal Transverse Mercator (UTM) projection.

C. General Organization for Physical Planning (GOPP)

GOPP was established in 1973 to prepare various plans and projects covering different administrative levels. It also supports cooperation between different planning agencies. GOPP reports to the Ministry of Housing, Utilities and Urban Communities. GOPP divides Egypt into seven regions; one of these regions is Greater Cairo. The first declaration of this region was in 1966 after various studies (economical, social, environmental, etc.) were

¹ Eng. Hassan Gad ESA governorate office (Cairo), and Eng. Hamdi ESA HQ Maps department

completed. This boundary is considered a planning boundary that includes both rural and urban parts within the three governorates (Cairo, Giza, and Qalyoubiya).

Digital data in shapefile format, in UTM projection system, dated 2000 was obtained from GOPP, supported by a hard copy map including the Greater Cairo boundary consisting of one sheet, at 1:1,000,000 scale, dated 1996, and in Universal Transverse Mercator (UTM) projection.

D. Real Estate Publicity Department (REPD)

REPD was assigned the responsibility for the legal component of the real property registration. REPD is a unit in the Ministry of Justice. According to REPD, Greater Cairo consists of the entire three governorates (Cairo, Giza, and Qalyoubiya).

The hard copy map including the Greater Cairo boundary that was obtained from REPD consists of one sheet, at 1:200000 scales, dated 2001, and in UTM projection

E. Cairo Sewage Company:

Cairo Sewage Company is responsible for sewage network extensions, and reports to the Ministry of Housing, Utilities and Urban Communities.

The manager of the Cairo Sewage Computer Information Center drew the boundary on a small scale map (1:2,000,000).

3.1.2 Delivered data

The data is submitted as an ESRI Geodatabase in the ESA standard projection system (ETM). The Geodatabase consists of the following layers (feature classes):

- GC ESA
- GC CAPMAS
- GC GOPP
- GC RETD
- GC SW
- Street network
- Nile River

3.2 Service area boundaries

Service area boundaries are those areas that any individual registration office is supposed to cover. It is assumed that any given location should be covered by one and only one registration office.

3.2.1 Data source

Context

There are between 25 to 27 registration offices within Greater Cairo. While there should always be one EDO for every single RO, it appears that sometimes new ROs are created and there is a time delay for new EDOs to be established. This may explain why there are currently two more ROs than EDOs within this area. The offices are distributed as follows: Cairo has 17 ROs (16 EDOs), Giza has 5 ROs (4 EDOs), and Qalyoubiya has 5 of both.

Expected data source

It was expected to create the service area maps by collecting about 60 maps from many agencies and offices. Such maps ought to be available at:

- At the Registry Offices themselves (26 in Greater Cairo), with each map (probably scale 1:5,000 or 1:10,000) covering just the single office area
- At MOJ Headquarters, where the map (probably scale 1:25,000 to 1:100,000) might be small scale covering a governorate only, or possibly one map for all of Greater Cairo.
- At Registry Governorate level offices (four: North Cairo, South Cairo, Giza, and Qalyoubiya). Map (probably scale 1:25,000 to 1:100,000) expected to cover part of governorate that falls in Greater Cairo or possibly the entire governorate.
- At ESA Headquarters. Map (probably scale 1:25,000 to 1:100,000) expected to cover parts of all three governorates that fall in Greater Cairo.
- At ESA Governorate level offices (three: Cairo, Giza, and Qalyoubiya). Map (probably scale 1:25,000 to 1:100,000) expected to cover part of governorate that falls in Greater Cairo or possibly the entire governorate.
- At the ESA Office of Financial and Administrative Determination (*Maktab al Fasl Al Mali Wa Al Idari*). There should be 26 hard copy maps (probably scale 1:5,000 or 1:10,000), one for each RO.

Actual data source

QSIT began by creating hard copy working maps at a scale of 1:50,000 from CAPMAS 1:5,000 street network and CAPMAS 1:100,000 sub district boundaries. The QSIT team then visited the various offices and either copied any available maps (hard copy) or worked with the ESA staff to draw the service areas on the QSIT hard copy working maps, as per the details below. Later, QSIT digitized the service areas over the digital Street network and Sub districts shapefiles.

- At ROs: EFS asked REPD for permission for QSIT to visit the offices, but this permission was denied. Senior staff at REPD stated that ROs do not have such maps, and that when they need them they refer to their counterparts at the EDO. Nevertheless, during QSIT's visits to all EDOs (see below), they were able to confirm that none of the ROs Greater Cairo have maps. The only exception is the Nasr City RO that has one outdated map at scale 1: 5,000 and the service area on this map is incomplete.
- At MOJ (REPD) HQ: A meeting was held with the Head of the Map Department at Lazoughly who stated that the department does not have service area maps and that such maps are not available at MOJ (REPD) HQ but might be found at the ROs themselves or at each EPO.
- At GROs: EFS asked REPD for permission for QSIT to visit the four offices (North & South Cairo, Giza and Qalyoubiya), but permission was denied.
- At EPOs: QSIT visited the three offices (Cairo, Giza, and Qalyoubiya), as follows:
 - Cairo EPO: The Head of the office (Eng. Hassan Gad) stated that the office used to have a map but it could not be found. Instead, he brought 10 of the 16 EDO heads to his office.² Each EDO Head then drew the service area of their office onto the QSIT hard copy working map. The EDO Heads then discussed how to resolve any overlaps or gaps between adjacent service areas.
 - Giza EPO: The Head of the office (Eng. Hossam Hassan) drew four service areas onto the QSIT hard copy working map.
 - Qalyoubiya EPO: This office had a wall map scale 1:250,000 showing center and village boundaries as well as service areas. QSIT drew the service areas onto the QSIT hard copy working map. The office also had a document describing each service area which was photocopied by QSIT.

² Attendees were Heads of Kasr El Nil, El Daher, Nasr City, El Nozha, Masr El Gedidah, Helwan, El Mamdi, El Mataraya, El Zeitoun, Ein Shams offices.

- At EDOs: As noted above, service areas for ten EDOs were collected at the Cairo EPO. Six additional EDOs³ in the Cairo governorate were visited separately and the EDO Head drew the service area onto the QSIT hard copy working map. Permission was given to visit the Giza EDOs, which were visited, but they do not have any maps. The Qalyoubiya EDOs were visited but they do not have any service area maps.
- At ESA HQ: ESA HQ did not have any map showing service areas. One staff member there did however draw by hand two service areas in Cairo governorate (El Sayida and El Moksi) onto a tourist map.
- At ESA Office of Financial and Administrative Determination: The Head of the office (Eng. Hanfi) stated that the office does not have any service area maps, but do have textual description of each office's service area, and that service area maps are originally created by EPOs. He further stated that his office is responsible to resolve any differences over service area boundaries.

3.2.2 Delivered data

The data is submitted in two datasets one for service areas created by EDOs and the other created from the textual descriptions from ESA Office of Financial and Administrative Determination. The data is submitted as ESRI shapefiles in the ESA standard projection system (ETM). The shapefile naming includes an abbreviation for the district name, as per the following examples:

- Ser_EDO_Zai (Zeiton)
- Ser_FMI_Zai (Zeiton)
- Ser_EDO_Dah (Daher)
- Ser_FMI_Dah(Daher)

Each service area is provided as a separate shapefile with the office name attribute (Arabic and English name), in order to illustrate gaps and overlaps with adjoining service areas more effectively. As each service area was drawn as it is, without fixing or enhancing gaps or overlaps between them.

3.3 Office locations

This task covered district level Registry Offices (RO), governorate level Registry Offices (GRO), Governorate level Survey Offices (EPO), Notarization Offices (NO), relevant MOJ offices, and relevant ESA offices. In detail, these offices were:

- 27 RO (district level) in Greater Cairo: 17 in Cairo, 5 in Giza and 5 in Qalyoubiya
- 25 ESA district offices
- 4 GRO (governorate level) and 8 MOJ offices
- 62 NO
- 17 ESA Governorate survey offices.

3.3.1 Data source

QSIT started off with a listing of the offices provided by EFS which included the address. QSIT then collected office locations by way of Global Positioning Systems (GPS) to an accuracy of 10 meters. The surveyed points representing the office locations were taken in front of the building. Later the surveyed points were revised in the office in order to make sure that the point location was placed within the building's outline (based on a CAPMAS 1:5,000 base map, Universal Transverse Mercator (UTM)). In addition, QSIT reviewed the attributes for each office that were provided by EFS and updated as necessary.

³ Rowd El Farag, El Sayida Zeinab, El Waili, Shobra, El Khalifa, El Moski.

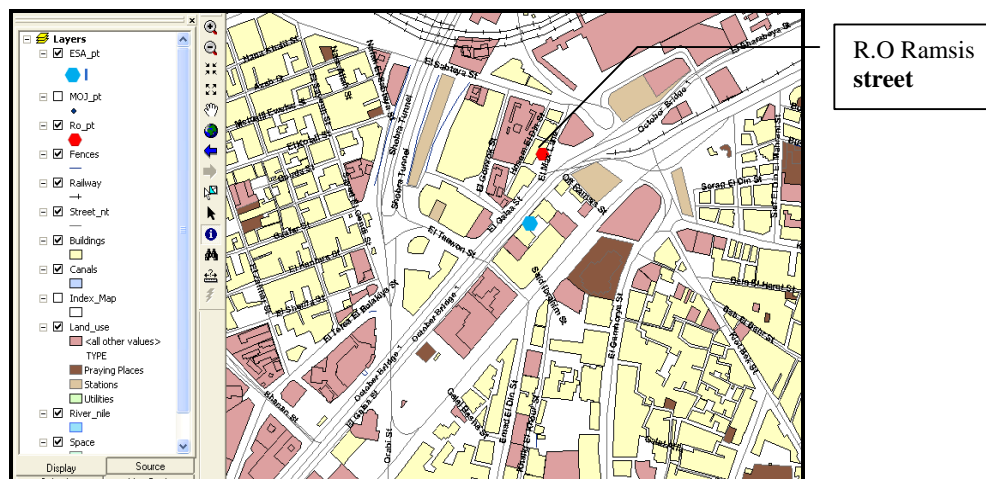
3.3.2 Delivered data

The data is submitted as an ESRI Geodatabase in the ESA standard projection system (ETM). The Geodatabase consists of the following layers (feature classes):

- RO pt (Address, Head office, Office Name, Telephone)
- MOJ pt (Address, Head office, Office Name, Telephone).
- ESA pt (Address, Head office, Office Name, Telephone).

