Arab Republic of Egypt

Ministry of State for Environmental Affairs

Egypt State of The Environment Report

2004

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God Bless.

Minister of State for Environmental Affairs

Eng. Maged George Elias

Word of H.E. The Minister of State For Environmental Affairs

It gives me great pleasure to forward the "State of Environment Report" of the Arab Republic of Egypt (ARE) for 2004, which is issued for the first time in Egypt as a significant step in the political environmental commitment of the Government of Egypt (GoE). This comes in the framework of Egypt's political leadership keenness on incorporating the environmental dimension in all fields for achieving sustainable development, and from its belief that protecting the environment has become a necessary requirement to protect the people's health and empowering it to achieve optimum utilization of natural resources, and in application of Law no. 4/1994 on Environment Protection and its executive regulation, which stipulates in its Chapter Two on developing an annual "State of Environment" report to be submitted to HE The President of the Republic and the Council of Ministers, with a copy deposited with the People's Assembly.

This report comes as an outcome of the efforts of many competent experts and those concerned with the environment in Egypt, as well as organizations, ministries, and line ministries that collaborated the Ministry of State for Environmental Affairs (MSEA) in developing this report. The scientific approach used in drafting this report is in compliance with the International Environmental Outlook Report, and includes a comprehensive analysis of all information and data collected from various environmental elements in Egypt including:
Air quality, Fresh water, Land, Soil, Natural resources such as Seas, Costal zones, Biodiversity, and areas of rare nature, as well as environmental management mainstays, which include:

Urban development; population activities; solid waste management; hazardous material and waste management; industrial waste management; environmental disasters management; and lands uses. Analysis and Focus were also directed to major, extremely significant issues, which are currently being reviewed by the ministry in cooperation with relevant ministries and governorates, these include:

Greater Cairo urban air pollution, with its associated integrated solid waste management; relocating environmentally polluting industries outside densely populated agglomerations to exclusive industrial zones in new cities and other areas; using natural gas instead of mazott, kerosene and petrol; industrial pollution abatement through achieving compliance of factories and companies; using eco-friendly cleaner technology; controlling vehicle exhausts; power generation pollutants; increasing green areas and planting wood forests using treated wastewater.

The second important issue is the elimination of untreated industrial effluent and wastewater discharges to the river Nile without complete treatment.

MSEA has gone a long way in implementing sound environmental planning by issuing the National Environmental Action Plan (NEAP) 2002–2017 in addition to executive plans, programs and projects for effectuating the state's 5-year plan 2002–2007 with clear-cut future visions.

MSEA is committed to input its maximum potentials for environmental protection and pollution abatement amidst many challenges to preserve our future generations' health and natural resources.

Introduction

Over the past three decades the issue of environmental preservation was on the top of the agenda of global and international concerns as one of the most important issues at both the national and international levels.

Environmental preservation means the maintenance of all types of flora and fauna, and natural resources and the prevention of all practices and activities that can lead to the extinction or endangering of natural resources, being invaluable wealth for future generations, and a live stock of renewable genes, capable of accommodating much of the future potential biotechnological developments that are currently unforeseen, and which can ensure global food for all human beings and achieve prosperity for all mankind.

International concern with environmental issues has escalated in the wake of the increase in adverse human activities and practices towards the environment in recent years as a result of the massive population increase. Many natural habitats we destroyed containing flora and fauna; the natural plant cover have been removed and replaced with agricultural and industrial systems that have become a hazardous pollution source. This was associated with housing, transport and energy systems that led to the rise of gigantic cities, which in turn had its destructive impact on the environment causing the disappearance of many rare living species and their natural habitats in unprecedented rates and in a manner posing a threat to the Earth's ecological systems.

Global concern with environmental issues has thus grown and was reflected in many international fora. Many international and regional conventions and treaties have been ratified binding signatory countries to establish legislative and administrative structures and adopt local and regional policies for protecting the environment and its natural wealth. Many international donor institutions and programs have also been established for supporting local environment protection programs and policies, particularly in developing countries through the provision of financial and technical assistance for supporting such programs.

Egypt, as most countries seeking to achieve socio-economic development, is facing many environmental problems due to the rapid population growth, which doubled one and a half folds over the last 40 years and is expected to reach in early 2025 about 103 million. Such increase has placed pressure on natural resources due to the expansion in industrial, agricultural and tourism activities in order to achieve the economic development that fulfills the requirements of such increase in population.

Internal rural-urban migration has also increased leading to the tripling of urban population in Egypt during the last two decades putting more pressures on the urban environment in general.

Therefore, and for emphasizing Egypt's cultural role, regionally and internationally, Egypt has directed significant concern to environmental issues and participated in ratifying many international conventions and treaties aiming at the implementation of rational environmental policies.

Egypt has also started establishing its legislative and institutional structure that works to protect its natural resources and habitats.

In this respect, many Egyptian Legislations have been promulgated with the aim of protecting the Environment, most important of which are:

- Law 45/49 on noise and sound amplifiers control.
- Law 66/53 on using fuel, coal and oil raw materials.
- Law 21/58 on Industry.
- Law 86/56 on Mines and Quarries.
- Law 59/60 on Ionizing activities.
- Law 79/61 on marine disasters and debris.
- Law 53/66 on Agriculture.
- Law 38/67 on Public Cleaning.
- Law 1/73 on Industrial establishments and noise abatement.
- Law 106/76 on Housing.
- Law 52/81 on Pollution Prevention.
- Law 173/82 on Work Environment.
- Law 3/82 on Urban Planning.
- Law 93/82 on Sanitary drainage and liquid wastes.
- Law 48/82 on Protecting the Nile and water ways from pollution.
- Law 102/83 on nature protectorates.
- Law 12/84 on Irrigation and drainage.
- Law 4/94 on Environment Protection.

