



Arab Republic of Egypt

Central Agency for Public Mobilization and Statistics

CAPMAS

UN-GGIM

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Country Report of Egypt
The Activities of the Integration of Statistical and Geospatial Information

The work of GIS Team-CAPMAS

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1. Introduction

Egypt is officially called the Arab Republic of Egypt and it is situated in the north-east of Africa; though the Sinai Peninsula forms a land bridge with south-west Asia. It is because of this that Egypt is also called a Middle-East country. Therefore Egypt is a transcontinental country, which helps it in being a major power in Africa, the Middle-East, the Mediterranean, and the Muslim world.

Egypt covers an area of approximately 1,001,450km² (386,662 miles²) and is bordered by the Mediterranean Sea in the north; the Red Sea in the east; Sudan in the south and Libya in the west. It is the 3rd most populous country in Africa and the most populous in the Middle-East with the majority of its estimated 90 million people living on, or near, the banks of the River Nile. Only 5.5% of the total land area is actually used by the population, the area that borders the River Nile as well as a few oases, the other 94.5% being uninhabitable desert.

2. Role and Responsibility of CAPMAS

CAPMAS is considered under presidential decree no. 2915 of 1964 the official source for data and statistical information collection, preparation, processing, dissemination and giving official nature of the statistical figures in A.R.E.

CAPMAS is also the responsible for Implementation of statistics and data collection of various kinds , specializations , levels and performs many of the general censuses and economic surveys.

One of the key aims of CAPMAS is to complete unified and comprehensive statistical work to keep up with all developments in various aspects of life and unifying standards, concepts and definitions of statistical terms, development of comprehensive information system as a tool for planning and development in all fields.

8. Statistical and Geospatial Activities

Geographic Information System Department is responsible for joining all statistical data with spatial data at all levels:

- Aggregation data at the level of administrative boundaries: governorates-sections-subsections.
- Detailed data at the level of: blocks-buildings-residential buildings-establishments-housing units.
- Dissemination statistical- geospatial data for all previous level on the website of CAPMAS.

3.1 Census 2016 and geospatial information systems

The Egypt 2016 Population, Housing and Establishment census is the 14th in a long history of census taking in recent history, since 1882.

The current census is considered the first electronic census in Egypt.

Many innovations in census 2016:

- a) Cartographic and census mapping,
- b) Electronic-census,
- c) Tablet Application and
- d) Establishment the number of organizational services.

a) Cartographic and Census Mapping (pre-census):

The Preparations for the cartographic and census mapping project were initiated since 2013 .GIS Department is responsible for producing updated census maps for all governorates covering both urban and rural areas before the enumeration phase and before training of surveyors.

The benefits from using census mapping to ensure the following:

- Updating the base maps including all administrative boundaries and names, as well as plotting area boundaries.
- Geo-locating socio-economic infrastructure such as schools, mosques, churches, factories, hospitals, gardens and land marks.
- Carrying out listing of households/dwelling units and SAs based on the updated maps, this data is considered as the primary estimation of population in SAs.
- Ensuring full coverage areas and avoid overlaps at all census levels.

Geospatial activities (post-census):

- I. Publishing Results on the website of CAPMAS and census info.
- II. Producing Census Atlas.
- III. Publishing Books for each Governorates (27 GOV.) contains all census characteristics.

b) Electronic Registration Census:

By using Internet Data Collection (IDC) for the households who wants to register by self.

c) Tablet Applications:

In previous censuses we use mostly manual, paper-based data collection methods for specialized surveys, which provide the bulk of statistical data. Paper-based methods involve printing of the paper questionnaires, transporting them across to the fieldworkers, and getting them back to a central location. The lengthy processes not only delay the production of data for decision making, but also require a lot of personnel for data collection and capture, thereby exacerbating the financial constraints. Due to these and other problems, handheld devices such as tablets are increasingly replacing pen-and-paper methods of survey data collection. The advantages of using handheld device include: automatic transfer of the survey to central database; automatic validity checks; automatic data cleaning, more control of question sequencing by the interviewer; easier to scale up (or down) and adapt for other surveys; more privacy due to the reduction in intermediate processing and cleaning, and concomitant reduction in operators involved.

d) Establishment the number of organizational services:

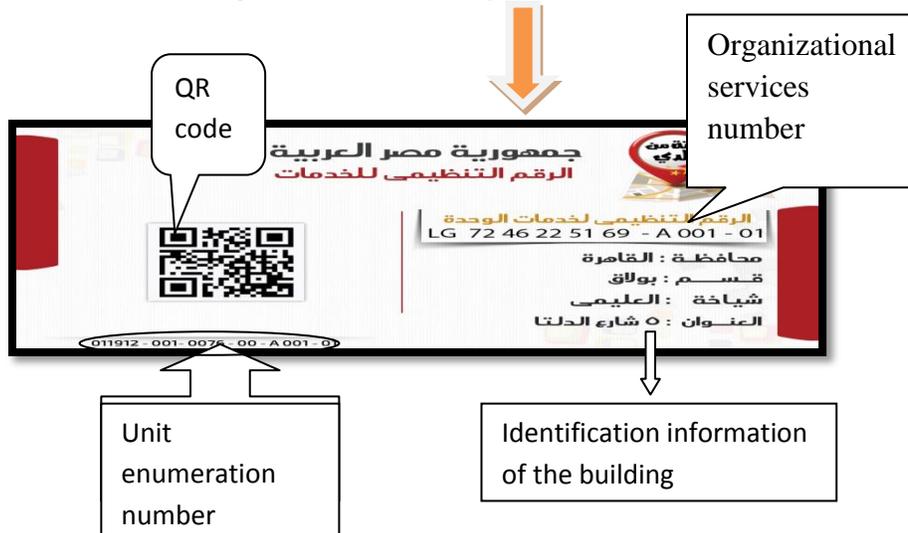
It is a unique number for each unit within the building.

It is produced by maps automatic.

In order to give a fixed number of the unit linked to the geographical location does not change even if the administrative boundaries change.

This number will be used as a reference number to evaluate and follow-up the services of local government such as electricity, natural gas, sewage, street cleanliness, ,, and other services. These evaluations will be through modern and mobile computer applications.

In enumeration stage will be distribute **specific cards** to each unit in the buildings.



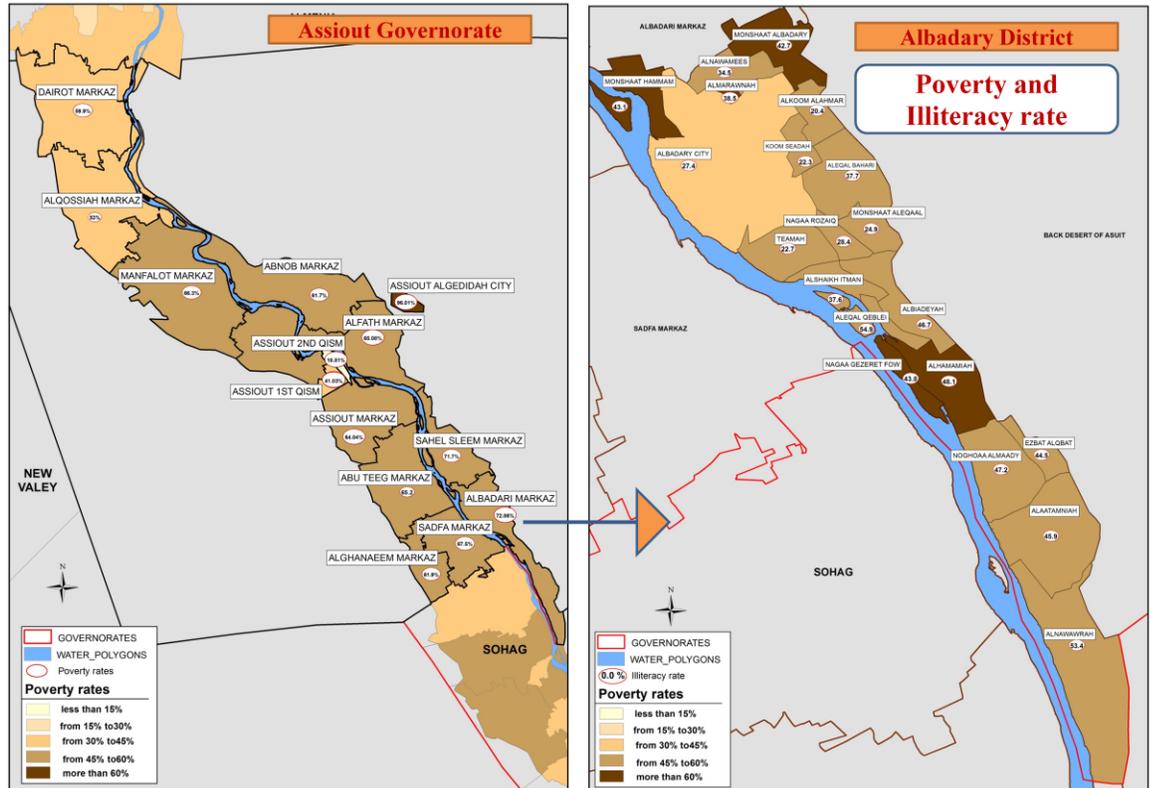
3.2 National Statistical Surveys and geospatial Information Systems

(Income and Expenditure survey):

CAPMAS Produces Income and Expenditure survey every 2 years, the last one was (2014-2015)

The main produced data from this survey is:

- The percentage of poverty and inequality among the country.
- The different levels of expenditures.
- Poverty Gap.....etc.



Static Thematic Maps:

The map on the left side is showing the poverty rate of Assiut Governorate at the of sections.

The map on the right side is showing the poverty and illiteracy rate at the level of subsection of Albadary District in Assiut governorate.