The attribute file is submitted as an Access file.

The figure below provides a sample screen shot.



Example of ESA office locations

3.4 CAPMAS census data

Complete census data for both buildings and population (1986 and 1996) should be delivered, at the desired sub district level (Shyakhah), according to the union of Greater Cairo boundaries, and, As per the Scope of Work, the census data ought to include demographic data (male pop < 15/>65, female pop <15/>65, household, family size), educational level, literacy, income levels, housing stock and typology, and construction permits and violations, all preferably at the sub district level.

3.4.1 Data source

QSIT collected material from the CAPMAS library, including the 1986 and 1996 census data in hard copy form. It was found that some required data was available at governorate level only (income level), while other at the district level (Family size and house stock), and the rest at the desired sub district level. In addition, some of the data was actually compiled by other organizations such as income level which was compiled by ministry of planning. As for data on construction permits and violations, none of the visited agencies (CAPMAS, Cairo Governorate, and Ministry of Housing) had such data. While the district offices (department of violations) themselves do have such data, it is forbidden to distribute it.

3.4.2 Delivered data

The complete census data is submitted as an ESRI Geodatabase, in the ESA standard projection system (ETM), in two data sets one for 1986 and one for 1996, at sub districts level. While other required data (Family size, house stock and income level), is submitted within the relevant administrative units that are delivered under section 3.5 below.

The census_1986 Geodatabase consists of the following layers (feature classes):

- Census of population 1986 (C_Pop_86).
- Census of building 1986 (C_Bil_86_part1).
- Census of building 1986 (C_Bil_86_part2).

The census_1996 Geodatabase consists of the following layers (feature classes):

- Census of population 1996 (C_Pop_96).
- Census of building 1996 (C_Bil_96_part1).
- Census of building 1996 (C_Bil_96_part2).

The table below provides a detailed listing of census for population main tables for both censuses (1986_1996).

ser.	Table name	No. of fields	Aggregation
1	population distributions for age groups by gender	36	sub districts
2	population distributions for selected age groups by gender	4	sub districts
3	population distributions for marital status by gender	14	sub districts
4	population distributions according to employment status by gender (age 15 and above)	24	sub districts
5	population distributions according to economic activity by gender(age 15 and above)	32	sub districts
6	population distributions according to educational level by gender(age 10 and above)	20	sub districts
7	population distributions according to main jobs by gender (age 15 and above)	18	sub districts

The table below provides a detailed listing of census for buildings main tables for both censuses (1986_1996).

Census for buildings and housing (1986-1996) main tables:

Ser.	Table name	No. of fields	Aggregation
1	Standard Residential Housing by Type	14	Sub districts
2	building by type and current usage	14	Sub districts
3	Residential and work buildings by sector	12	Sub districts
4	Attachments building by sector (Mabny jawaazia)	6	Sub districts
5	Type of Residential unite and current usage	11	Sub districts
6	Type of Residential unite for work and current usage	11	Sub districts
7	buildings by current status	9	Sub districts
8	Standard Residential Housing (Completed) by Year of Construction	9	Sub districts
9	Utilities in Residential Buildings	16	Sub districts
10	Residential + Commercial Bldg by Construction Type	16	Sub districts

In addition, photocopies of material collected will be submitted. The appendix provides a detailed listing of the submitted digital data.

3.5 Governorates, Districts, and Sub districts

3.5.1 Data source

An ESRI soft copy shapefile data set from CAPMAS including Governorates (Muhafaza), Districts (Taksimat idaria), and sub districts (shiyakha), in the Universal Transverse Mercator (UTM) projection. The source scale is 1:10,000, and attributes include Governorate name, district name, sub district name.

3.5.2 Delivered data

The data is submitted as an ESRI Geodatabase in the ESA standard projection system (ETM). The Geodatabase consists of the following layers (feature classes):

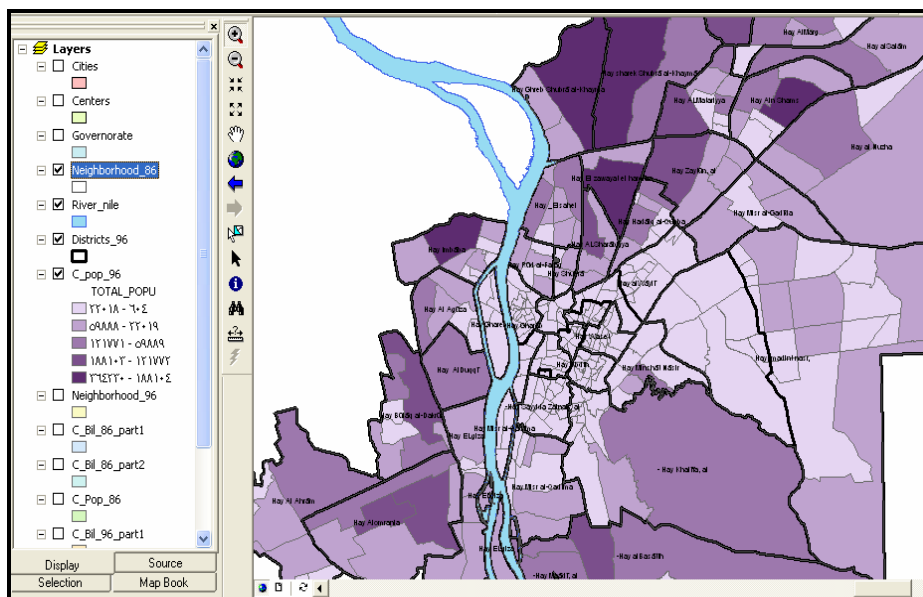
- Governorate (Gov_name, income level 86, income level 96).

Because of the districts administrative boundaries aren't identical in the two censuses (1986-1996); two layers (feature classes) were submitted.

- Districts_86 (Gov_Name, Sec_Name, H_Stock, F_size).
- Districts_96 (Gov_name, Sec_name, H_Stock, F_size electric subscriptions).

As districts, the sub district administrative boundaries aren't identical in the two censuses (1986-1996); so it delivered in two different data sets under section 3.4 above.

The figure below illustrates the districts and sub districts in Greater Cairo.



Administrative boundaries (districts, sub districts)

3.6 City, Neighborhood, and Center

3.6.1 Data source

These administrative boundaries were created from the CAPMAS administrative boundaries presented above (governorates, districts, and sub districts). QSIT investigated the boundaries to determine which districts made up cities, neighborhoods, and centers.

An ESRI soft copy shapefile data set from CAPMAS including Governorates (*Muhafaza*), Districts (*Taksimat idaria*), and sub districts (*shiyakha*), in the Universal Transverse Mercator (UTM) projection. The source scale is 1:10,000, and attributes include Governorate name,

district name, sub district name. Districts were merged in order to create neighborhoods, cities, and centers. The results can be summarized as:

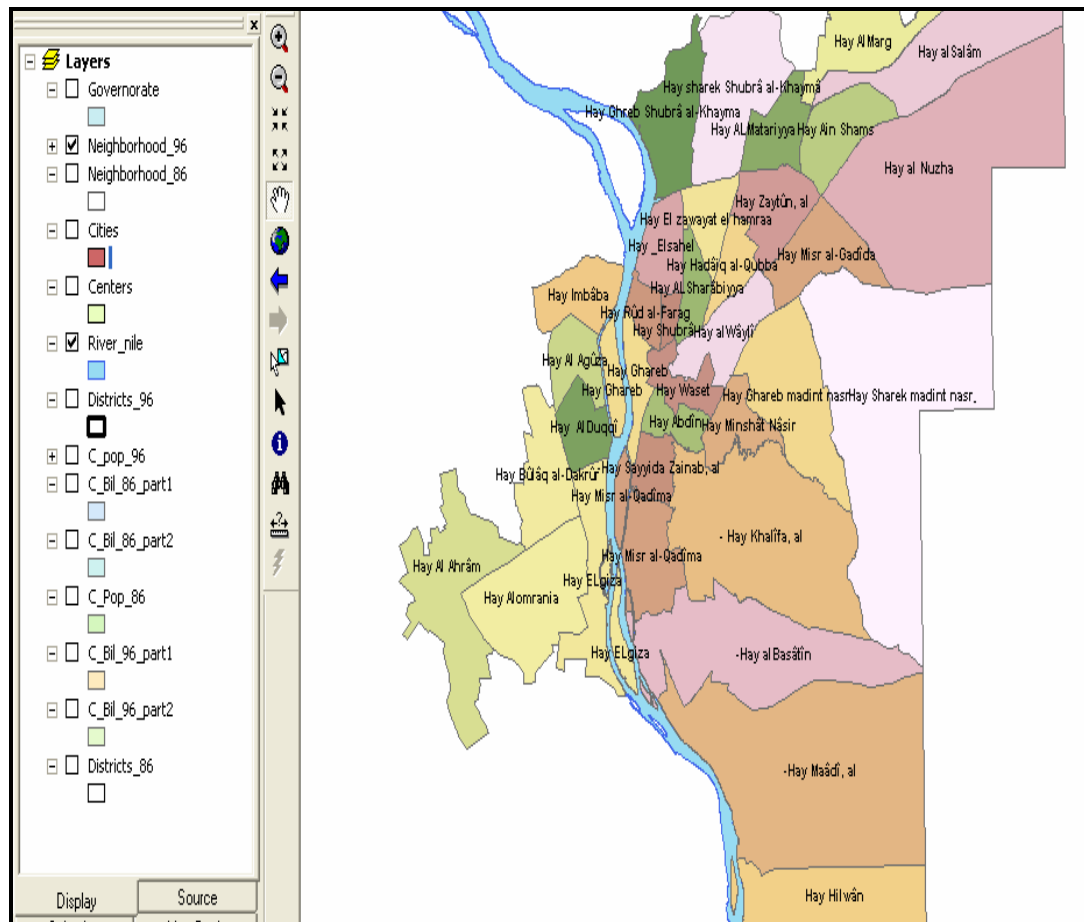
- Cairo governorate: 26 neighborhoods in 1986 and 27 neighborhoods in 1996, one city (Badr), no centers
- Giza governorate: seven neighborhoods, nine cities.
- Qalyoubiya governorate: two neighborhoods, nine cities.