In addition to many ministerial and administrative decrees and decisions.

The Presidential decree no. 631/82 on establishing EEAA for charting the general policy for the environment and coordinating with the competent administrative authorities.

In 1997, and for the first time in Egypt, a Ministry of State for Environmental Affairs (MSEA) has been established, bringing under its direct affiliation EEAA to act as the general coordinator for environmental policies in Egypt responsible for their monitoring and implementation. Parliamentarian representatives responsible for the environment were also assigned to the Health and Environment Committees in both the People's and Shura Councils.

Environmental action philosophy in Egypt is focused on striking a balance between pressing economic and social requirements in Egypt on the one hand and maintaining natural resources and wealth in a manner that would ensure protecting the environmental rights of future generations.

This report aims at highlighting the most important features of the state of environment in Egypt and factors affecting such state, as well as the efforts of MSEA and all state institutions concerned with environmental issues in supporting environmental policies and improving environmental quality in Egypt.

Methodology

Report Objectives

First: Implementation of one of Law no. 4/94 important stipulations, which was delayed pending the finalization of MSEA information structure;

Second: Drawing a clear and accurate picture of the state of environment showing positive and negative changes thereto.

Third: Assessing the effectiveness of environmental policies and programs implemented by Egypt for overcoming environmental changes that occurred in Egypt.

Fourth: Implementing some policies and programs for addressing environmental changes phenomenon.

For achieving these objectives, the methodology used in developing this report relied on three major principles:

First Principle

Transparency:

Adopted by the Arab Republic of Egypt; Thus all pressures on Egypt's environment have been presented using the latest data available to MSEA\EEAA in collaboration with all ministries, authorities and research centers. The State believes that the transparency principle would allow the people to know the nature and volume of impacts on the environment as well as the massive efforts exerted by the state to minimize such impacts.

Second Principle

Participation:

This report was based on the participation of experts, researches and those concerned with the environment in developing and reviewing the report. A work group comprising members from the different fields and specializations was formed and several workshops were held for developing the report, identifying its objectives and collecting its data. Regular meetings were also held for reaching an agreement on work methodology and report structure.

The report has also been developed with participation from a large group of experts representing the different public and executive sectors, such as line ministries, research institutions, universities, organizations, NGOs, People's and Shura Council members, environmental communication and information professionals, representatives of private sector and businessmen associations, environment protection associations, women organizations as well as representatives of the Youth sector and all civil organizations in Egypt.

Third Principle

Implementing internationally recognized global standards in developing "State of the Environment" reports. Thus, a scientific approach was used in drafting the report, including (influencing powers, pressures, environmental status, environmental impact and efforts exerted for mitigating environmentally adverse impacts). Which is the internationally recognized environmental assessment framework used by UNEP. Through this framework, the current environmental policies' appropriateness and effectiveness in mitigating any adverse impacts have been studied and analyzed, as well as clarifying the future vision of environmental policies in Egypt.

The development of the report based on such methodology incorporating the three above-mentioned principles puts Egypt among the ranks of countries distinguished in environmental work in general and in the development of "State of Environment" reports in particular.

Chapter I

Review of Policies and The State of Environment in Egypt

1 Air Quality

1-a Introduction

Preserving air quality is an absolute necessity to Man's life. Community development can never be achieved in the absence of a clean environment that protects Man's health and property. Air pollution has been defined as gaseous and solid impurities resulting from natural sources or human activities. The upsurge of developmental activities in Egypt over the last successive decades, which have reached their climax by the end of the twentieth Century, has led to a disturbance in the natural equilibrium of life and such increasing developmental activities have become a direct source of significant risks to Man's life and environment.

The Arab Republic of Egypt, recognizing the necessity of protecting its air form pollution is relentlessly working through all line ministries in cooperation with Ministry of State for Environmental Affairs (MSEA) to take all measures and procedures for improving the quality of air in Egypt.

1-b Pressures Affecting Air Quality

Egypt has witnessed many changes in the past few decades that led to the deterioration of air quality in all urban and rural areas. Egypt's population has doubled two and a half folds, reaching up from 26 to 70 million, since 1960. This increase resulted in significant increase in natural resource consumption and generation of all types of wastes, which are in most cases disposed of through open burning. Furthermore, increased demand on housing units to meet public needs consequently led to the expansion in construction industries and building material, such as cement and brick factories; a large percentage of which are concentrated in the South of Greater Cairo. This huge increase in population has also

led to a consequential surge in the number of vehicles, with associated significant increase in street traffic, exceeding 3 million vehicles in 2004.

Over the last 50 years, Egypt has also witnessed a substantial industrial breakthrough. Focusing on achieving a record in industrial development rates has led to a rapid expansion in the industrial sector without a preceding environmental planning. Thus many informal industrial activities prevailed within residential areas, such as smelters, bakeries and workshops. These increasing activities led to the emission of pollutants and chemical compounds and their diffusion into the ambient air adversely impacting human health and all ecological systems. About 5% of diseases in the world are attributable to indoor and outdoor air pollution.

Furthermore, we should also consider the impact of natural factors in Egypt represented in winds, sand storms carrying dust and sand from the desert engulfing most of the Egyptian cities located in the Nile Valley depression. These natural factors are considered as one of the stresses affecting the increased rate of suspended dust, dispersible into the air in Egypt. The atmospheric phenomena, which greater Cairo area is exposed to in autumn, represented in wind stillness and the dropping of the thermal change layer level, induced by the obstruction of pollutants and their dispersion, consequently causing severe pollution episodes in the troposphere, the nearest level to the earth surface, where pollutants accumulate and exceed their normal rate.