Also, Producing GIS Desktop Application entitled “Poverty Map of Egypt: Location Information for decision support”

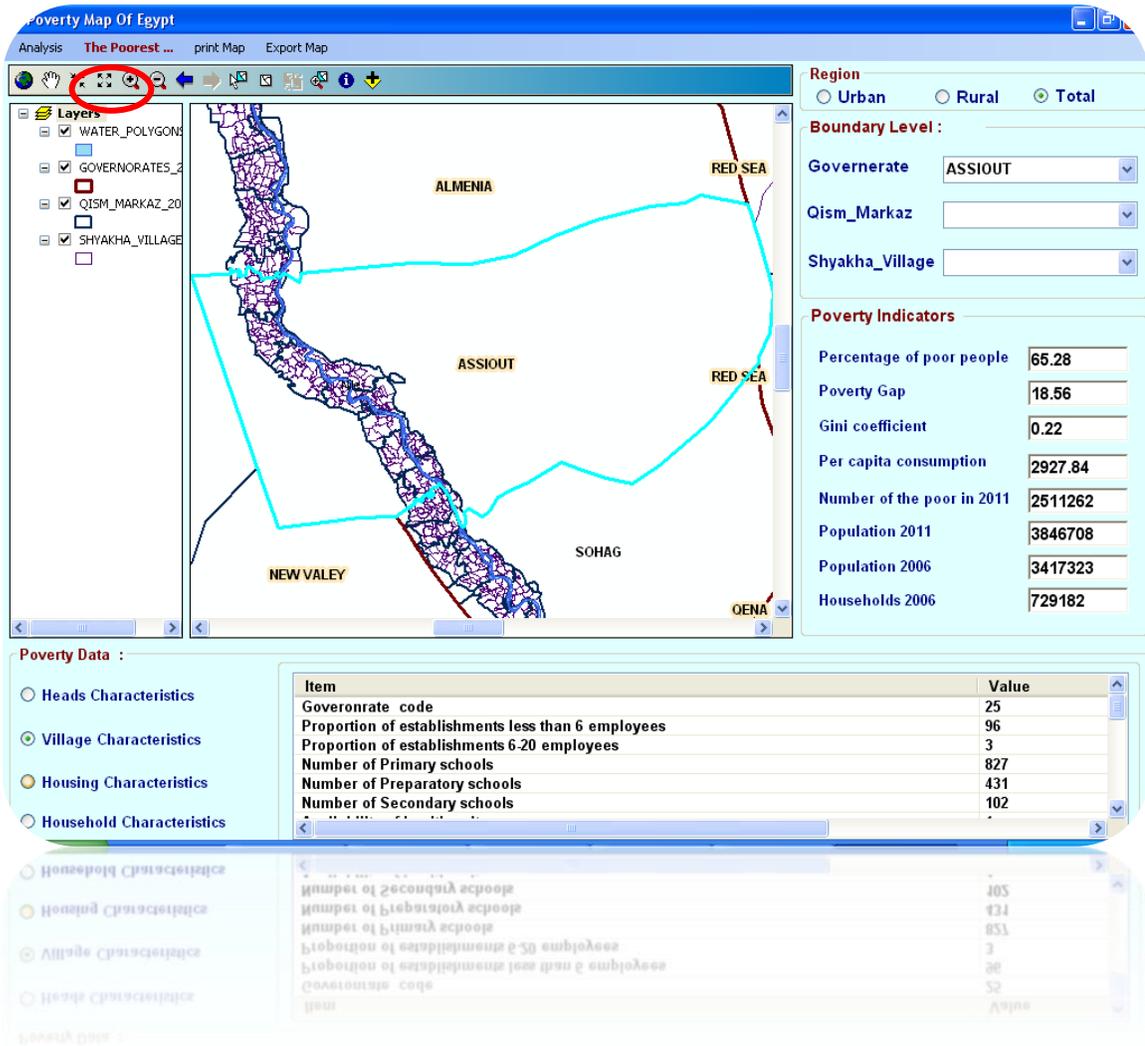
This application has been distributed among all the Egyptian ministries, governmental and social agencies.

CAPMAS dedicated a training groups to help all the ministries in using the application.

The benefits:

We can know:

Where is the poor people, Why they are poor, what are the points of shortage in distributing the main and essential services and the decision to improve these services. So they can take the right decision.