3.6.2 Delivered data

The data is submitted as an ESRI Geodatabase in the ESA standard projection system (ETM). The Geodatabase consists of the following layers (feature classes):

- Cities (Gov_name, C_name)
- Because of the districts administrative boundaries aren't identical in the two censuses (1986-1996); two layers (feature classes) were submitted.
- Neighborhood86 (Gov_name, Hay_Name)
- Neighborhood96 (Gov_name, Hay_Name)
- Centers (Gov_name, Cen_name)

The figure below illustrates the City, Neighborhood, and Center in Greater Cairo.



Administrative boundaries (Neighborhood)

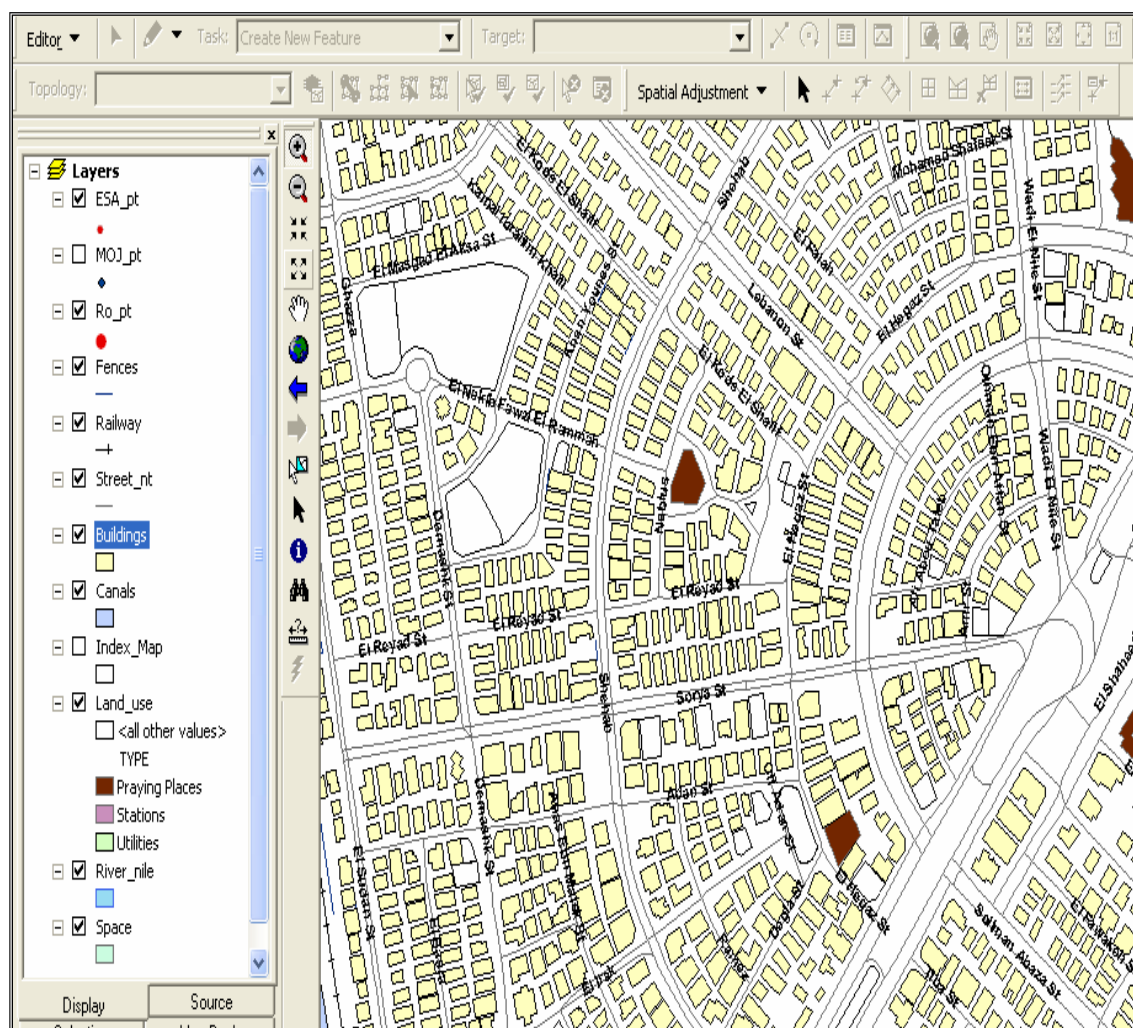
3.7 Base map

3.7.1 Data source

The data source came from an ESRI softcopy shapefile from CAPMAS including street centerlines and building mass, in the Universal Transverse Mercator (UTM) projection. The source scale is 1:5,000, and attributes include street name. QSIT quality control team reviewed the data.

3.7.2 Delivered data

- Delivered data Buildings
- Street network including street name.
- Canals
- Fences
- Land use
- Railway
- River Nile
- Open space



Base map

4. Satellite Imagery

The AOI over Cairo is covered by 1000km² Ikonos satellite imagery. Originally the required IKONOS satellite data was GEO PSM (1meter, 3 bands) product acquired in 2003 and 2004, but we've achieved a good deal, substituting the data acquired in 2003 with the data acquired in 2005, and the GEO PSM product with the Geo Bundle product (1m for Pan and 4m for MSI).

4.1 Original Satellite Imagery

Imagery Specifications:

Resolution: 1m & 4m
 Product: Geo bundle
 Date of acquisition: 2005, 2004 & 2003
 Format: Geotiff
 Projection: UTM – WGS84

GEO products are geometrically corrected and rectified to a specified ellipsoid and map projection. The correction process removes image distortions introduced by the collection geometry and re-samples the imagery to a uniform ground sample distance and specified map projection. GEO has ± 25 m (RMSE) standard horizontal accuracy, excluding effect of terrain displacement, Geo is provided with Image Geometry Model (IGM), which enables the complete and accurate sensor geometry at the time of the image collection. The IGM allows user full control of the ortho rectification process for the highest possible accuracy.

Geo Bundle:

1meter PANCHROMATIC (PAN) + 4 meter MULTISPECTRAL (MSI)

Bands

Black and White:	0.45 - 0.90 micrometer
Band 1 Blue:	0.45 - 0.53 micrometer
Band 2 Green:	0.52 - 0.61 micrometer
Band 3 Red:	0.64 - 0.72 micrometer
Band 4 Near Infrared:	0.77 - 0.88 micrometer

Coverage:

Data over Cairo is covered by 15 tiles as shown in Fig1.



Fig1

4.2 Rectified Imagery

Raw Satellite imagery passed thorough several processes as follows:

- Rectifying individual images using extensive sets of GCPs collected from CAPMAS Cairo base Map (more than 200 GCPs).
- Mosaicing adjacent images in order to reduce number of tiles using sets of tie points along overlapping area.
- Performing necessary colour matching between images in order to minimize the color separation between different tiles.
- Performing an overall mosaicing over the whole AOI in one file.

The results are:

- Seven mosaic files in IMG format form the whole AOI covered by satellite Imagery in 7 tiles Fig 2:

1. Mosaic1.img
2. Mosaic2.img
3. Mosaic3.img
4. Mosaic4.img
5. Mosaic5.img
6. Mosaic6.img
7. Mosaic7.img

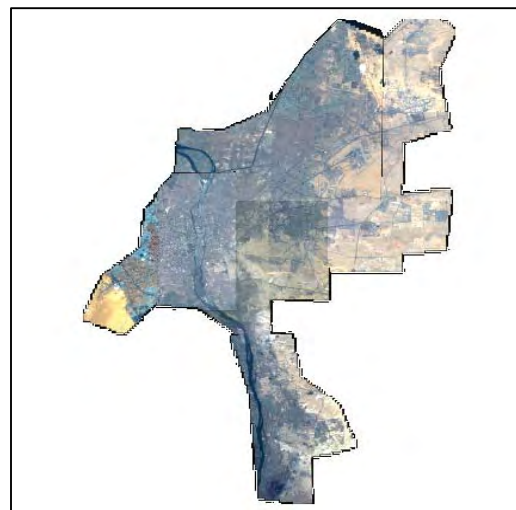


Fig (2)

- One mosaic file in MrSid format with auxiliary files covers the whole AOI in one tile.

Mosaic.sid
Mosaic.sdw
Mosaic.aux
Mosaic.txt

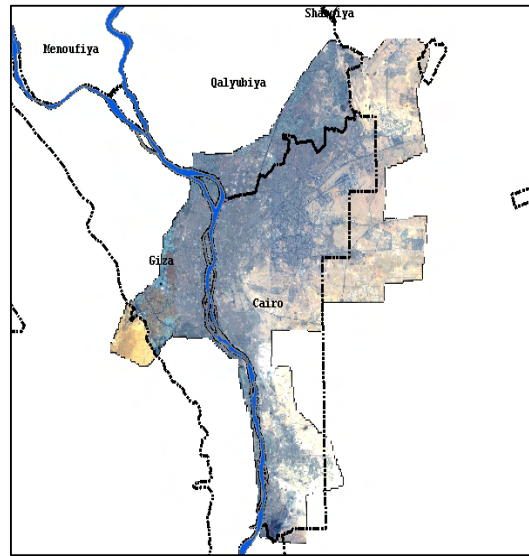


Fig 3

4.3 Imagery Specifications

- Resolution: 1m
- Product: PSM
- Date of acquisition: 2005,2004 &2003
- Format: Geotiff
- Projection: ETM

Geo PSM:

Merging between 1meter PANCHROMATIC (PAN) & 4 meter MULTISPECTRAL (MSI) final product is colored data with 1m resolution.