1-c Ambient Air Quality in Egypt and Monitoring Indicators

Air pollutants in Egypt are monitored through two MSEA monitoring networks. The First covers Greater Cairo area and monitors suspended thoracic particles dusts and lead. It includes 20 monitoring sites. The second covers most areas prone to air pollution in Egypt and monitors sulphur dioxide, nitrogen oxides, Ozone, smoke and carbon monoxide, in addition to suspended dusts. This network consists of monitoring stations in 42 sites countrywide. This network has been completed in mid 1999, taking considerable care that monitoring sites are representative of the different industrial, residential and traffic activities covering most of the important population agglomerations in Egypt exposed to the different air pollution sources. The following table shows the number and distribution of monitoring stations:

The operating station distribution

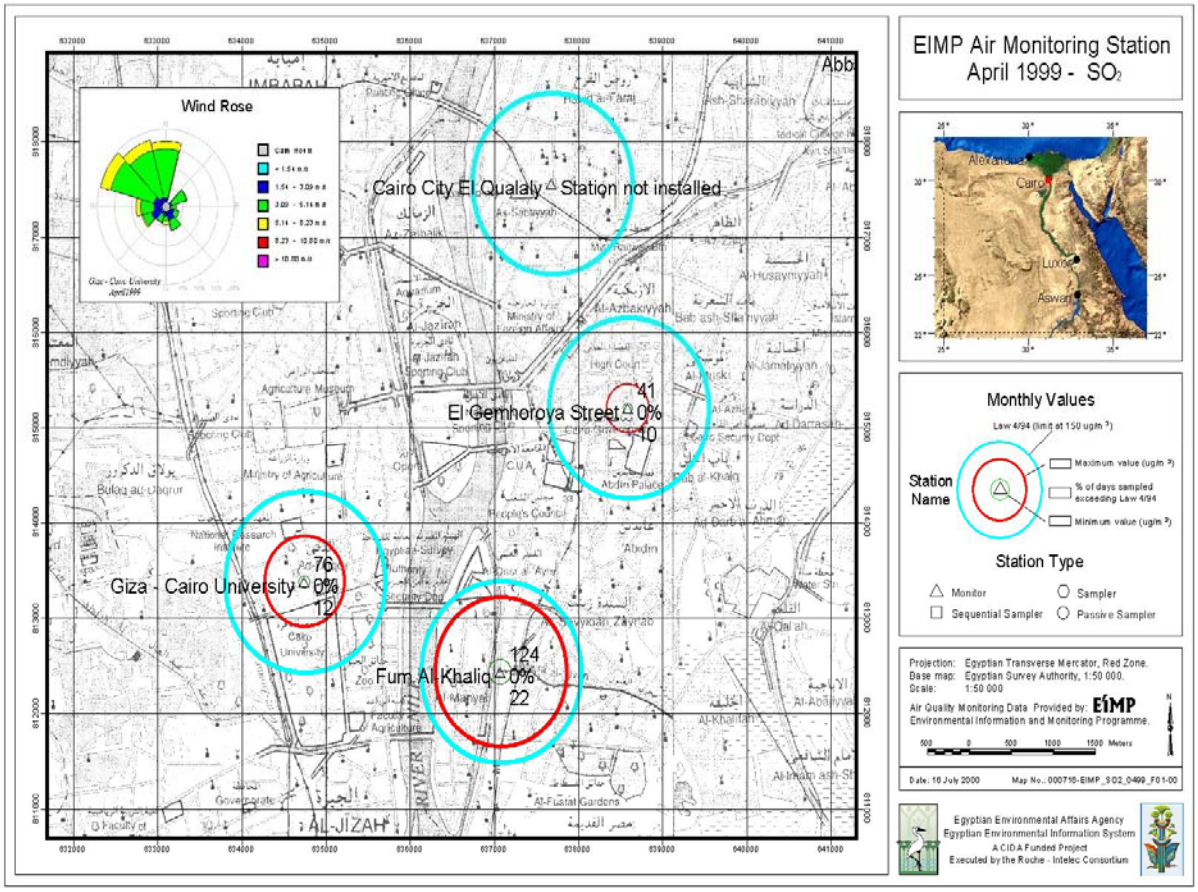
Area description	Cairo	Alexandria	Delta	Upper Egypt	Sinai & Canal Cities	Total
Industrial Areas	3	3	3	2		**11**
Urban Areas	1	1	2	4	1	**9**
Residential Areas	4	2	1	2	1	**10**
Traffic Areas	3					**3**
Buck Areas	1	1			1	**3**
Mixed Areas	2	1	1	1	1	**6**
Total	**14**	**8**	**7**	**9**	**4**	**42**

This network is constantly upgraded by EEAA within an integrated system that ensures network sustainability in line with air pollution monitoring networks international standards. The following table illustrates the annual average concentrations of key air pollutants in some of the air monitoring stations during 1999 and 2004, where figures show significant decrease in concentration of such pollutants in 2004.

The annual average concentration of key air pollutants in some monitoring stations in 1999 and 2004

Site	Pollutant Type							
	Sulphur Dioxide		Nitrogen Dioxide		Suspended Particles less than 10 micron		B.S.	
	1999	2004	1999	2004	1999	2004	1999	2004
Qulaly	87	66	75	67	232	163		
Gomhureya	59	32	42	63				
Abasseya	48	28				95		
Nasr City	16.4	9	84	55			47.4	43
Maadi	28	46	37	64				
Tibbeen	23	19	30	29	240	107		
South Tibbeen	37	18					112	58
Fum El-Khalig	86	42	61	73		185		
Shubra El-Khaima	87	61	51	40		167		
Giza	31	27	46	53				
Qaha				34		91		
6th October	9	4.4	32	12.2			25	26
10th Ramadan	11	4.5					23	23
Suez	18		31	36				
Luxor		12.4					67.5	46
Kum Umbo	36	144					64.7	294
Aswan	21	28						
El-Max	9	6.1	59	34				23
Alexandria 1	7	8	37	38		57		
El-Assafra	3	3.8	28					18.7
Ghiet El-Anab	6.5	5.2	41	29				20
Kafr El-Zayat	16.4	16	31	25				
Tanta	8	5.4						48
El-Mahala	21	8				44		
El-Mansoura	11	19	20	25				
Dumiat	8	5.2						45
Kafr El-Dawar	11	5.3						46.5
El-Shuhadaa	5	21		85				
Annual Maximum Limit	**60 µg/m^3**				**Daily average is 70 µg/m^3**			