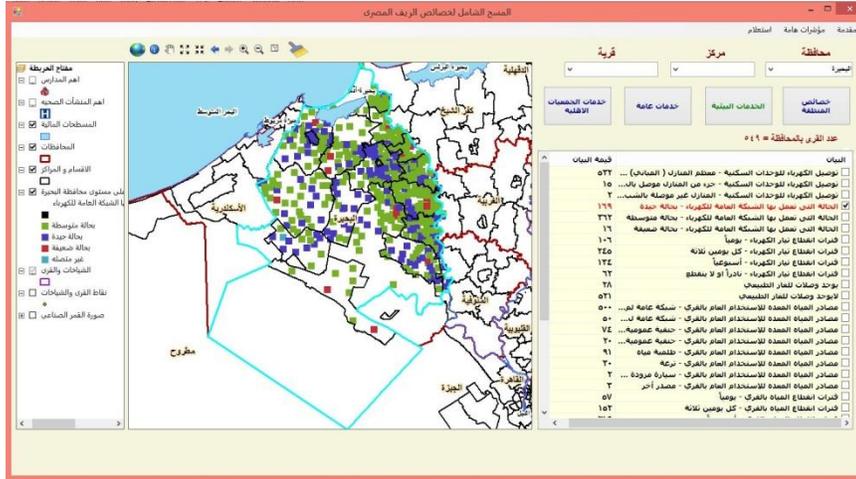


Comprehensive survey of the characteristics of the Egyptian countryside:

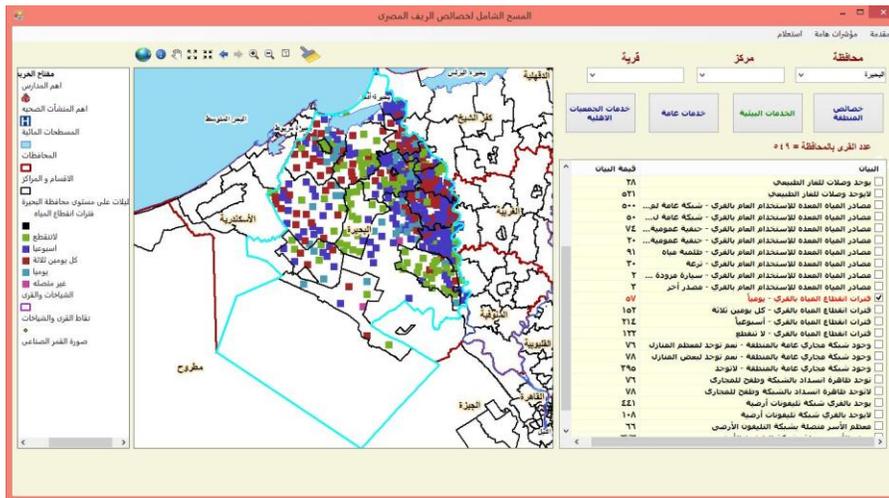
It is an analytical **comprehensive survey** given the overall picture of the state of the rural community in all its aspects and illustrates the weaknesses and shortcomings of the existing services in this community, and given the priorities of the services required of this community.

The following static thematic maps are showing:

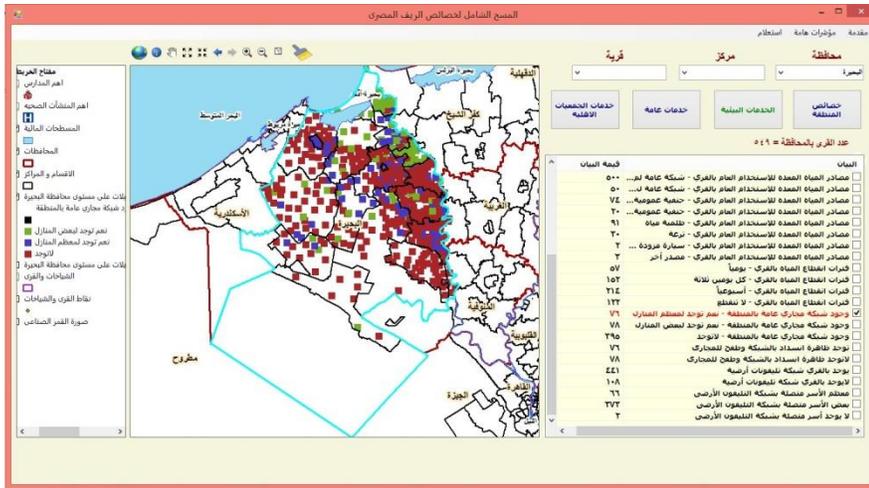
Existing infrastructure services in the village of sources of water network, sewage network, electricity network and energy.



The status of electricity network in Behaira Governorate: Good ■ Medium ■ Weak ■ not connected ■