Bands:

True color 3bands: Red, Green and Blue

Band 1 Blue:	0.45 - 0.53 micrometer
Band 2 Green:	0.52 - 0.61 micrometer
Band 3 Red:	0.64 - 0.72 micrometer

4.4 Index map

Index Map for satellite tiles that can be used for generating hard copy maps on A3 sheet, Scale1:3500, covering the area of 1.47 Km2 (Approx.1.5 KM2).

4.4.1 Delivered data

The index map is submitted as an ESRI Shapefile in the ESA standard projection system (ETM).

5. Hard Copy Maps

5.1 Hard copy maps

Hard copy maps of Greater Cairo showing:

- Greater Cairo limit (according to CAPMAS, ESA).
- Nile River.
- Governorate boundaries and names.
- Major roads names.
- Satellite imagery in background.

5.2 Delivered data

All hard copy maps are delivered as:

- Four copies on A1 sheet of which two on mounted foam board.
- Four copies on A3 sheet.

The figure below illustrates hard copy maps of Greater Cairo.



Greater Cairo map

6. Metadata

The Metadata will be attached to the each deliverable ESRI GeoDatabase in a digital form (Arc Catalogue), and includes two components as below:

Source data description:

- Publisher
- Publication Date
- Date of the last update

Digital data description:

- The purpose of the deliverable
- Deliverable scale
- Coordinate system
- Attributes description
- Creation method

7. Research and supporting documents

7.1 Service area

REPD and ESA registration office services areas can be defined as an area that is served by one office, and that each RO is associated with one EDO. The service area boundary is a not a physical restricted boundary, but rather a flexible one which can be changed or modified at any time.⁴

7.1.1 Urban areas

The initial delineation of these service areas was done by collecting the neighborhoods or districts boundaries together to be served by one office. Each office was expected to serve about three to four neighborhoods, with the understanding that this service area could be changed at any time.⁵

Each office serves on average three or four districts or neighborhoods. The office that is authorized to determine the EDO service areas is the ESA Governorate office (EPO). The procedures by which a service area is created or changed can be described as follows:

- The head of the ESA governorate office forms a committee including members from different agencies: Governorate, EDO managers, members from the ESA Office of Financial and Administrative Determination.
- The committee meets to discuss the suggested changes.
- The committee studies the suggested changes and may revise the districts and sub districts maps. The suggested boundaries should observe the main street network and the current administrative boundaries (districts /sub districts).
- After one or more meeting, the committee issues the new service area boundaries, and draws it over an administrative boundaries map.
- These new boundaries will then be submitted to the ESA Office of Financial and Administrative Determination and also to the relevant EDOs.

7.1.2 Rural areas

There are differences between urban and rural areas in terms of their administrative divisions, as the rural areas combine units (centers containing villages) separated by clear boundaries. The main components of the rural areas are centers (markaz). Each center contains villages served by the Capital of the Markaz (a city). On average, each center needs only one RO office to serve the whole center (including the villages) and is usually located in the Capital (city).⁶

As in urban areas, the ESA governorate office is the main office responsible for delineating the service area for each EDO (and consequently the RO service area). The process to create or modify a service area is the same as that found in urban areas. Service area boundaries are typically changed when administrative boundaries (villages or Centers) have their boundaries changed, or there is a need to add new registration offices.

⁴ Discussion with Eng. Hanfi Head of Office of Financial and Administrative Determination.

⁵ Discussion with Eng. Hassan Gad ESA governorate office (Cairo).

⁶ Discussion with Eng. Ahmed Bahnsi ESA governorate office (Qaluobia).

7.2 Administrative boundaries

7.2.1 Governorates

Governorate boundaries are either changed or modified by decree taken by the President or Prime Minister, after which a number of steps or procedures are followed:⁷

- The decision is transferred to the ESA headquarter and ESA Office of Financial and Administrative Determination in order to study it and decide whether it is valid decision or not. This is done by studying the land ownership maps and administrative boundaries map.
- A committee is formed including members from the following agencies: Ministry Of Finance, Ministry of Interior, and Ministry of Local Development, CAPMAS, and the Governorate.
- The committee accepts the results.
- Review by the Real Estate Taxation Department and the Ministry of Finance.
- Finally to office of the ESA Office of Financial and Administrative Determination in order to coordinate and follow up and transfer it to the concerned governorate to determine necessary changes in the governorates boundaries and locate them on relevant maps. While the ministry of local Development is responsible for the identification of the administrative boundaries in text only.

7.2.2 Districts and sub districts

Urban areas

Urban areas within any governorate (*muhafazat or muhafaza*) consist of cities (*mudn or madina*), and each city consists of districts (*taksimati idariya*). The total sum of the districts areas is equal to that of the city. Each district is subdivided into sub districts, and the sum total of the sub districts' areas is equal to that of the district.

In urban areas the district is a police district (*aksam or kisim*), as police districts are considered one of the most important divisions of a city. The creation of new district always results from a direct decision by the Ministry of Interior and happens when a new community or city is established or when the population size of an existing district becomes too large and part of the district needs to be cut off to become a new one. Rules that govern the creation or change of district boundaries include:

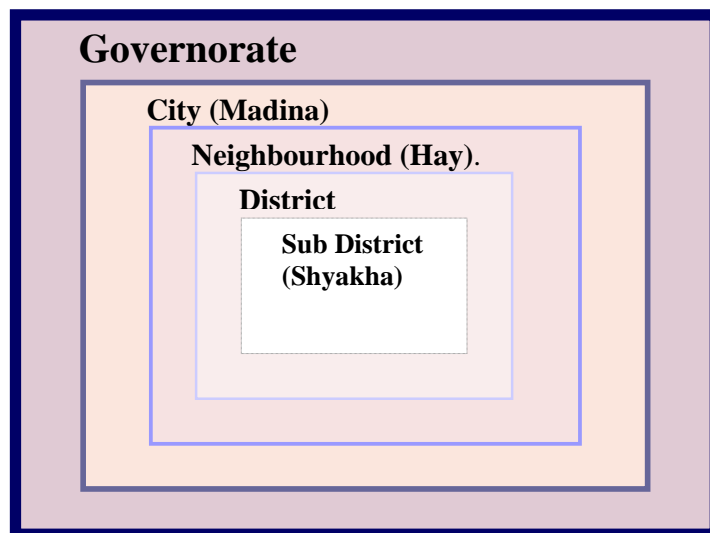
- District boundaries should be continuous.
- The districts should not have gaps.
- The districts should not overlap.

The main objective from establishing sub districts is for use in elections, and in the armed forces recruitment. Sub districts boundaries are considered among the older boundaries and are modified rarely.

When modifying the boundaries of a sub district, a committee is formed drawn from the local council (*hay*) to discuss the importance of any change. Any suggested modifications in the sub districts boundaries are sent to the Ministry of Interior for review. A sub district should always fall in one single district, sub districts should never overlap and the sub districts' name should be unique.

The following diagram illustrates administrative boundaries aggregation in urban areas:

⁷ Decree number 2925, published by Ministry of Administrative Development, 2003.



Rural areas

Rural areas within any governorate (*muhafazat or muhafaza*) contain centers (*taksimat idariya or markaz*), and each center contains one or more city of which one is the capital of the center. In addition, each center contains villages.

Centers (*taksimat idariya or markaz*) boundaries are modified based on a decision by the governor (*muhafiz*) or from the local council, after which a number of steps or procedures can be summarized as follows:

- A committee is formed from the local council to discuss the decision.
- The decision is transferred to the ESA governorate office in order to study it and decide whether it is valid decision or not. This is done by studying the land ownership maps and administrative boundaries map.
- The committee accepts the results.
- Finally to office of the ESA Office of Financial and Administrative Determination in order to coordinate and follow up and transfer it to the concerned governorates or centers to determine necessary changes in the governorates boundaries and locate them on relevant maps.

Rules that govern the creation or change of centers boundaries include:

- The villages should fall completely within the center borders.
- The center boundary must be continuous.
- There should be no gaps between centers, and no two centers should overlap.

As with centers, village boundaries are modified either by a decision by the governor or recommendations from the local council, after which a number of steps or procedures are followed:

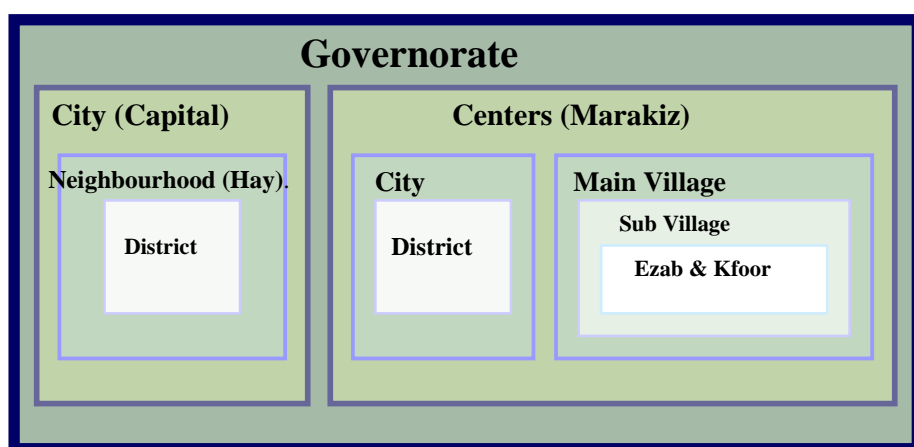
- A committee is formed from the local governorate council.
- The decision is transferred to the ESA governorate office in order to study it and decide whether it is valid decision or not. This is done by studying the land ownership maps and administrative boundaries map.
- The committee accepts the results.

- Finally to office of the ESA Office of Financial and Administrative Determination in order to coordinate and follow up and transfer it to the concerned governorates and centers to determine necessary changes in the village boundaries and locate them on relevant maps.

Rules that govern the creation or change of village boundaries include:

- The villages should not have gaps.
- The villages should not overlap.
- The village name should be unique.
- New or modified border should not interfere with any precession limit (the line which separates ownership between properties).
- Each village must fall inside an existing center (*markaz*).

