

Chapter 18: Environmental Information Systems (EIS)

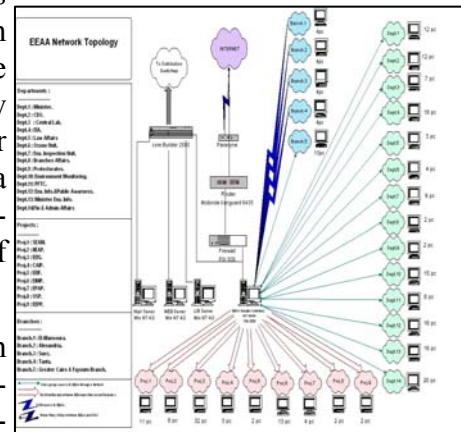
Introduction

Information and data are necessary in supporting and rationalizing decision making to build an Egyptian information society able to pursue and absorb the great flow of advanced knowledge. The dominating world is one which depends on accurate and quick information received by open minds, trained on analysis and able to create. These minds made information and knowledge industry a new activity whose development and effect exceeded other activities. Accurate, timely information received in a proper form is the basis of correct decision. Correct decisions and accurate information are the fundamentals of this world.

MSEA has thus developed an aggressive EIS program which depends on managing EIS through electronic system and program network, providing advanced high-quality and high-speed services to gain tangible outcome from using IT in environment development, protection, and maintenance. MSEA has adopted a strategy to establish an EIS structure based upon two axes:

First: High-quality and quick performance management of MSEA and EEAA regular work, providing public services contributing effectively to environmental development.

Second Axis: Providing information service and awareness to all citizens generally and investors specifically. This service depends on encouraging investment in environmental fields, namely: pollution abatement, CP utilization, waste recycling/ disposal, and general environmental education to raise and disseminate awareness on environment importance, maintenance, and development.



Picture (18-1) Network Connecting RBOs and EEAA

MSEA website is chosen among top 10 websites providing online services in 2004/2005.



MSEA Achievements

First: Internet and Intranet

1. MSEA Website:

MSEA website (www.eeaa.gov.eg) objective is to enhance communication among MSEA, EEAA, RBOs, national and international organizations, researchers, investors, and the public through circulating environmental information. Within this context, MSEA/EEAA website is regularly updated; and Environmental information and services provided to the public are disseminated.



Picture (18-2) Website of EEAA at the Internet

The website provides information and data on MSEA, EEAA, and Egyptian environmental policies framework. Information is available on RBOs established to achieve environmental management decentralization, effectuate governorate role in following up and managing activities which improve environmental conditions, and protect natural resources. Besides, data and information are available on environmental work fields in Egypt, MSEA/EEAA major achievements, and specialized information on different environmental issues, such as natural protectorates, biodiversity, air quality, sever air pollution episodes, procedures to be taken by citizens to mitigate these episodes effects, forest plantations, waste recycling, ozone, climate changes.

The website provides for searching databases of Environment Law, international environmental conventions and treaties endorsed by Egypt, working EEAA environmental projects, international donors being cooperated with, environmental reports, environmental news and events, Egyptian facilities awarded ISO 14000-14001 certificates, and guide of environment NGOs.



Picture (18-3) Pages from MSEA Website

To spread environmental awareness and culture, environmental guidelines have been given to the public to protect environment against pollution and eliminate environmental problems. Information and media materials from the Green Corner program are distributed to raise environmental awareness among Egyptians, especially children and youth.

MSEA is keen on publishing services provided to citizens and investors on the website as follows:

- Investor services: EIA procedures, Environmental Screening Forms, and manuals as a free service to new establishments and projects or extensions and renewals of existing establishments in accordance with Environment Law. In addition, there is inquiry service on the status of EIA new projects, procedures, conditions, environmental priorities, financial support programs for environmental compliance of factories and companies, how to apply for getting support, funding forms of EPF and international projects and bodies.
- Industrial Sector services: manuals, forms, success stories on industrial pollution control, EMS, and CP.
- Citizen services: environmental complaining system enabling citizens from filling in an online form. The complaint is electronically sent to MSEA Citizens Service Unit which forwards the complaint to the competent authority. Citizens receive feedback.
- Researchers and beneficiaries from MSEA&EEAA staff and others: environmental library services, for example, through providing online document and book search, in addition to linking Arab and international environment sites.