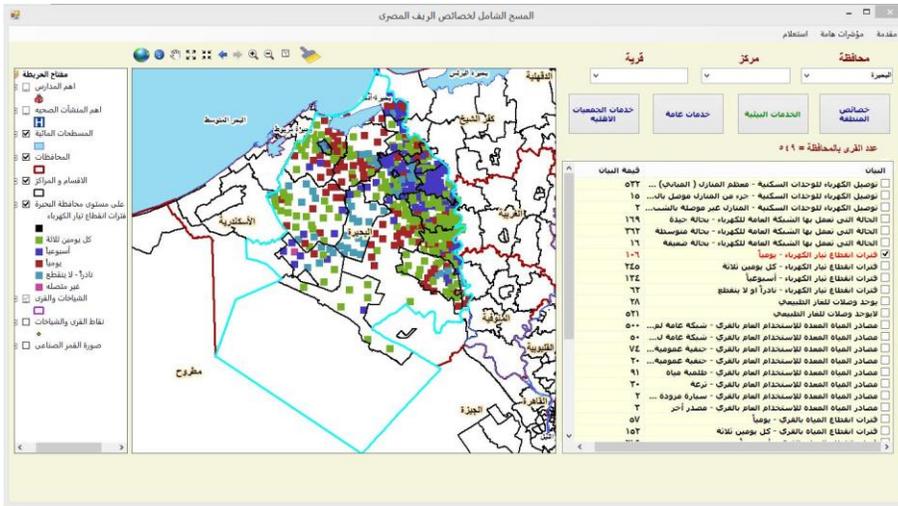


The status of water cuts in Behaira Governorate: not cuts ■ weekly ■ every 2-3 days ■ Daily ■ not connected ■



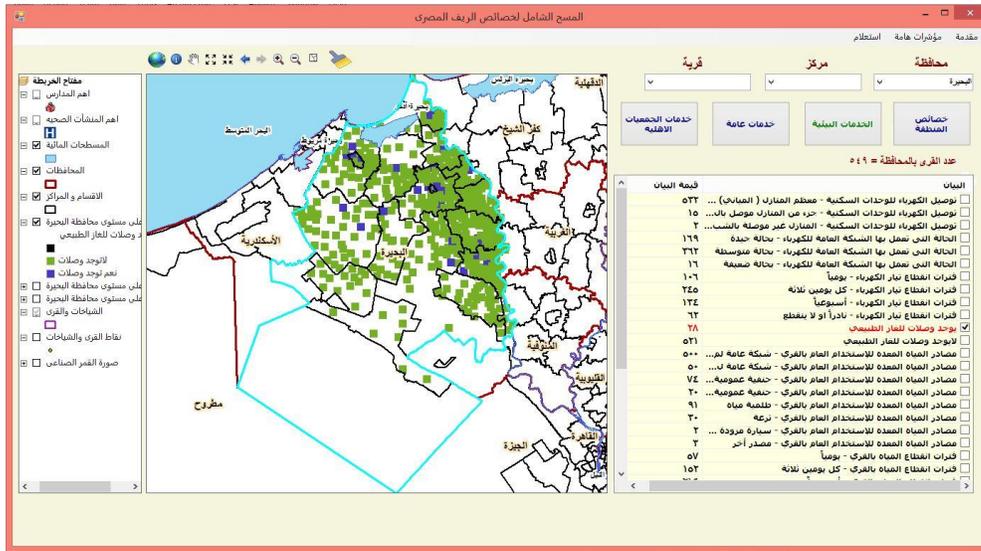
The status of sewage network in Behaira Governorate: it exists in some houses

It exists in most houses not connected



The status of period of power cuts in Behaira Governorate: every 2-3 days

Weekly seldom not connected

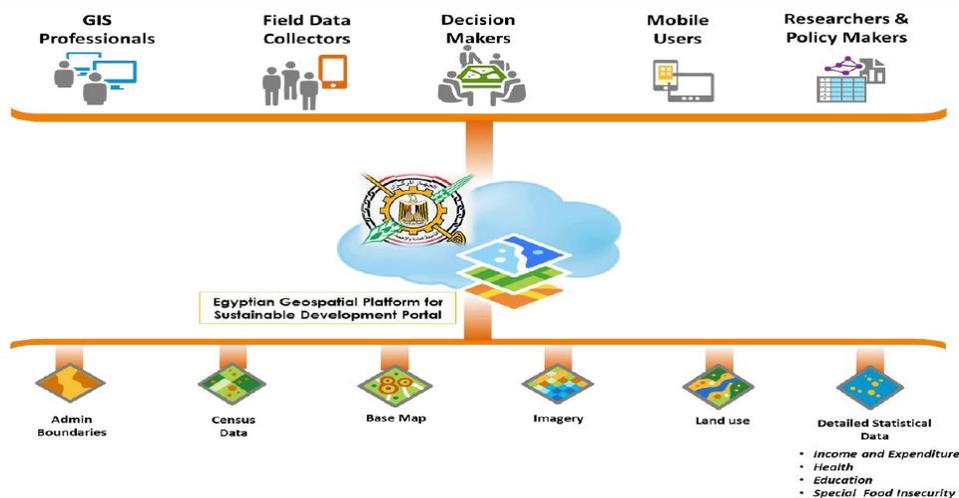


The status of natural gas network in Behaira Governorate: connected

not connected

4. Geographical Information Portal for CAPMAS

The Geographical Information Portal utilize CAPMAS statistical databases as a main source of data and compile disparate geospatial data from across the country into a single platform for analysis. It will also help CAPMAS study the data entered by its field crews when performing national surveys. In addition, the platform will allow CAPMAS to have an overall view of different indicators on real-time via the platform operational dashboard; such a holistic view will assist the Egyptian Government in taking accurate decisions.