The following diagram illustrates administrative boundaries aggregation in rural areas:



7.2.3 Neighborhoods

Neighborhoods consist of one or more district. As with other administrative entities, a governor decides on the creation or modification of a neighborhood boundary, after which a number of steps or procedures are followed:

- A committee is formed from the local council in the governorate, Ministry of Interior, and governorate staff.
- The committee accepts the results.
- The decision is transferred to the ESA governorate office in order to study it and decide whether it is a valid decision or not. This is done by studying the land ownership maps and administrative boundaries map.
- Then to office of the ESA Office of Financial and Administrative Determination in order to coordinate and follow up and transfer it to the governorate to determine necessary changes in the neighborhood boundaries and locate them onto relevant maps.
- Maps are sent to the Ministry of Finance to confirm the neighborhood's balance of budget.

Rules that govern the creation or change of neighborhood boundaries include:

- A neighborhood should include at least one police office.

- A neighborhood boundary should not be a physical border, but preferably coincide with the public utilities service area boundary.
- A neighborhood should not overlap with another neighborhood.
- If a neighborhood consists of more than one district, these districts should be adjacent.

7.2.4 Cities

A city is a community with a large number of inhabitants or that has a large built up area or the multi functions of them. There are three types of cities:⁸

- Millions city: A city where the number of inhabitants is more than one million and its effect may extend to surpass the national limits such as Cairo.
- Metropolis: Is the National Capital.
- Settlement: A city depending on another main city due to its services or activities.

Cities may be created in one of two ways, either by changing a large village into a city, or by developing a new planned city, as discussed below.

Village to city

Depending on official governmental decree or announcement specifying the built areas which considered cities and those considered rural Changing of village to be done in the following case:

- Appearance of new activities (industrial, services, commercial ...), and a decrease
In the main activity of the village which is mostly agricultural.
- The neighboring built up areas depends on the village due to its services or work opportunities.
- Changes in the village such as the building style, inhabitants, composition and professional activity.

The procedures of changing a village into a city:

- A decree to change a village into a city is issued by the governorate.
- Forming a committee by a decree from the governor including members of local council, Ministry of Local Development, representatives of Ministry of Agriculture, Ministry of Interior and Egyptian Survey Authority.
- The committee and ESA governorate office will study the administrative boundaries and the land ownership maps.
- The decree is sent to the ESA Office of Financial and Administrative Determination where in turn it is sent to the Governorate and Local Unit to show it in maps.
- The decree is sent to the Ministry of Local Development.
- The concerned local units will prepare the project of general and detailed planning for the cities.

City (*madina*) boundaries are created or modified based on a decision by the governor (*muhafiz*), according to the following procedures:

- A decree to change city boundaries is issued by the governorate.

⁸ The urban planning law and its executive decree issued by the Ministry of Housing no. 600 / 1982

- Forming a committee by a decree from the governor including members of local council and Ministry of Local Development and representatives of Ministry of interior and Egyptian Survey Authority.
- The decision is sent to the ESA governorate office in order to study the administrative boundaries and the land ownership maps.
- The decree is sent to the ESA Office of Financial and Administrative Determination where in turn it is sent to the Governorate and Local Unit to show it in survey maps.

New (planned) cities

The main aim of establishing new planned cities in Egypt is to redistribute both the inhabitants and the buildings. This is a new policy started after 1973 in order to redistribute the inhabitants over the Egyptian territories. The responsibility of planning new cities falls with the Authority of New Urban Communities which reports to the Ministry of Housing. The city planning procedures are:

- Authority of New Urban Communities and General Organization for Physical Planning prepare all necessary studies (environment, social and economical)
- A long term general plan is prepared, followed by a detailed plan (including land use, roads, public services, public utilities).
- The project is presented to the local council of the governorate.
- After the agreement of the Local Council, the project is sent to the Minister of Housing for approval.
- The Authority of New Urban Communities will supervise the new city establishment.

7.2.5 Blocks and areas⁹

Definitions

- Land Partition (*al taksim*): Means dividing piece of land inside the city belt (*Nitak Elmadina*) into more than two pieces. Also, the construction of more than one building with its annex on a piece of land (whether these buildings are attached or detached) is considered a Land Partition.
- Residential Area (*al kotla al sakania*): The built area in a town or a village which is occupied by different activities including the unused and cultivated land or water surface, and the approved land partitions.
- The Block (*al block*): Piece of land specified for urban purposes, surrounded from all sides by streets, public roads, green areas, water drainage or water course.
- Piece of land (*ketaat al ard*): Part of the block or any piece of the land set as a unit to be disposed in its property or to be used for urban development.

The new partition project must take into consideration achieving the general planning objectives, protecting the natural environment, and supplying the partition with the public utilities.

The procedure followed to make the land partition:

- Submitting a demand for the partition project by its owner to the planning and organizing department in the local unit (*al wihda al mahaliya*) to be checked and approved; the following should be attached with the application:
 - The issued approval that confirms the site suitability.
 - A map with minimum scale 1:5000 showing the land site.
 - The certificate proving that the land is not public or state property or assigned to public service constructions.

⁹ The urban planning law and its executive decree issued by the Ministry of Housing no. 600 / 1982.

- The partitioning project sheets should include all related information (owner and designer name, current land use, and the length of partition boundaries).
- The approval is given by the planning and organizing department in the local unit after studying this partition.
- The final project shall be made on scale 1: 1000 represented on the maps accurately.

When determining the length and width of a block the design should consider the following:

- The lengths of the residential blocks should not exceed 250 meters along block axis. If the block length > 250meters, the block should include a passage with width at least 4 meters.
- The blocks specified for the commercial or industrial uses must be with a specific width suitable for providing areas outside the street borders and the consignment and discharging of goods.

7.3 Electrical subscriptions

The Egyptian Electricity Holding Company (EEHC) is a utility responsible for delivery of electrical energy to all customers in Egypt. In July 2000, Law No. 164 (a recent modification of Law No.12 from 1976) was issued to change the Egyptian Electricity Authority (EEA) into an Egyptian joint stock (holding) company which is EEHC. In November 2004, the Cairo Company for electric power distribution was split into two separate companies: Cairo North Company for electric power distribution and Cairo South Company for electric power distribution.

EEHC divides electric subscriptions into three main groups:

- Important customers including factories, large companies, etc.
- Public such as utility lighting, etc.
- Houses, shops.

The two companies provided QSIT with a hard copy list of the total number of electric subscriptions for all entities that occupy a space (house, shops, and institutions). The smallest unit of area that EEHC deals with is a district and these are then grouped into one entity known as a commercial department. The total number of electric subscriptions obtained by QSIT contains the billable entities such as house, shops and small institutions (Education centers) but does not include important customers or public connections. EEHC cannot provide or separate the number of buildings that might have an electric subscription. The data is delivered in an excel sheet in addition to being integrated into a GIS data set showing the delineations of these units of area.

7.4 Post 1996 CAPMAS surveys

QSIT conducted an interview with CAPMAS¹⁰ for this part of the work.

Every ten years, three comprehensive censuses are conducted: Population, Construction, and Housing. They are published at three levels of aggregation: Governorate, District, and Sub district. All of the information collected in the 1996 census is published.

In addition, once a year CAPMAS publishes projected statistics at the governorate level based on the published censuses.

¹⁰ Mr. Mahoud Abd el Ghani, Head of the published census, CAPMAS

Since 1996, CAPMAS has conducted sample surveys across all the governorates at the district and sub districts level. These surveys include demographic data (age groups, economic activities, marital status, and educational level).

For example, in 2003 literacy data was collected and published at the Police district (kism) and Center (markaz) level, broken down by male and female. One sample field has nine possible values.¹¹

The table below provides a detailed listing of collected data

Title	Year	Geography	Aggregation - Collection	Aggregation - Publishing	Availability	Fields
Population estimates by Gender (Age groups)	2003	Egypt	Governorates, Districts and sub districts	Governorates , Districts and sub districts	Hard copy	<ul style="list-style-type: none"> ▪ 75_and_above, 70_to_under_75 ▪ 65_to_under_70, 60_to_under_65 ▪ 55_to_under_60, 50_to_under_55 ▪ 45_to_under_50, 40_to_under_45 ▪ 35_to_under_40, 30_to_under_35 ▪ 25_to_under_30, 20_to_under_25 ▪ 15_to_under_20, 10_to_under_15 ▪ 5_to_under_10, 0_to_under_5 ---Male and Female
Population estimates by gender (economic activities)	2003	Egypt	Governorates – Districts	Governorates – Districts	Hard copy	<ul style="list-style-type: none"> ▪ Age15Economic_Total Population ▪ Economically Active ▪ Activities not Adequately Described ▪ Community Social Human Services ▪ Health and Social Work ▪ Education ▪ Public Administration and Defense ▪ Financing Insurance Real Estates Services ▪ Transport Storage and Communications ▪ Hotels and Restaurants ▪ Commerce and Retail ▪ Constructions ▪ Electricity Gas and Water ▪ Manufacturing ▪ Mining and Quarrying ▪ Agriculture Hunting

¹¹ Illiterate, Read and Write, Primary Education, Lower Intermediate Education, Intermediate Education, Upper Intermediate Education, University Degree, Education Status not Stated, Under Education age.

Title	Year	Geography	Aggregation - Collection	Aggregation - Publishing	Availability	Fields
						and Fishing ---Male and Female
Population estimates by gender (educational level)	2003	Egypt	Governorates – Districts	Governorates – Districts	Hard copy	<ul style="list-style-type: none"> ▪ Illiterate ▪ Read and Write ▪ Primary Education ▪ Lower Intermediate Education ▪ Intermediate Education ▪ Upper Intermediate Education ▪ University Degree ▪ Education Status not Stated ▪ Under Education age ---Male and female
Population estimates by gender (Marital status)	2003	Egypt	Governorates – Districts	Governorates – Districts	Hard copy	<ul style="list-style-type: none"> ▪ Marital Total ▪ Below Marital Age ▪ In Marital Age ▪ Marital Status not Stated ▪ Widower ▪ Divorced ▪ Married ▪ Contractually Married ▪ Never Married ---Male and Female
Population estimates by sex and governorates	Annually	Egypt	Governorates	Governorates	Hard copy	<ul style="list-style-type: none"> ▪ Male ▪ Female ▪ Total
No. of dwellings unites in urban areas	2003	Egypt	Urban areas in Governorates	Urban areas.	Hard copy	<ul style="list-style-type: none"> ▪ Public sector (economic type-middle type-over middle type-luxury type-low cost type) ▪ Private sector
Monthly price indices	2003-2005	Egypt	Egypt	Egypt	Hard copy	<ul style="list-style-type: none"> ▪ Miscellany ▪ Education ▪ Recreation ▪ Communication ▪ Health ▪ Food ▪ Tobacco
Quarterly labor force by gender	-2003 2005		Egypt	Egypt	Hard copy	<ul style="list-style-type: none"> ▪ Labor force ▪ Working ▪ Not working ▪ Unemployment Rate

Source: Census sale center at CAPMAS.