µg = $1/10^6$

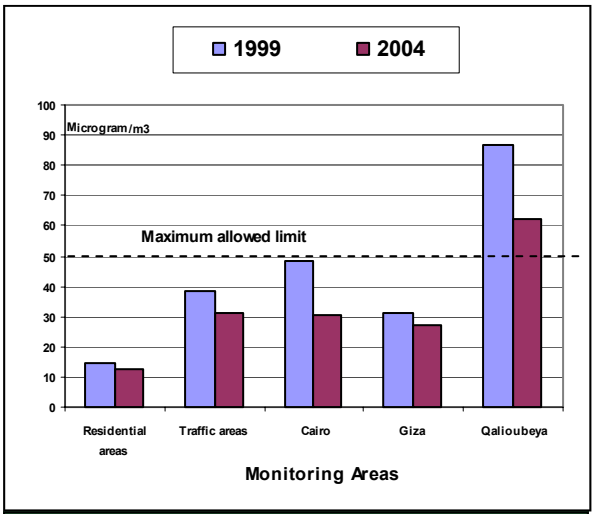


Air Pollutants Indicators in Egypt

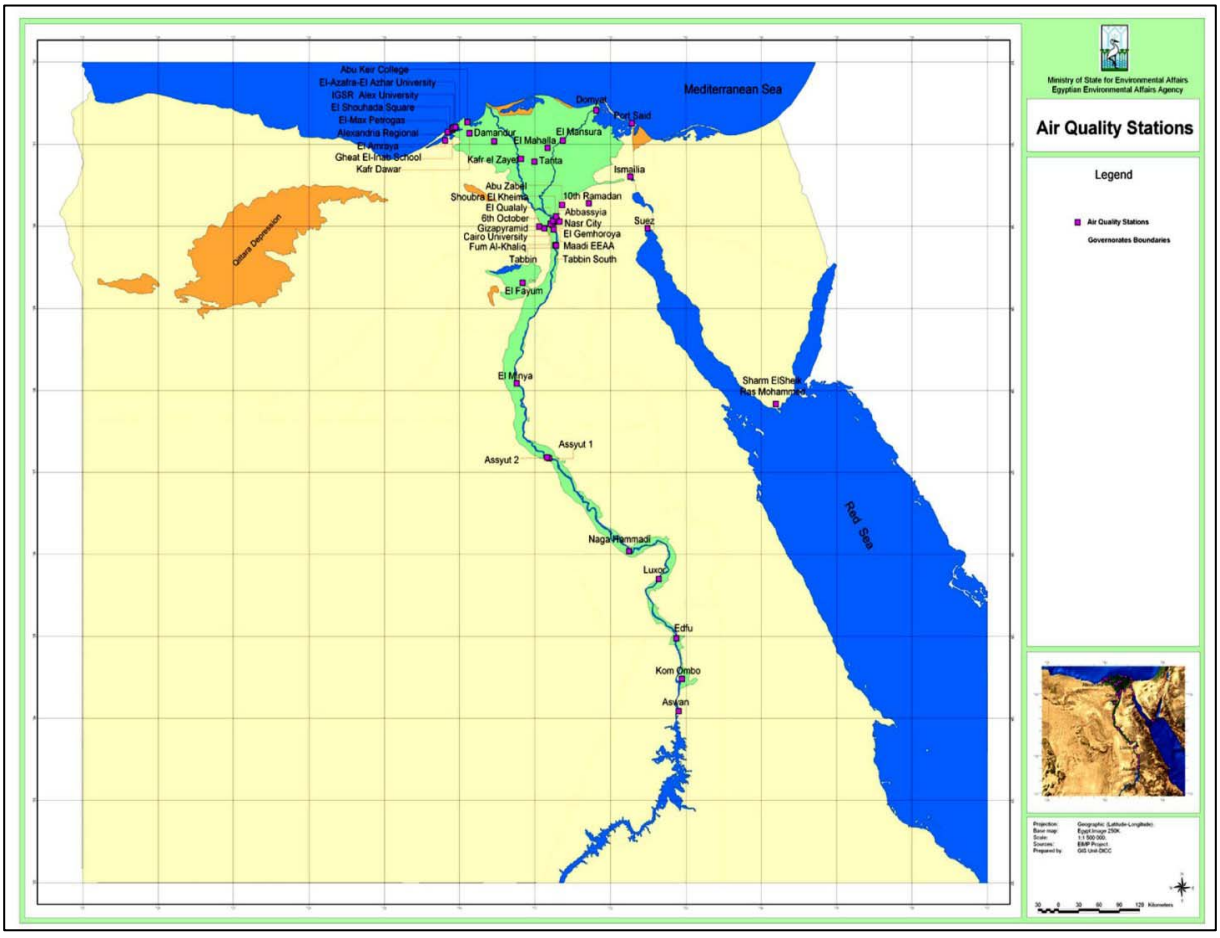
As a result of government air pollution abatement efforts in Egypt, monitoring stations average annual figures in majority of sites in 2004 indicated significant air quality improvement as opposed to 1999 monitoring figures as follows:

Sulphur Dioxide Gas

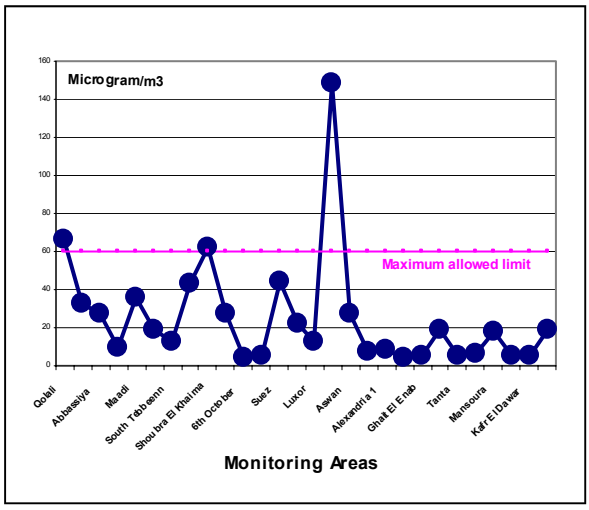
Air pollution monitoring stations results demonstrate remarkable improvement in most monitoring areas. This improvement is attributed to the prohibition of Mazot in bakeries in residential areas, in addition to lowering Sulphur rates in gasoline fuel used in vehicles, as well as the increased use of natural gas in electric power generation plants by 98% in Greater Cairo area. The following figure shows that Sulphur Dioxide gas concentrations in 2004 have become within permissible levels in most monitoring sites.



Comparison of SO2 concentration in 1999-2004



Air Quality Monitoring Stations in Greater Cairo Area:



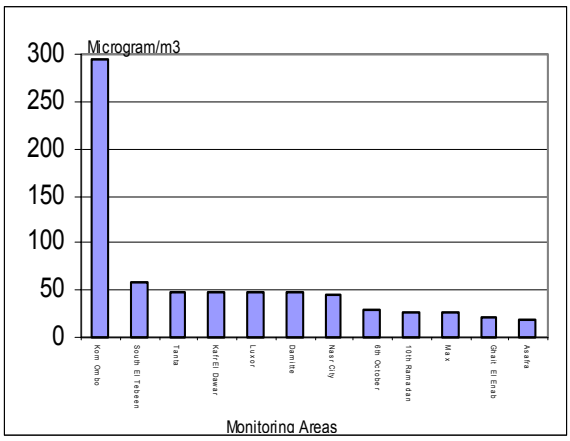
Annual average SO2 gas concentration in 2004

Nitrogen Dioxide Gas

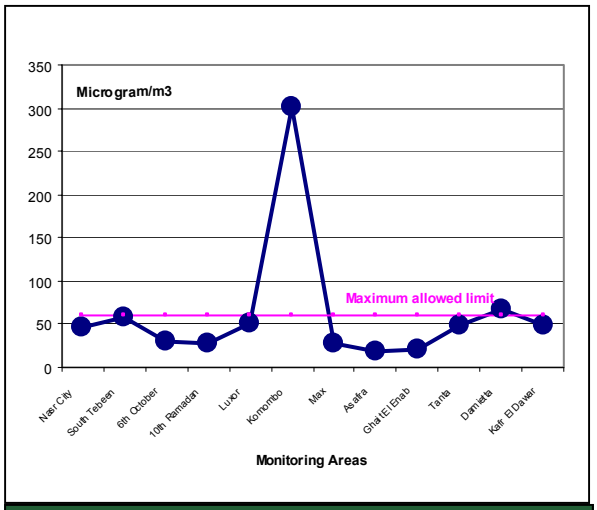
The results show an improvement by 14.8% in industrial areas. This is attributed to using high-efficiency fuel combustion systems. However, results show a slight increase of 0.33% in Nitrogen dioxide gas concentrations in traffic areas, which is attributable to a general increase in vehicles, and consequently in fuel quantities used in their operation. A 0.54% increase in concentrations was also found in residential areas due to the impact of fuel-burning emissions from industrial and traffic sites located in these areas.

Smoke

Monitoring figures countrywide show that, in 83.4 % of the monitoring sites, the annual average of smoke concentration during 2004 had not exceeded the permissible level given in the environment law 4/1994 executive regulations. Improvement was also reported in most areas, reaching 4.7% and 48.2 % in residential and industrial areas respectively, with a total improvement rate of 34.7 % at the level of Cairo governorate.



Annual Smoke Concentrations in Egypt in 2004

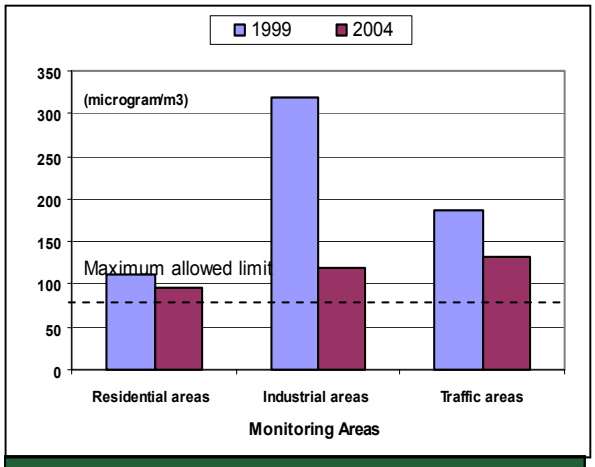


Annual average BS concentration in 2004

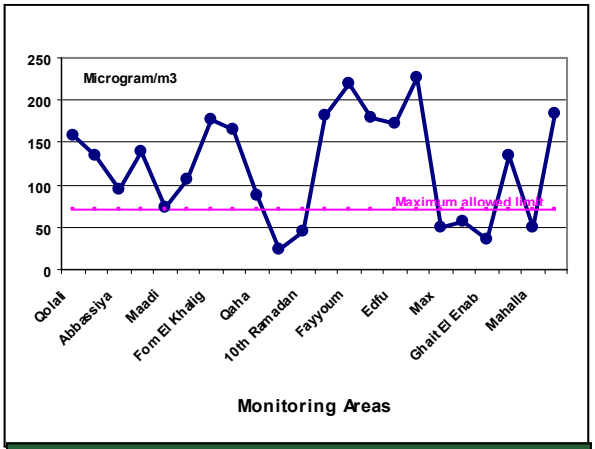
On the other hand, an increase of 354 % in smoke monitoring figures in Kom Umbo in Upper Egypt was reported. This could be attributed to the continuing burning of sugarcane wastes used as a power generation source in the Sugar Factory in Kom Umbo city, where the monitoring station is located near the factory.