Additionally, the expected expansion of the portal is to integrate with portals at other governmental entities, allowing sharing information between the different entities.

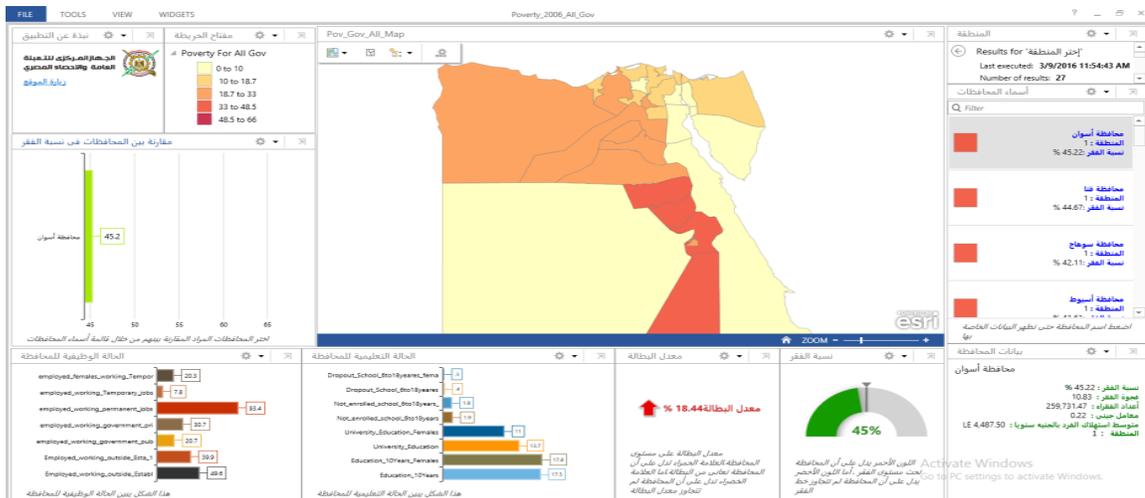
CAPMAS Geographical Information Portal enables us to share maps, applications, and other geographic information with other employees in CAPMAS. The content that we share is delivered through a website customized with CAPMAS look and feel.

CAPMAS Portal brings together all the geographic information in our ArcGIS platform and shares it throughout our network or online through internet. For example, we can:

- Create, save, and share web maps
- Create and host web mapping apps
- Search for GIS content within CAPMAS
- Create groups for sharing GIS information with coworkers
- Share links to GIS applications
- Share map and layer packages to use in ArcGIS for Desktop

Dashboard example:

The following dashboard shows the poverty indicators with Egypt map in the middle. As we see the indicators are real time changed and are represented in various charts like bar, pie, threshold and thematic maps



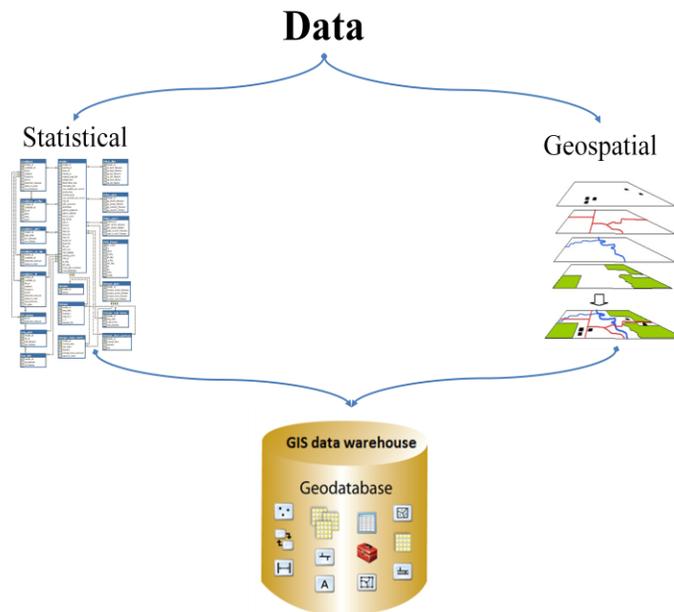
Web Application projects:

This web applications are about census data and can interact with life data to produce thematic maps and charts.



<https://Geoportal.CAPMAS.gov.eg/arcgis/home>

Our objective to build CAPMAS-GIS data warehouse as illustrated in the following figure:



5. National Spatial Data Infrastructure (NSDI)

Definition of NSDI:

National Spatial Data Infrastructure NSDI: combines technologies, policies and people to promote sharing of geospatial information throughout all levels of government, the private and non profit sectors and the academic community.