Administrative boundaries modification each census period:

The administrative boundaries are being changed frequently, as the result these changes should be modified and drawn on the maps. This mission should be done by ESA and the concerned governorate where the change accrued; these modifications always be done based on an official decree.

The procedures followed to redraw the modified administrative boundaries:

- 1- Before publishing the census, some preparation procedures should be taken by CAPMAS; through these procedures CAPMAS collects all recent administrative decrees which were declared in between the two sequential censuses (within 10 years) from Ministry of local development .
- 2- CAPMAS addresses the governorate officially inquiring about where the boundaries were modified, to provide it with the last updated administrative boundary maps, which were modified before Census is published by two years.
As for 2006 census, all administrative boundary modifications which happened from 1997 to 2004 were collected by CAPMAS, and will be shown in the 2006 census.
- 3- CAPMAS collects all required census data within the new modified administrative boundaries.

7.5 National Building Number Identifier

Purpose

This project aims to count and register all different types of Real Estate in one database, and create unique property unit identifier which should be simple, permanent, easy to understand, and easy to use .

This identifier should be used by various agencies to deal with all types of Real Estate.

Project objectives:

- Assist in developing the infrastructure.
- Support housing & construction plans.
- Control random housing.
- Assist transparency for real estate marketing.
- Enhancing relationship between citizens & local authorities
- Decision support about real estate breaches.
- Control real estate tax collection.
- Support visibility studies for economical activities.
- Arranging economical activities practice

Participating Agencies

- 1 The Real Estate Taxation Department (RETD). " Ministry of Finance"
- 2 The District offices, department of Planning and Organization." Ministry of State for Administrative Development".
- 3 The Real Estate Publicity Department (REPD)." Ministry of Justice".
- 4 Information and Decision Support Center (IDSC).

History of the project

The initial delineation of this project was done by the Information and Decision Support Center (IDSC) in 1992, the selected locations to be started with, as a case study, were (Alexandria governorate (East District), and Heliopolis District), the plan was to complete all other governorates over the smallest administrative boundaries (Sub districts) within 10 years.

The project stopped in 1995, then it began again by 1996 and the aim was to count all buildings and units in Cairo governorates, Alexandria governorate and El Monsora city. The project stopped again in 1998, then it resumed in 2000 with Bani Suwif governorate; then it was applied on all Egypt governorates.

Through this project all Real Estate unites were counted and registered over all Egypt in one large data base using an Oracle Data base.

Data source

- 1-Cadastral data archived in Registry offices including:
 - The Building address
 - Owner of the building
 - Building or unit description
 - Building or unite components
- 2- Cadastral data archived in the Department of Organization in Districts office, containing the organization number.

The project outputs:

1- The output of this project is a complete Real Estate Data base system archiving the data which was collected from the mentioned agencies, this system consists of two major parts:

Real Estate Database; contains:

- Name of Location (District -Sub district – Street).
- Tax account no.
- Building's description.
- Ownership's type.

Building's Units database; contains:

- Unit's number.
- Floor's number.
- Unit's type.
- Usage type.
- Number of rooms.
- Rent's value.
- Habitant's name.

The System outputs include:

- Number of registered buildings in data base ;(3.0 million buildings) "the number of registered buildings in the RETD"
- Number of owners 3.8 million owner.
- Number of streets name .25 Million.
- Number of inhabitant 9.5 million.

As the result the project registered all properties, based on the data which were provided by the RETD, in one oracle Data Base.

2- One of the project results is a suggestion of the National Building Number Identifier

National building number identifier (Code) can be described as:

An identifier that should be assigned to one real property object, it shouldn't be affected by any change on administrative boundaries, also this code should be unique identifier, and this code should be assigned to the property after being completed and shouldn't be changed or erased till removal of the real state property itself.

A Proposed structure for the building identifier:

The proposed code based on the coordinates of the property also using real properties area and the date of the structure completion.

The system includes two parts:

1- Identifier for Real Estate:

Consists of four main parts:

- 1 First part: Easting (X) 8 digits (Degree, minutes, seconds).
- 2 Second part: Northing (Y) 8 digits (Degree, minutes, seconds).
- 3 The Real property area.

- 4 Completion date for the structure.

2-Identifer for unites:

Consists of six main parts:

- 1 First part: Easting (X) 8 digits (Degree, minutes, seconds).
- 2 Second part: Northing (Y) 8 digits (Degree, minutes, seconds).
- 3 The Real property area.
 - 4 Completion date for the structure.
 - 5 Floor No.
 - 6 Unit No.

The table below provides a sample of archived data in the data base system

Governorate	Hay/Centers	Last Update	Real Estate NO	Unites NO.	Owners No.	Street No.
Giza	North	2004	98628	227844	105866	4574
	South	2003	46750	121367	24789	2077
	Dokki		7956	66290	5268	355
	Agouza	2003	16633	124117	13564	761
	Haram	2003	51059	139512	26933	3270
	Boulak Eldakror	2005	42123	192213	30927	2307
	Omranya	2005	52198	198931	35448	2885
	Albwaity					
	Abou el nomres	2004	10083	14975	10840	805
	El saf	2004	6001	8050	4000	483
	Affeh					
	Monahset el knater					
	Aiat	2004	8331	10772	4163	422
	Al badrashen	2004	8131	17762	6177	361
	Alhwamdia	2005	16785	38792	12787	750
	Oseem	2004	11725	21335	10505	643
	Warrak	2004	27202	101356	22187	1486
Total			403605	1283316	313454	21179
Cairo	alsharabia	2002	11418	82384	13145	543
	Alsahel	1999	21174	64386	49440	1121
	Alziton	1999	19507	133915	73100	1425
	Rod el farg	2001	13126	848 96	56472	607
	shobra	2004	7808	46478	34116	411
	Hadaeak el koba	1999	22452	123658	73281	1673
	Alzawaiyt el hamra	2003	40289	198325	39051	1005
	Helioblise	2000	9588	94865	35106	536
	alnozah	2002	15936	107828	29536	1950
	Sharek madinat nasr	1998	31253	164586	88917	578
	Gharb madinat nasr					
	Al matrya	2004	38768	191801	90352	2015
	alsalam	2003	12259	53029	15276	756
	Ein shames	1991	31244	165908	89422	736
	Almarg	1999	26961	64386	50411	1279
	Waset	1999	19992	42567	12032	237
	Elwayili	1999	11898	88323	54427	853
	Gharb	1999	18802	102475	57923	1170
	Abdeen	1999	9503	81059	47636	671
	Monasheat nasr	1999	18508	67660	31065	1215
	Alkhilfa we elmokatem	2003	10204	269	3003	486
	Masr el kadima	2001	20391	91245	51587	1170
	Helwan	2003	35390	199741	77117	3258
	Elmaadi	2005	6859	69127	16063	822
	Eltbeen	2004	6566	25060	7478	387
	Elbassaten wa dar elsalm	2003	54397	241282	499	2382
	Saida zienb	2002	14417	3700	8036	883
Total			528710	2588953	1104491	28169

Annex A: Data Dictionary Population Census

NAME	ALIASRB	ALIASENG
GOV_NAM	اسم المحافظة	
TOTAL POPU	اجمالي السكان	Total Population
MALE_AGE_1	ذكور - سن 10 فأكثر	Male_Age_10_and_Above
MALE_EDUCA	ذكور - الحالة التعليمية غير مبين	Male_Education_Status_not_Stated
MALE_POST	ذكور - دبلوم وماجستير ودكتوراه	Male_Post_Graduate_Degrees
MALE_UNIVE	ذكور - درجة جامعية اولى	Male_University_Degree
MALE_UPPER	ذكور - مؤهل فوق المتوسط	Male_Upper_Intermediate_Education
MALE_INTER	ذكور - مؤهل متوسط	Male_Intermediate_Education
MALE_LOWER	ذكور - مؤهل اقل من المتوسط	Male_Lower_Intermediate_Education
MALE_PRIMA	ذكور - ابتدائي	Male_Primary_Education
MALE_READ	ذكور - يقرأ ويكتب	Male_Read_and_Write
MALE_ILLIT	ذكور - امي	Male_Illiterate
FEMALE_AGE	اناث - سن 10 فأكثر	Females -Aged
FEMALE_EDU	اناث - الحالة التعليمية غير مبين	Female_Education_Status_not_Stated
FEMALE_POS	اناث - دبلوم وماجستير ودكتوراه	Female_Post_Graduate_Degrees
FEMALE_UNI	اناث - درجة جامعية اولى	Female_University_Degree
FEMALE_UPP	اناث - مؤهل فوق المتوسط	Female_Upper_Intermediate_Education
FEMALE_INT	اناث - مؤهل متوسط	Female_Intermediate_Education
FEMALE_LOW	اناث - مؤهل اقل من المتوسط	Female_Lower_Intermediate_Education
FEMALE_PRI	اناث - ابتدائي	Female_Primary_Education
FEMALE_REA	اناث - يقرأ ويكتب	Female_Read_and_Write
FEMALE_ILL	اناث - امي	Female_Illiterate
AGE15ECONO	جملة السكان حسب النشاط الاقتصادي سن 15	Age15Economic_Total_Population
MALE_TOTAL	جملة الذكور حسب النشاط الاقتصادي	Male_Total_Economically_Active_and_not_Active
MALE_NOT_E	ذكور - غير ملتحق	Male_not_Economically_Active
MALE_ECONO	جملة الذكور الملتحقة	Male_Economically_Active
MALE_ACTIV	ذكور - أنشطة غير كاملة التوصيف	Male_Activities_not_Adequately_Described
MALE_COMMU	ذكور - خدمات المجتمع والهيئات	Male_Community_Social_Human_and_Domestic_Services
MALE_HEALT	ذكور - الصحة والعمل الاجتماعي	Male_Health_and_Social_Work
MALE_PUBLI	ذكور - الادارة العامة والدفاع	Male_Public_Administration_and_Defence
MALE_FINAN	ذكور - الوساطة المالية والعقارات والتأجير	Male_Financing_Insurance_Real_Estate_and_Business_Services
MALE_TRANS	ذكور - النقل والتخزين والاتصالات	Male_Transport_Storage_and_Communications
MALE_HOTEL	ذكور - الفنادق والمطاعم	Male_Hotels_and_Restaurants
MALE_COMME	ذكور - تجارة الجملة والتجزئة	Male_Commerce_and_Retail
MALE_CONST	ذكور - الانشاءات	Male_Constructions
MALE_ELECT	ذكور - الكهرباء والغاز والنجارة	Male_Electricity_Gas_and_Water
MALE_MANUF	ذكور - الصناعات التحويلية	Male_Manufacturing
MALE_MININ	ذكور - التعدين واستغلال المعادن	Male_Mining_and_Quarrying
MALE_AGRIC	ذكور - الزراعة والصيد	Male_Agriculture_Hunting_and_Fishing
FEMALE_TOT	جملة الاناث حسب النشاط الاقتصادي	Female_Total_Economically_Active_and_not_Active
FEMALE_NOT	اناث - غير ملتحق	Female_not_Economically_Active
FEMALE_ECO	جملة الاناث الملتحقة	Female_Economically_Active
FEMALE_ACT	اناث - أنشطة غير كاملة التوصيف	Female_Activities_not_Adequately_Described
FEMALE_COM	اناث - خدمات المجتمع والهيئات	Female_Community_Social_Human_and_Domestic_Services
FEMALE_HEA	اناث - الصحة والعمل الاجتماعي	Female_Health_and_Social_Work
FEMALE_PUB	اناث - الادارة العامة والدفاع	Female_Public_Administration_and_Defence
FEMALE_FIN	اناث - الوساطة المالية والعقارات والتأجير	Female_Financing_Insurance_Real_Estate_and_Business_Services
FEMALE_TRA	اناث - النقل والتخزين والاتصالات	Female_Transport_Storage_and_Communications