Thoracic Particles

From measurements taken during 2004, we can notice that the concentrations of thoracic particles have decreased by varying degrees according to the type of activities concentrated around the different monitoring stations. However, they are still higher than environment law 4/1994 permissible limits.



Suspended chest dusts (PM10) comparison



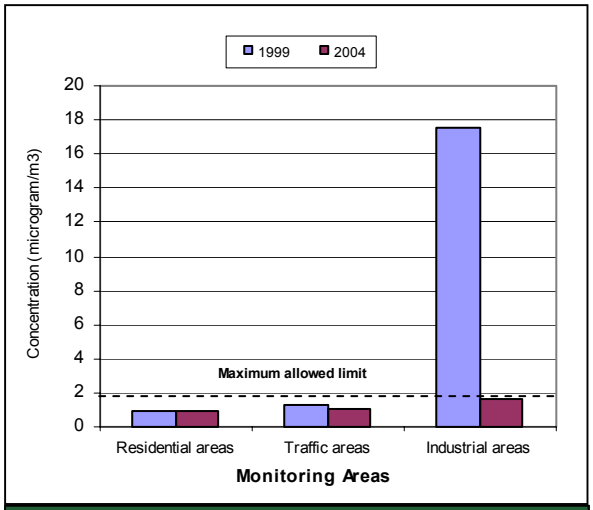
Annual average concentration of suspended chest dusts (PM 10) in 2004 in all Egypt

This improvement is attributed to the use of dust filters by industrial facilities, particularly cement factories, the prohibition of Mazot fuel burning, replacing it by natural gas in industries located within residential areas and the increase of compressed natural gas usage in industrial facilities and vehicles in general.

The above figure shows sever increase in thoracic particles concentrations (PM10), which appeared during autumn, from October till November 2004, in several Greater Cairo areas as a result of atmospheric phenomena. The figure also illustrates the clear increase of dust concentrations during sever air pollution episodes. Wind stability and thermal change cause concentrating pollutants in the air around the Troposphere (the nearest layer to earth's surface).

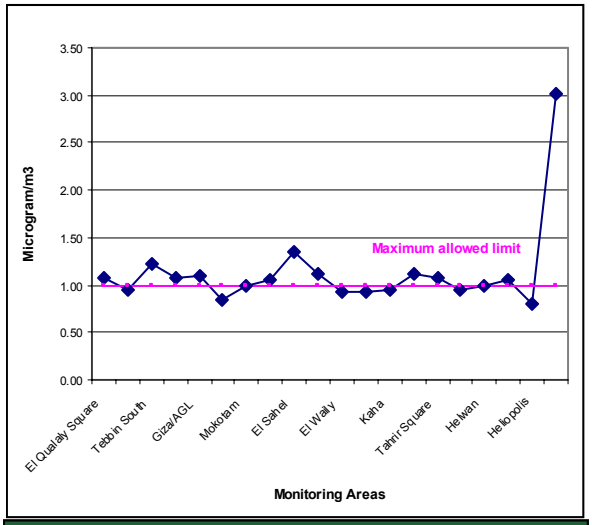
Lead

Results show that the annual average of lead in the air had not exceeded the permissible level during 2004 in 20 % of the monitoring sites in Greater Cairo.



Comparison of Lead (Pb) concentration

This confirms the continuous improvement in air quality as a result of using lead-free fuel in vehicles and moving lead smelters to the industrial cities and areas outside residential blocs, particularly in north of Greater Cairo (Shoubra El-Kheima), while applying modern technologies in melting furnaces and emission control. Lead monitoring improvement rates have reached 26 %, 4% and 4.5% in residential, industrial and traffic areas respectively.



Annual average lead (Pb) concentration in 2004 in different areas of Greater Cairo

1-d Sources of Air Pollutant Emissions in Egypt and The Most Significant Challenges

One of the most important sources of air pollution in Egypt is the incomplete combustion of fuel, whether from fixed sources, such as industrial facilities and open burning of wastes, or from mobile sources, such as vehicles. Industrial facilities in Egypt mainly depend on fuel oil, which is considered a major source for Sulphur dioxide, Nitrogen dioxide and Carbon monoxide gases and smoke emissions. Greater Cairo and Alexandria have large percentage of major and large air pollution

sources from industry, such as metal, chemical, cement and other industries concentrated in both cities.

Lead-free petrol

Fertilizers and Sulphuric acid industries are considered the most Sulphur and Nitrogen oxides producing industries, while, Lead smelters emissions contain very large quantities of Lead, considered one of the most hazardous air pollutants in respect of its toxic effect on several body organs, particularly in children.

Moreover, incomplete combustion of car engines fuel oil causes Nitrogen oxides, Carbon monoxide and smoke emissions, as well as hydrocarbons. These pollutants increase significantly with the increased number of vehicles and congestion in large cities, particularly Greater Cairo, where the number of vehicles in streets have exceeded 1.5 million during 2004, in addition to daily commuting vehicles. Worth noting, moving vehicles and cars were considered one of the most significant air lead-polluting sources in Egypt until 1999, when organic lead (Tetra-Ethyl Lead), added to petrol as a catalyst, was replaced by the more safer (MTBE) compound in the framework of governmental ambient air quality improvement efforts.