- ✓ Reduce duplication
- ✓ Increase data Availability
- ✓ Reduce costs
- ✓ Improve quality
- ✓ More accessible to the public

5.1 Coordination of Spatial Data Infrastructure

NSDI project under the auspices of the Ministry of Planning, initiated since 2014

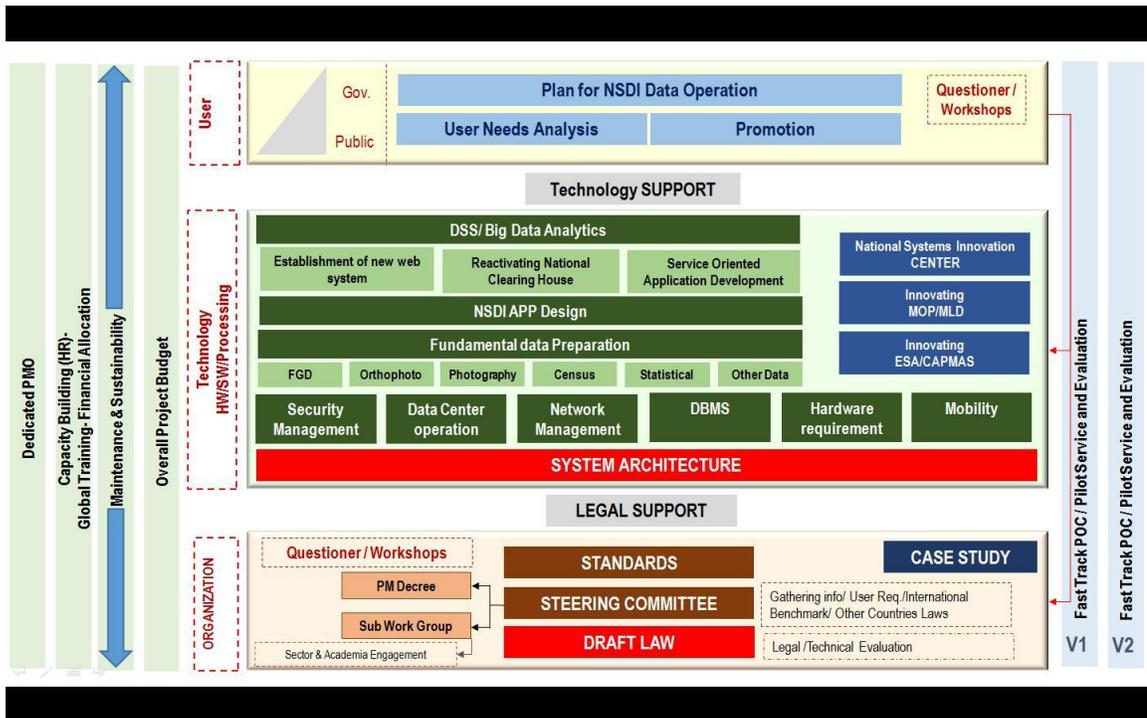
The partners:



The main objectives:

1. Unify surveying references
2. Unify the base map and the unify the administrative boundaries
3. Unify spatial identifier number

5.2 Legal Framework(NSDI)



The next step is the work of time plan and the initiative of implement it.

5.3 Unique Spatial Identifier

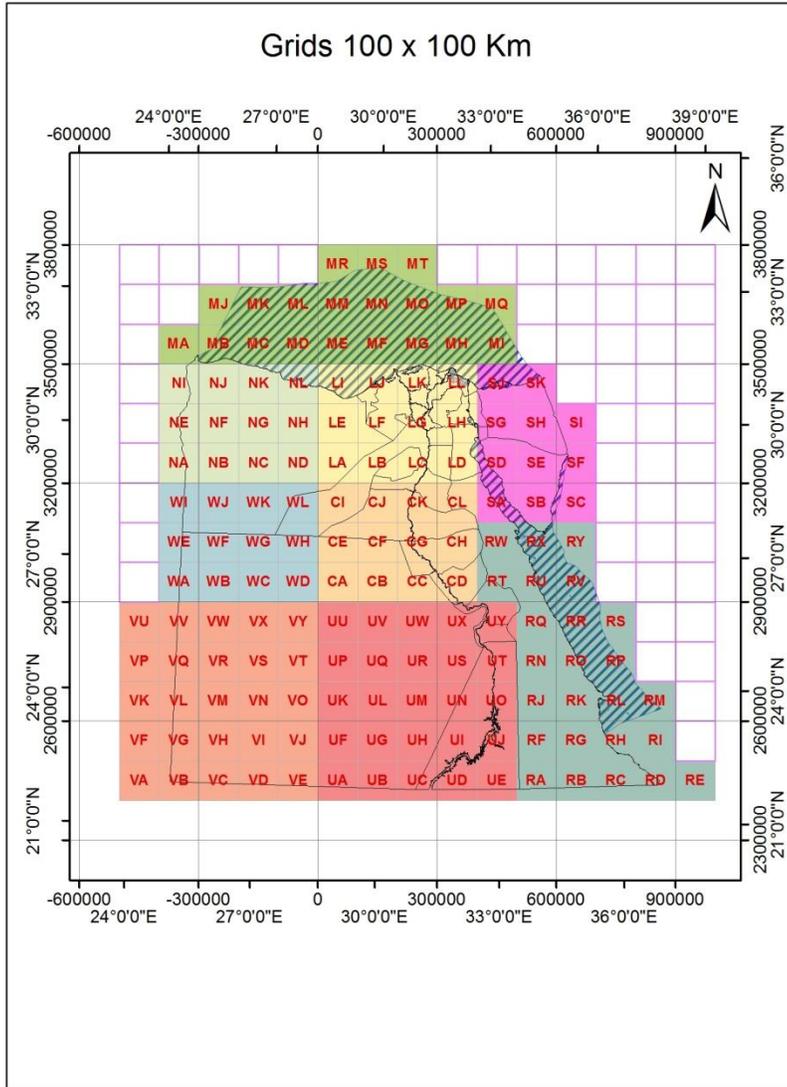
It is issuing a unified spatial reference number at the state level represent all locations on the maps: point, line and polygon by using national grid system.