FEMALE_HOT	اناث - الفنادق والمطاعم	Female_Hotels_and_Restaurants
FEMALE_C_1	اناث - تجارة الجملة والتجزئة	Female_Commerce_and_Retail
FEMALE_CON	اناث - الانشاءات	Female_Constructions
FEMALE_ELE	اناث - الكهرباء والغاز والنجارة	Female_Electricity_Gas_and_Water
FEMALE_MAN	اناث - الصناعات التحويلية	Female_Manufacturing
FEMALE_MIN	اناث - التعدين واستغلال المعادن	Female_Mining_and_Quarrying
FEMALE_AGR	اناث - الزراعة والصيد	Female_Agriculture_Hunting_and_Fishing
AGE15EMPLO	جملة الذكور حسب الحالة العملية	Age15Employment_Male_Age_15_and_Above
MALE_EMPLO	ذكور - غير مبين	Male_Employment_Status_not_Statement
MALE_OUT_O	ذكور - خارج قوة العمل	Male_out_of_Labour_Force
MALE_UNABL	ذكور - عاجز عن العمل	Male_Unable_to_Work
MALE_SENIO	ذكور - مسن لايعمل	Male_Senior_not_Working
MALE_RETIR	ذكور - بالمعاش	Male_Retired
MALE_NOT_W	ذكور - زاهد في العمل	Male_not_Willing_to_Work
MALE_STUDE	ذكور - طالب متفرغ	Male_Student
MALE_IN_LA	ذكور - داخل قوة العمل	Male_in_Labour_Force
MALE_UNEMP	ذكور - متعطّل حديث	Male_Unemployed_Seeking_Work_First_Time
MALE_UNE_1	ذكور - مشغّل تعطل	Male_Unemployed_Seeking_Work_and_Worked_Before
MALE_UNPAI	ذكور - يعمل لدى ذوي بهدون اجر	Male_Unpaid_Family_Worker
MALE_SELF	ذكور - يعمل لحسابه	Male_Self_Employed
MALE_EMP_2	ذكور - صاحب عمل ويستخدم	Male_Employer
FEMALE_EMP	اناث - غير مبين	Female_Employment_Status_not_Statement
FEMALE_OUT	اناث - خارج قوة العمل	Female_Out_of_Labour_Force
FEMALE_UNA	اناث - عاجز عن العمل	Female_Unable_to_Work
FEMALE_SEN	اناث - مسن لايعمل	Female_Senior_not_Working
FEMALE_RET	اناث - بالمعاش	Female_Retired
FEMALE_HOU	اناث - متفرغة للمنزل	Female_Housewife
FEMALE_STU	اناث - طالب متفرغ	Female_Student
FEMALE_IN	اناث - داخل قوة العمل	Female_in_Labour_force
FEMALE_UNE	اناث - متعطّل حديث	Female_Unemployed_First_Time
FEMALE_E_2	اناث - يعمل باجر	Female_Employee
FEMALE_SEL	اناث - يعمل لحسابه	Female_Self_Employed
AGEGROUPS	جملة الذكور حسب فئات السن	AgeGroups_Male_Total
MALE_AGE_N	ذكور - غير مبين	Male_Age_not_Statement
MALE_75_AN	ذكور -75	Male_75_and_above
MALE_70_TO	ذكور -70	Male_70_to_under_75
MALE_65_TO	ذكور -65	Male_65_to_under_70
MALE_60_TO	ذكور -60	Male_60_to_under_65
MALE_55_TO	ذكور -55	Male_55_to_under_60
MALE_50_TO	ذكور -50	Male_50_to_under_55
MALE_45_TO	ذكور -45	Male_45_to_under_50
MALE_40_TO	ذكور -40	Male_40_to_under_45
MALE_35_TO	ذكور -35	Male_35_to_under_40
MALE_30_TO	ذكور -30	Male_30_to_under_35
MALE_25_TO	ذكور -25	Male_25_to_under_30
MALE_20_TO	ذكور -20	Male_20_to_under_25
MALE_15_TO	ذكور -15	Male_15_to_under_20
MALE_10_TO	ذكور -10	Male_10_to_under_15
MALE_5_TO	ذكور -5	Male_5_to_under_10
MALE_1_TO	ذكور -1	Male_1_to_under_5
MALE_0_TO	ذكور -0	Male_0_to_under_1
FEMALE_75	اناث -75	Female_75_and_above

FEMALE_70	اناث -70	Female_70_to_under_75
FEMALE_65	اناث -65	Female_65_to_under_70
FEMALE_60	اناث -60	Female_60_to_under_65
FEMALE_55	اناث -55	Female_55_to_under_60
FEMALE_50	اناث -50	Female_50_to_under_55
FEMALE_45	اناث -45	Female_45_to_under_50
FEMALE_40	اناث -40	Female_40_to_under_45
FEMALE_35	اناث -35	Female_35_to_under_40
FEMALE_30	اناث -30	Female_30_to_under_35
FEMALE_25	اناث -25	Female_25_to_under_30
FEMALE_20	اناث -20	Female_20_to_under_25
FEMALE_15	اناث -15	Female_15_to_under_20
FEMALE_10	اناث -10	Female_10_to_under_15
FEMALE_5_T	اناث -5	Female_5_to_under_10
FEMALE_1_T	اناث -1	Female_1_to_under_5
FEMALE_0_T	اناث -0	Female_0_to_under_1
MARITAL_MA	جملة الذكور حسب الحالة الاجتماعية	Marital_Male_Total
MALE_BELOW	ذكور اقل من السن	Male_below_Marital_Age
MALE_MARIT	غير مبين	Male_Marital_Status_not_Stated
MALE_WIDOW	ذكور - ارملة	Male_Widower
MALE_DIVOR	ذكور - مطلق	Male_Divorced
MALE_MARRI	ذكور - متزوج	Male_Married
MALE_CONTR	ذكور - عقد قران	Male_Contractually_Married
MALE_NEVER	ذكور - لم يتزوج ابدا	Male_never_Married
MARITAL_FE	جملة الاناث حسب الحالة الاجتماعية	Marital_Female_Total
FEMALE_BEL	اناث اقل من السن	Female_below_Marital_Age
FEMALE_MAR	غير مبين	Female_Marital_Status_not_Stated
FEMALE_WID	اناث - ارملة	Female_Widower
FEMALE_DIV	اناث - مطلق	Female_Divorced
FEMALE_NEV	اناث - لم يتزوج ابدا	Female_never_Married
MALE_12_TO	ذكور 12-	Male_12_to_under_15
MALE_6_TO	ذكور 6-	Male_6_to_under_10
FEMALE_12	اناث 12-	Female_12_to_under_15
FEMALE_6_T	اناث 6-	Female_6_to_under_10
AGE15OCCUP	جملة الذكور حسب المهن سن 15	Age15Occupation_Male_Age_15_and_Above
MALE_WORKE	ذكور - غير مصنفيين	Male_Workers_not_Classified_by_Occupation
MALE_WOR_1	ذكور - عمال المهن العادية	Male_Workers_of_Ordinary_Jobs
MALE_LABOU	ذكور - حرفيون	Male_Labourers_and_Related
MALE_FARME	ذكور - مزارعون وعمال صيد	Male_Farmers_Fishermen_Breeding_Animals_and_Hunting
MALE_SERVI	ذكور - عاملون بالخدمات ومحلات البيع	Male_Services_and_Sales_Workers
MALE_CLERI	ذكور - اعمال كتابية	Male_Clerical_Workers_and_Related
MALE_TECHN	ذكور - فنيون ومساعدو اخصائيين	Male_Technicians_and_Assistants_to_Professionals
MALE_PROFE	ذكور - اخصائيون	Male_Professionals_in_Technical_and_Scientific_Occupations
MALE_LEGIS	ذكور - رجال تشريع وكبار المسؤولين والمديرين	Male_Legislators_and_Managers
AGE15OCC_1	جملة الاناث حسب المهن سن 15	Age15Occupation_Female_Age_15_and_Above
FEMALE_W_2	اناث غير ملتحق	Female_without_Occupation
FEMALE_W_3	جملة الاناث الملحقه	Female_with_Occupation
FEMALE_WOR	اناث - غير مصنفيين	Female_Workers_not_Classified_by_Occupation
FEMALE_W_4	اناث - عمال المهن العادية	Female_Workers_of_Ordinary_Jobs
FEMALE_W_5	اناث - عمال مصانع وماكينات و انتاج	Female_Workers_in_Factories
FEMALE_LAB	اناث - حرفيون	Female_Labourers_and_Related
FEMALE_FAR	اناث - مزارعون وعمال صيد	Female_Farmers_Fishermen_Breeding_Animals_and_Hunting