Picture (18-4) Investor Services



Picture (18-5) Industrial Sector Services

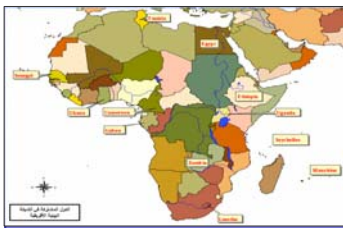
2. Intranet (Internal Information Highway IIIH):

IIIH aims at raising MSEA & EEAA performance efficiency using communication and information technology through realizing quick document and information exchange between different departments and sectors and providing services to staff as follows:

- Making available databases of all MSEA & EEAA activities providing information needed by staff in carrying out daily work (staff data, projects, donors, reports, conferences and symposia, environmental laws and agreements, environmental library, international organizations links, EMUs, leader email addresses).



Picture (18-6) Personnel Affairs Services



Egypt chosen among 13 African states as a founding member of the Africa Environmental Information Network AEIN, working under UNEP since 2004

- Providing medical services to staff (directory of the entities providing medical services and the financial regulations of medical service project).
- Publishing external bodies manuals (company directory of the National Organization for Military Production and Industrial Work Sector, and ARE Information Centers Directory).
- Publishing environmental achievements, reports, plans, followup of different environmental activities (citizen complaints, air quality and coastal water monitoring reports, and monthly achievement reports).
- Delivering personnel affair services including documents, applications of services and dues, procedures of receiving services, laws regulations.

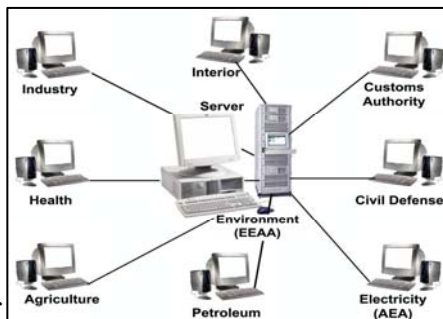
Second: Environmental Systems and Applications

1. Hazardous Material Information and Management System:

This system aims at establishing an integrated national system in Egypt. It includes management of imported and locally produced hazardous material, and cooperation with line ministries to execute the system via a database and customs clearance form.

Achievements:

- Setting up hazardous material database connected to internet.
- Issuing a manual on requirements and standards of handling and safely storing hazardous material.
- Issuing hazardous material accident emergency facing plan.
- Issuing the national approach to hazardous material management in Egypt.
- Setting up importers and warehouses databases.
- Developing the national strategy for safe handling of hazardous material.



Picture (18-7) Cooperation with ministries concerned with hazardous material management system in Egypt



Picture (18-8) Hazardous material information and management system publications

2. Followup system of vessels carrying hazardous material and wastes and passing through Suez Canal:

This database records vessels passing through Suez Canal carrying hazardous material and wastes. It includes data on exporters, importers, their countries, type of wastes, whether wastes will be recycled or disposed of, and recycling/ disposal companies or entities.



Picture (18-9) Followup system of vessels carrying hazardous material and wastes and passing through Suez Canal

3. EIA System and Consultants:

This system works on managing and following up EIA studies and defining the consultants to review these studies.

EIA system processes four major data groups:

- EIA consultant data, whether individuals or companies
- EIA project data
- Petitions
- Requirements



Picture (18-10) EIA system

4. Citizen Complaint Service System:

This system manages all citizen complaint data in MSEA and RBOs through internet to record, investigate, and print complaints, make statistics, and print different reports to ensure ongoing followup and extract different indicators clarifying service quality.

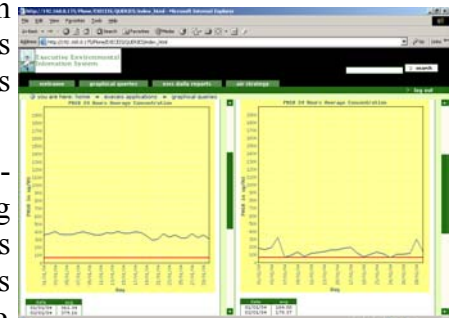


Picture (18-11) Citizen complaints system

5. Executive Environmental Information System (ExecEIS):

ExecEIS has been set up to enable MSEA/EEAA executive departments to access EEAA environmental information serving decision makers, utilizing system analytical options in displaying information in various forms: reports, comparison tables, figures, and diagrams to facilitate decision making by executive departments.