Continuous air pollutants monitoring results manifested an increase in volatile organic compounds as a result of using such compound, which the Ministry of Petroleum has replaced with a new environmentally less-polluting compound.

Suspended air dusts are considered the most hard-to-control pollutants such as the total suspended particles, dust fall, and thoracic particles. These dusts come from variable sources such as soil, roads, waste burning, fossil fuel combustion (especially Mazot, Diesel and Benzene) and all different types of industrial sources, in addition to the desert as a natural source of dusts. Inhalation of air, filled with concentrations of suspended dust exceeding legally permissible levels, affects the respiratory system and causes health risks such as bronchitis, chronic cough, chest diseases and disturbance in the functions of some other organs, in addition to its impact on fetus growth.

1-e Air Pollution Abatement Efforts in Egypt

The government exerts great efforts to minimize air pollution in Egypt through enforcing Law no.4/1994 on the environment and its executive regulation, in addition to concerted efforts and close cooperation between all line ministries in the field of using cleaner technology in the different industries, the compliance of existing industrial facilities and concentrating them in new industrial zones and cities away from populated areas, as well as eliminating all types of wastes burning and finding safe means for their disposal and/or recycling. Significant efforts are also being made for using less environmentally polluting energy alternatives such as natural gas, wind and solar energy.

Minimizing Vehicular Pollution

One of the important deliverables that had significant impact on minimizing pollutants produced by vehicular emissions in Egypt is the replacement by the Ministry of Petroleum of organic lead used to be added to fuel petrol (Tetra Ethyl Lead) by the less environmentally harmful MTBE compound as of 1999. MTBE has been further replaced by an environmentally less harmful compound after a relation has been established between the presence of high concentrations of volatile organic substances in the air and the use of MTBE in fuel.

As of 2002, the Ministry of Petroleum has also decreased Sulphur percentage in Gasoline from 0.65 % down to 0.41 %, in order to minimize Sulphur dioxide emissions into air.

Fueling Buses with Natural Gas

Moreover, in a collaborative effort with the Ministry of Interior, a decree for enforcing article 37 of law 4/94 executive regulations has been issued for testing vehicular emissions in Giza and Qalubeya Governorates as of June 2003. Accordingly, vehicular emissions testing, tune-up and certification procedures have been incorporated as part of vehicles licensing technical examination. Testing equipment has been provided for testing vehicular emissions in traffic departments in both Governorates. As of 2004, this program has been applied in Cairo Governorate within an integrated plan for implementing the program in the remaining governorates. A EEAA vehicular emissions testing model center have also been established for testing vehicular emissions. The center also contributes in developing studies on environmental pollution from vehicle emissions, calibration and quality control processes of technical testing equipment used in licensing departments and training testing officers in the relevant authorities on vehicular environmental examination.

Furthermore, EEAA has also called for expanding on the use of Compressed Natural Gas (CNG) as an eco-friendly fuel in vehicle operation and industrial processes owing to its environmental impact on pollution reduction as well as its economic benefit, as emissions produced from burning natural gas are lower than those from liquid fuel, moreover, the cost of one cubic meter of natural gas is equal to half the cost of one liter of petrol. The following values show the results of pollutant emission measurements as a result of natural gas burning as opposed to diesel fuel:

Percentage of Compressed Natural Gas (CNG) emissions compared to diesel	
Nitrogen oxides	1/10
Carbon monoxide	1/25
Hydrocarbons	1/100
Burning natural gas does not cause snug	

Through the Cairo Air Improvement Project (CAIP) many programs for using CNG by converting 50 buses to operate on CNG assembled under supervision of El Nasr Car Company. These buses have been operated under supervision of the Public Transportation Authority and Greater Cairo Bus Company. Two garages have also been established for these buses each having an

in-house CNG fueling station, in addition to the establishment of an emissions testing, tune-up and certification center for testing the performance of heavy vehicles (buses and Lorries) at Misr Petroleum Company of the General Petroleum Authority. Also, 55 thousand private vehicles and taxis have been transformed to operate on CNG and 87 fueling stations have been established for this purpose as shown in the following table:

Coordination is also underway for transforming another 2000 vehicles to CNG operation in several governmental authorities.

CNG-Operated Bus

Minimizing Industrial Pollution

Preparations are currently being taken to transform 50 clay brick factories to CNG operation instead of Mazot. Coordination between the Ministry of Petroleum and the Ministry of Electricity and Energy has been implemented for transforming more than 98% power plants in Greater Cairo to CNG operation. Usage of Mazot as fuel has been prohibited in bakeries in residential areas to be replaced by gaseous or liquid CNG.

Furthermore, projects are being implemented through bilateral cooperation between Egypt and donor countries for assisting the industry in environmental compliance and the use of cleaner production technology.

Current development in the number of CNG operated vehicles

Description	2000	2001	2002	2003	2004
Number of Public Buses CNG fueling stations.	2	2	2	2	2
Number of vehicles CNG fueling stations.	17	47	74	76	87
Number of CNG transformation Centers.			32	34	
Number of companies working in vehicles CNG transformation.	2	2	3	5	5
Number of CNG-operated public transport buses in Greater Cairo.	25	39	58	58	58
Number of vehicles transformed to CNG		30,000	41,000	46,000	55,000

Minimizing Pollution from the Burning of Wastes

Significant efforts are being made by the State to counter several types of waste burning. Tangible activities are being made for implementing Integrated Solid Waste Management Systems (ISWMS) in several Egyptian governorates including Greater Cairo and Alexandria. Furthermore, a plan has been set up for the identification, clean-up and safe disposal of historical waste accumulations to prevent their intentional or natural burning.