FEMALE_SER	اناث - عاملون بالخدمات ومحلات البيع	Female_Service_and_Sales_Workers
FEMALE_CLE	اناث - اعمال كتابية	Female_Clerical_Workers_and_Related
FEMALE_TEC	اناث - فنيون ومساعدو اخصائيين	Female_Technicians_and_Assistants_to_Professionals
FEMALE_PRO	اناث - اخصائيون	Female_Professionals_in_Technical_and_Scientific_Occupations
FEMALE_LEG	اناث - رجال تشريع وكبار المسؤولين والمديرين	Female_Legislators_and_Managers

Annex B: Data Dictionary Building Census (1986)

Table name	Categories	Description	Fields name
Standards residential housing by type	Standard Residential Housing by Type	Buildings No.	Building1
		Home No.	Home1
		Housing no.	Housing1
		Villas	Villa1
		Total residential housing	Total_TNo1
Standard Residential Housing (Completed)	by Year of Construction	Before 1940	before_194
		1940-1949	z940_49_2
		1950-1959	z950_59_2
		1960-1969	z960_69_2
		1970-1979	z970_79_2
		1980-1981	z980_81_2
		1981-1982	Z981_82_2
		1982-1983	Z982_83_2
		1983-1984	Z983_84_2
		1984-1985	Z984_85_2
		1984-1985	Z985_86_2
		undefined	Ntcl2
		Total No. of residential housing completed by year of construction	Total_Tno2
Utilities in Residential housing	Water	Public Water network	PublicW
		Other	OtherW
		none	NoneW
		undefined	NtclW
	Electricity	Public electricity network	PublicE
		Other	OtherE
		None	NoneE
		undefined	NtclE
	Sewage	Public sewage network	PublicS
		Other	OtherS
		undefined	NtclS
		Total No of buildings by type and current usages	Total_TNo3
Type of Residential unite and current usage	Residential unites	apartment	apartment11
		only room	room_11
		others	other11
		Total	Total_11
	Attachments Residential unites (Sakan Jawaazia)	Shops No.	Shop12
		Garage	Grage12
		Others	Other12
		Total	Total12

Type of Residential unite for work and current usage	Residential unites	apartment	apartment13
		only room	room_13
		others	other13
	Total		Total13
	Attachments Residential unites (Sakan Jawaazia)	Shops No.	Shop14
		Garage	Grage14
		Others	Other14
	Total		Total14
Type of Building Construction	Construction method & material	Re-bar Cement Ceiling, Columns	Res_BLDG5R(Residential)
			Com_BLDG5R(Commercial)
		Pre-fab Construction	Res_BLDG5p(Residential)
			Com_BLDG5p(Commercial)
		Red Brick Rebar Ceiling	Res_BLDG5F(Residential)
			Com_BLDG5F(Commercial)
		Red Brick NC Ceiling	Res_BLDG50(Residential)
			Com_BLDG50(Commercial)
		Mud or clay brick	Res_BLDG5U(Residential)
			Com_BLDG5U(Commercial)
		Others	Res_BLDG5(Residential)
			Com_BLDG5(Commercial)
		undefined	Res_BLDG5n(Residential)
			Com_BLDG5n(Commercial)
		Total buildings	Res_BLDG5t(Residential)
		Total Work	COM_BLDG5T(Work)
Residential and work buildings by sector	residential buildings by sector	Governmental	Govt6
		Public sector	Pub_Sec6
		Private sector	Pri_Sec6
		Others	Other6
		undefined	Ntcl6
	Total		Total6
	buildings for work	Governmental	Govt7
		Public sector	Pub_Sec7
		Private sector	Pri_Sec7

		Others	Other7
		undefined	Ntcl7
		Total	Total7
building by type and current usage	Standard Residential Housing building for work w	Residential	Residence4
		Work	Work4
		Both usage (residential and work)	Both4
		Empty Buildings	Empty4
building by major usage		SCHOOL	SCHOOL
		FACTORY	FACTORY
		HOSPITAL	HOSPITAL
		Governmental building	BUILDING
		MOSQUE	MOSQUE
		CHURCH	CHURCH
		PENSION	PENSION
		THEATER	THEATER
		STORES	STORES
		SHOPS	SHOPS
		GARAGE	GARAGE
		OTHER	OTHER
Total buildings			TOTAL1
Attachment usages		Cabin	Cabin
		KIOSK	KIOSK
		CEMETARY	CEMETARY
		OTHER14	OTHER14
		TOTAL14	TOTAL14

Annex C: Data Dictionary Building Census (1996)

Table name	Categories	Description	Fields name
Standards residential housing , work ,housing attachments and others	Standard Residential Housing by Type	Buildings No.	Building1
		Home No.	Home1
		Housing no.	Housing1
		Villas	Villa1
		Total	Total 1
	Standard buildings for work	Buildings No.	Building2
		Shops No.	Shop2
		Total	Total 2
	Housing Attachments (Mbany Jawaaziya)	Kioshk	Kioshk3
		Tents and huts	Tent-Hut 3
		Total	Total 3
	Others	other buildings type	Others3
	undefined	undefined	NTCL3
TOTAL No of standard residential housing and work			Total_TNo1
building by type and current usage	Standard Residential Housing building for work	Residential	Residence4
		Work	Work4
		Both usage (residential and work)	Both4
		Empty Buildings	Empty4
		Other usage	other4
		undefined	NtCL4
	Total		Total4
	Attachments buildings (Mabany Jawaazia)	Residential	Residence5
		Work	Work5
		Both usage (residential and work)	Both5
		Other usage	other_5
		undefined	Ntcl5
		Total	Total5
	Total No of buildings by type and current usages		Total_TNo2
Residential and work buildings by sector	residential buildings by sector	Governmental	Govt6
		Public sector	Pub_Sec6
		Private sector	Pri_Sec6
		Others	Other6
		undefined	Ntcl6
	Total		Total6
	buildings for work	Governmental	Govt7
		Public sector	Pub_Sec7
		Private sector	Pri_Sec7
		Others	Other7

		undefined	Ntcl7
	Total		Total7
Attachments building by sector (Mabny Jawaazia)		Governmental	Govt8
		Public sector	Pub_Sec8
		Private sector	Pri_Sec8
		Others	Other8
		undefined	Ntcl8
Total No. Of attachment buildings by sector			Total_Tno4
Type of Residential unites and current usage	Residential unites	whole buildings	Building9
		only one floor or part of the building	Floor_9
		only an apartment	apartment9
		only Room	Room_9
	Total		Total9
	Attachments Residential unites (Sakan Jawaazia)	Shops No.	Shop10
		Garage	Grage10
		Other	Other10
	Total		Total10
Undefined			Ntcl10
Total No. of residential unites and its current usages			Total_Tno48
Type of Residential unite for work and current usage	Residential unites	whole buildings	Building11
		only one floor or part of the building	Floor_11
		only an apartment	apartment11
		only Room	Room_11
	Total		Total11
	Attachments Residential unites (Sakan Jawaazia)	Shops No.	Shop12
		Garage	Grage12
		Others	Other12
	Total		Total12
		undefined	Ntcl12
Total No. residential unites for work and its current usages			Total_Tno49
buildings by current status	Complete Occupied buildings	Residential	Residence1
		Work	Work1
	Complete Empty buildings	Residential	Residence2
		Work	Work2
		under construction	Construct1
		under Demolition	Demolition1
		Others	Other1
		undefined	Ntcl1
Total no. of buildings by current usages and status			Total_Tno5
Standard Residential Housing (Completed)	by Year of Construction	Before 1940	before_194
		1940-1949	z940_49_2

		1950-1959	z950_59_2
		1960-1969	z960_69_2
		1970-1979	z970_79_2
		1980-1989	z980_89_2
		1990+	z990_2
		undefined	Ntcl2
Total No. of residential housing completed by year of construction			Total_Tno6
Utilities in Residential housing	Water	Public Water network	PublicW
		Other	OtherW
		none	NoneW
		undefined	NtclW
	Electricity	Public electricity network	PublicE
		Other	OtherE
		None	NoneE
		undefined	NtclE
	Sewage	Public sewage network	PublicS
		Other	OtherS
		None	NoneS
		undefined	NtclS
	N_Gas	Natural Gas network	Connected
		Not connected to natural gas	Not_conct
		undefined	NtclN
Total no. residential housing connected to utilities			Total_Tno15
Type of Building Construction	Construction method & material	Re-bar Cement Ceiling, Columns	Res_BLDG5R(Residential)
			Com_BLDG5R(Commercial)
		Pre-fab Construction	Res_BLDG5p(Residential)
			Com_BLDG5p(Commercial)
		Red Brick Rebar Ceiling	Res_BLDG5F(Residential)
			Com_BLDG5F(Commercial)
		Red Brick NC Ceiling	Res_BLDG50(Residential)
			Com_BLDG50(Commercial)
		Mud or clay brick	Res_BLDG5U(Residential)
			Com_BLDG5U(Commercial)
		Others	Res_BLDG5(Residential)
			Com_BLDG5(Commercial)
		undefined	Res_BLDG5n(Residential)
			Com_BLDG5n(Commercial)
		Total buildings	Res_BLDG5t(Residential)
		Total Work	COM_BLDG5T(Work)