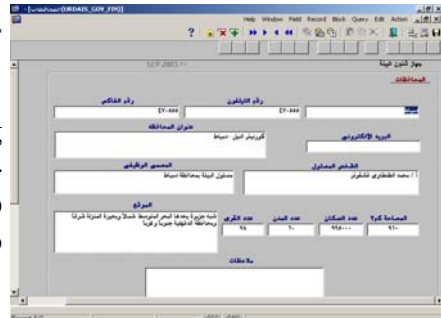
ExecEIS contains an application for inquiring and displaying data and information on air quality monitoring program. Measurements of all air monitoring stations could be displayed in the form of tables and diagrams for one or all measured items. Comparisons could be made depending on station measurements in different periods for one or more monitored items providing results in the form of diagrams and tables. Issuing a daily report on air pollution is also available.



Picture (18-12) ExecEIS

6. Sustainable Development Environmental Indicators System:

It is an accurate and comprehensive database including data, information, environmental indicators, and accurate statistics which clarify development path and help decision makers adopt proper and timely decisions to achieve sustainable development goals.



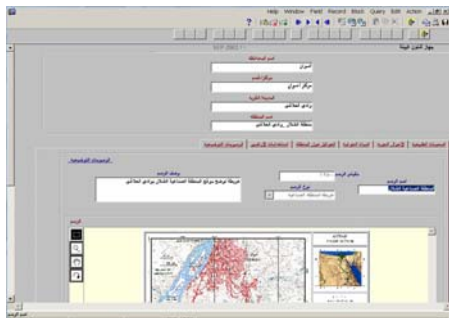
Picture (18-13) Sustainable development environmental indicators system

7. City and Urban Communities Development System (URDAIS):

URDAIS analyzes urban community impact on environment, especially using land and water (whether surface, ground, or coastal water).

8. Studying Environment Condition in Rural and Urban Areas NDZIS:

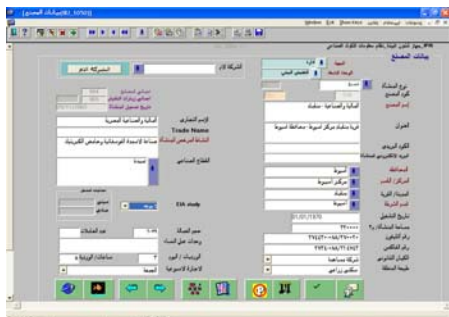
This system studies environmental condition in rural and urban areas to determine industrial activity locations, volumes, and impact on neighboring residential communities. NDZIS monitors various types and sources environmental pollution and compliance with environmental laws. The program includes a geographical database indicating rural and urban areas in every governorate and related public service.



Picture (18-14) NDZIS

9. Industrial Zones Information System (NIZIS):

It aims at setting up a database on the environmental state of existing or new industrial zones, whether an EIA study is conducted about them, and data on utilities and services of industrial zones and activities included therein. Uploading maps of industrial zone locations in all governorates is an available option using Geographical Information System (GIS) applications.



Picture (18-15) NIZIS

10. Industrial Pollution Information System (IPIS):

IPIS is considered the comprehensive pool prepared to receive all data on factories and different industrial activities generally, on factory level, or on industrial process level in terms of quantity and quality or inputs and outputs.

IPIS is designed to include different analyses from all sources: auto-monitoring of plants, inspection measurements, sample measurement from monitoring institutes and stations distributed all over the country.

IPIS stores industrial pollution data in an organized form facilitating followup process. This in turn facilitates data recovery and comparison to permissible limits stipulated in the executive regulations of the Law on Environment No. 4/1994, to know pollution areas and sources. Based upon these data, specialized environmental experts can provide practical solutions and follow up these problems, reducing negative impacts as a step towards problem solving and eventually eliminating it.