This number is an official unique spatial identifier in national databases of all stakeholders to serve different applications in state.

The production of unique spatial identifier depends on the updated layers of base map from census mapping project for preparation of census 2016 and using the national grid system which is compatible with wgs84 system and geo reference projection MTM

National Grid System is issued by technical specialized of the best Egyptian experts from various authorities.

National Grid System:



6. Global Statistical Geo Spatial Framework-Egypt Status

Principle 1: Use of authoritative geospatial infrastructure and geocoding

Egypt is working on establishing a NSDI using a National Grid system with coordinate system MTM-WGS84 (Modify Transfer Mercator) which will be used to generate a unique numbering and geocoding system for each unit in a dataset, such as a building, household or business.

Principle 2: Geocoded unit record data in a data management environment

All the geographical spatial data and statistical data are identified with the smallest geographic boundary (Shyakha (Urban) - Village (Rural)), and we are working now on putting a mechanism to facilitate the integration and management of the geocode within dataset including spatial number identifier to geocode linking mechanisms to join the detailed statistical building, household and business data and all of this will be accomplished by the end of the next census 2016.

Principle 3: Common geographic boundaries for dissemination of statistics

One of the most important roles of the NSDI is to unify the administrative geographic boundaries between all the Egyptian agencies, beside the mechanism of data dissemination using the National grid merged with the geographic boundaries.

Principle 4: Interoperable data and metadata standards

Egypt statistical and geospatial data operated metadata capabilities.
Egypt applies standards for statistical and geospatial data, and agrees with Australia on the need to seek international agreement.

Principle 5: Common Accessible and usable geostatistical information

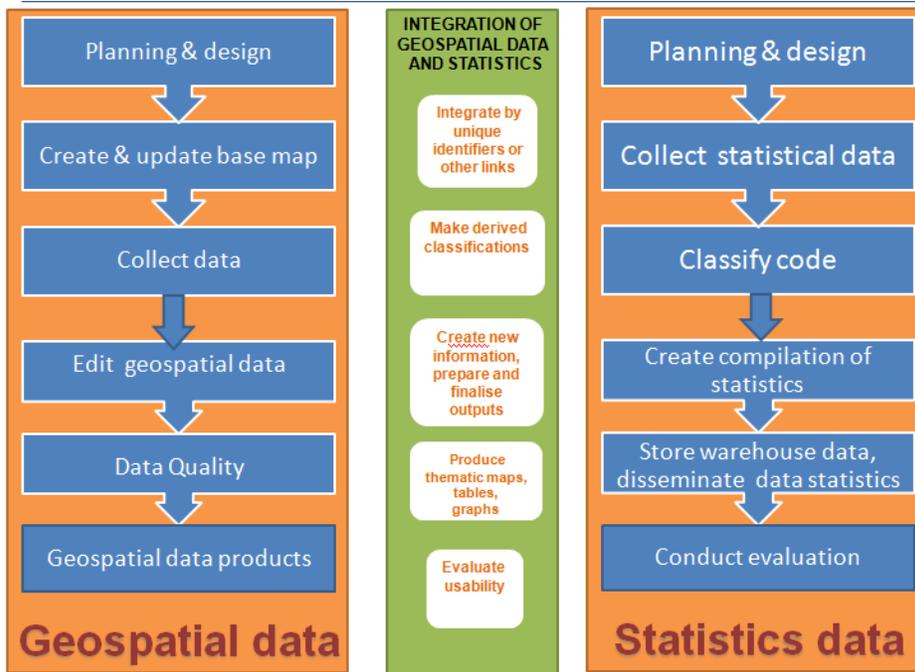
Egypt uses Open data policies and principles, and also after building and publishing the NSDI portal all the data will be accessed using Web services to enable dynamic accessing the to the geostatistical data.

Statistical Spatial Framework (SSF)



Statistical Spatial Framework (SSF)

Integration of Statistical & Geospatial Information



Links: http://ggim.un.org/ggim_committee.html□

: <http://www.capmas.gov.eg>

: [http:// Geoportal.CAPMAS.gov.eg/arcgis/home](http://Geoportal.CAPMAS.gov.eg/arcgis/home)