11. International Environmental Agreement Information System (MEAIS):

MEAIS provides information to MSEA and EEAA on international or regional agreements signed or joined by ARE. MEAIS also determines ARE obligations by virtue of these agreements.

12. Domestic and Funded Project Information System (DFPIS):

DFPIS is designed for data entry and report development on different project activities. It is divided into two main sectors:

- First Section:** planning, it includes basic project data, donors, funding bodies, and external and internal bodies dealing with the project: beneficiary entities and others participating in implementation, decision makers, etc. Project objectives and expected outcomes are also included to help develop a general map of donor activity in the Egyptian environmental field. Such map geographically and technically defines the activity aspects, thus, it helps coordination among donors and ensures integrity and absence of duplicity.
- Second Section:** reports, it includes periodical data on project activity implementation, project schedules, project financial data, comments on implementation and obstacles to it, lessons learnt, recommendations, and other information useful to decision makers during implementation and after finishing the project.



Picture (18-16) DFPIS

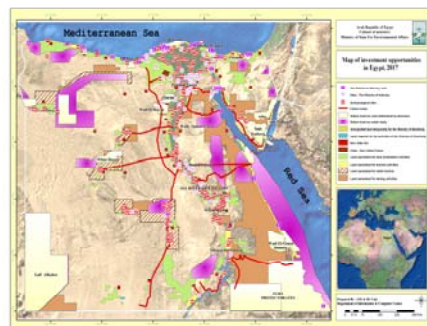
Third: Environmental Databases

1. Biodiversity Database:

The biodiversity database is for surveying all flora and fauna in Egypt, as well as all the details of every organism (environment, location in Egypt, economic value and importance, and taxonomy).

The database helps decision makers in:

- Supporting decisions on making any development (industrial or commercial) in a certain area or not;
- Realizing the amount of protection given to organisms, whether flora or fauna, and whether such organisms are threatened or vulnerable owing to human intervention; and
- Contrasting organisms and activities in every protectorate and methods of conserving organisms inside protectorates.



Map (18-17) Egypt's Investment Opportunities

2. ISO 14000-certified company database:

- ISO 14000 certificate consists in a set of environment management systems with the view of achieving more development and improvement in environment protection systems as well as balancing them with environment needs and protection.
- ISO 14000-certified company database aims at surveying and recognizing certified companies and facilities and encouraging others to obtain the certification to conform to environmental laws and regulations.

3. NGO Database:

The aim is to develop a database for surveying and recognizing environmental NGOs, so that users can recognize every NGO with its activities at governorate level through MSEA website.

Fourth: Environmental Information Network

1. Cement plant monitoring network:

MSEA is keen on using advanced electronic means to automatically monitor Egyptian cement plant emissions; therefore, it developed a central system for monitoring such plant emissions automatically 24/7. The system is composed of:

- Measurement devices for cement production line (furnaces, filters, or grinder) chimney dust emission concentration;
- On-site e-monitoring of dust emissions in plant; and
- Information transfer through a communication network in every plant for instantaneous transferring of monitoring results to the main monitoring room in MSEA.

Using the central system led to the following:

- Tightening control over cement plants in terms of abiding by the requirements of smoke emissions from chimneys on filters along production lines;
- Speedy communication with plants to identify violations and following up operation problem corrective actions;
- The existence of a tangible practical guide helping taking legal measures stipulated in the Environment Law 4/1994 in cases of violations leading to impacting air quality in cement plant surrounding areas; and
- Notifying competent authorities and local community representatives of pollution situations in cement plants and verifying complaints from residents around the plants on increased emissions in certain times.

Fifth: GIS and Remote Sensing

Sound planning has become an aspect and need of a modern state, whether environmentally, industrially, urban, agriculturally, scientifically... etc. It is a proof of coping with continuing development in using modern technologies lately, especially GIS and remote sensing, which has led these systems to form the base for several national programs and projects.

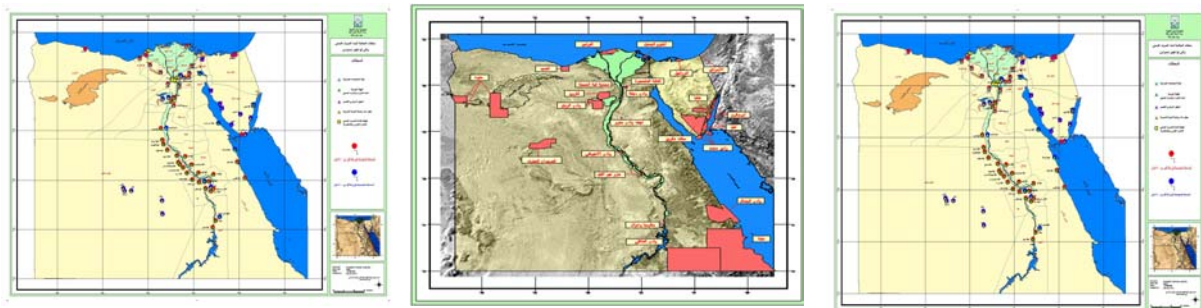
Based on the desire to continue such progress so as to maximize the benefit of such modern technology in implementing different developmental environmental applications in environmental domains and projects, several environmental applications have been constructed using GIS and remote sensing technologies to help environmental decision makers.

1. Environmental Common Information System (ECIS):

The system is based on collecting and integrating all GIS-based environmental systems and information in MSEA and EEAA on a central server as a storage for all data and information used in all environmental systems and projects. System users access it through authorizations and privacy levels previously identified to every user.

Examples of systems used:

- GIS for solid waste (agricultural, industrial... etc.);
- GIS for treated wastewater stations with desert backlog for safe woods usage;
- GIS for identifying the most appropriate locations fit for municipal solid waste landfills at governorate level;
- Environment-friendly industrial cities;
- Hazardous material transfer accident follow-up form;
- Protectorates and state land utilization maps;
- Governorate environmental projects;
- Governorate environmental problems;
- EEAA/RBOs; and
- Air quality monitoring stations;



Picture (18-18) Geographic Information System

2. Environmental Applications Using Remote Sensing Technology:

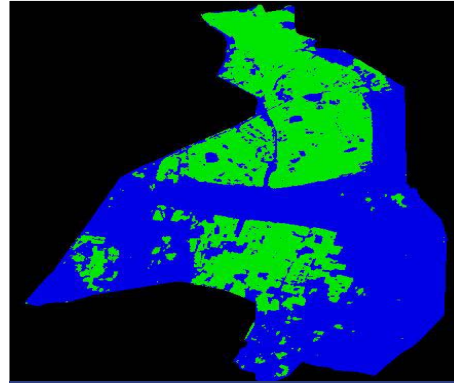
Remote sensing plays a great role in serving the environment, as it can monitor and examine several environmental phenomena in Egypt. Satellite images for 1972, 1997, and 2002 were used to develop some applications helping environmental decision makers:

- Demarcation of green planes in some Cairo residential districts;
- Monitoring and following up the growth of some new urban communities in Greater Cairo region;

- Monitoring urban sprawl over agricultural lands;
- Monitoring water surface pollution resulting from the Gulf of Suez ship wastes;
- Monitoring and following up efforts made to control pollution resulting from plant chimneys in Greater Cairo (Shoubra al-Khayma and Helwan); and
- Examining some marine systems along the Red Sea Coast



Picture (18-19) Demarcation of green planes in Nasr City District using remote sensing technology



Picture (18-20) Urban sprawl over agricultural lands in Khanka, North Cairo, using satellite images

Sixth: Environmental Library

- Established in EEAA in 1992 as a library specialized in environmental sciences.
- Comprises some 7500 titles (5500 in Arabic and 2000 in English).
- Uses the environmental screening system INFOTERA and some e-indexes for document data, such as the author, title, publisher, keywords. Inquiry is made through the Advanced Library Information System (ALIS) installed on the library computers.
- Provides, in addition to reading and information, photocopying, internet, and external borrowing services.
- Library websites:
 - MSEA site: www.eeaa.gov.eg
 - MSEA information network (information internal quick path):
http://eeis_websrv1/first/index.htm
 - Egyptian library network: www.library.idsc.gov.eg
- MSEA Information and Computer Center issued 3 “State of the Environment” Reports in Egypt for 2004, 2005, and 2006 in Arabic and English.



Picture (18-21) State of the Environment Reports in Egypt for 2004, 2005, and 2006