With respect to the disposal of agricultural wastes, which has recently been posing a significant burden on both farmers and the State, due to the fact that burning for the disposal of such wastes has recently become a normal practice by farmers leading to severe air pollution. In this respect, the State is exerting great efforts as of 2001 for

recycling and safe disposal of agricultural wastes (rice straw).

MSEA has also concluded and agreement with "Sichuan Institute for Research and Agricultural Machinery Design" in Chengdu Province, the People's Republic of China, for the supply of 2 units for transforming rice straw into a gas that can be used as fuel for domestic uses aiming at the integrated usage of rice straw This agreement was signed in the framework of the efforts to introduce modern technology for utilizing agricultural wastes and eliminating one of the "black cloud" causes in Egypt.

1-f Future Vision

Within the framework of the air quality improvement plan developed for Egypt, and in line with efforts for achieving sustainable development, which call for concerted efforts, plans and mechanisms had to be developed for minimizing pollutants and emissions generated into the ambient air and adversely impacting people's health through:

1. Encouraging the use of CNG as an alternative eco-friendly fuel in transportations and industrial facilities, eventually leading to the reduction of Sulphur dioxide and thoracic particles emissions. Thus, minimizing health risks resulting from increased pollutant concentrations.
2. Expanding the environmental monitoring of ambient air pollution to include all new sites of human activities.
3. Strict enforcement of ambient air pollutant standards and maximum benchmarks and emissions through regular revision and enforcement of such standards and benchmarks, in order to provide citizens with more protection.
4. Implementing some precautionary measures for controlling air pollutants through facilitating loans and funding for industrial facilities that prove genuine willingness to minimize their industrial pollution by implementing pollution control measures.
5. Continuing support for relocating polluting industries outside populated cities to specially planned industrial zones, while implementing remediation measures in the locations from which lead smelters have been removed to prevent lead pollution migration to surrounding residential areas.
6. Encouraging the use of catalytic converters in vehicles to minimize their polluting emissions.
7. Providing Customs exemption to eco-friendly equipment to encourage their utilization.

2 Fresh Water

2-a Introduction

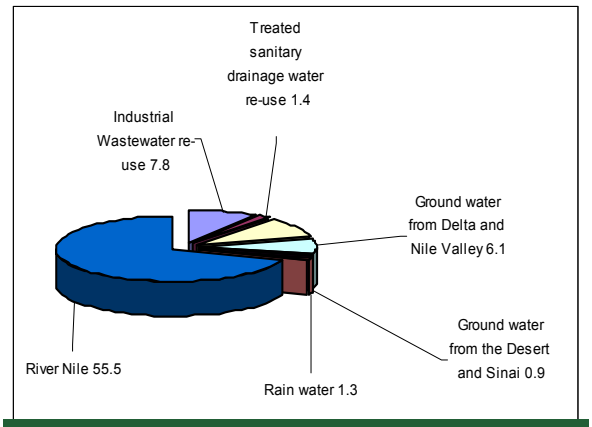
Water resources constitute one of the development pivots in Egypt. They are essential elements of environment, it was necessary to pay more attention to preserving water resources, and exerting relentless efforts to perfectly use them and maintain their quality. Due to limited water resources and the increasing water demand, particularly that current conditions contribute greatly to the pollution of such water resources as a result of the unplanned development and its related industrial, agricultural, urban and tourism activities, it is necessary to the government to consecrate massive efforts to preserve water resources and protect them against pollution.

2-b Water Resources and their Use in Egypt

In Egypt, the main water resource is the River Nile. It constitutes 96% of the renewable water resources in accordance with the Agreement on Full Utilization of the Waters of the Nile concluded between Egypt and Sudan in 1959. Under this Agreement Egypt's annual quota of the Nile water is 55.5 billion cubic meters, while Sudan's is 18.5 billion cubic meters. Moreover, the volume of seasonal rains on coasts and Sinai is 1.3 billion cubic meters annually. Other water resources are the renewable and non-renewable groundwater in deserts. Current water uses are a mix of direct utilization of main resources, and indirect one; namely reuse of agricultural drainage and treated wastewater.

As the following chart shows, the direct use of renewable water resources is represented in 55.5 billion cubic meters of Nile water, 1.3 billion cubic meters of rains, and 0.9 billion cubic meters of non-renewable groundwater in Eastern and Western De-

serts and Sinai. Indirect use is represented in 6.1 billion cubic meters of renewable groundwater in Nile Valley and Delta, 7.5 billion cubic meters of agricultural drainage reuse, 7.8 billion cubic meters of industrial effluents reuse, and 1.4 billion cubic meters of treated wastewater. The use of water resources in different sectors includes agriculture (58.65 billion cubic meters), industry (7.5 billion cubic meters) and drinking or household (4.75 billion cubic meters) in addition to Nile navigation and power generation.



Direct and Indirect Use of Water

Source: Ministry of Water Resources and Irrigation (MWRI)

2-c Pressures Placed on Water Resources

Increasing water needs are due to population growth, standards of living improvement, and the State policy aiming at reclamation of new lands, encouragement of industry and maximization of clean water accessibility. Closing the gab between the available water resources and the increasing water demand by the various economic sectors is a major challenge facing Egypt currently. However, Egypt endeavors to make the optimum use of potable water and non-conventional water resources such as desalination of seawater, reuse of agricultural drainage, and treated wastewater.
The Government aims to improve water resources management and increase the efficiency of their use through further utilizing modern irrigation methods to decrease the waste. Raising grassroots awareness with respect to the importance of rationalizing the consumption of water in irrigation, industry and household, and protecting water resources against pollution, as well as involving people in water policies formulations.

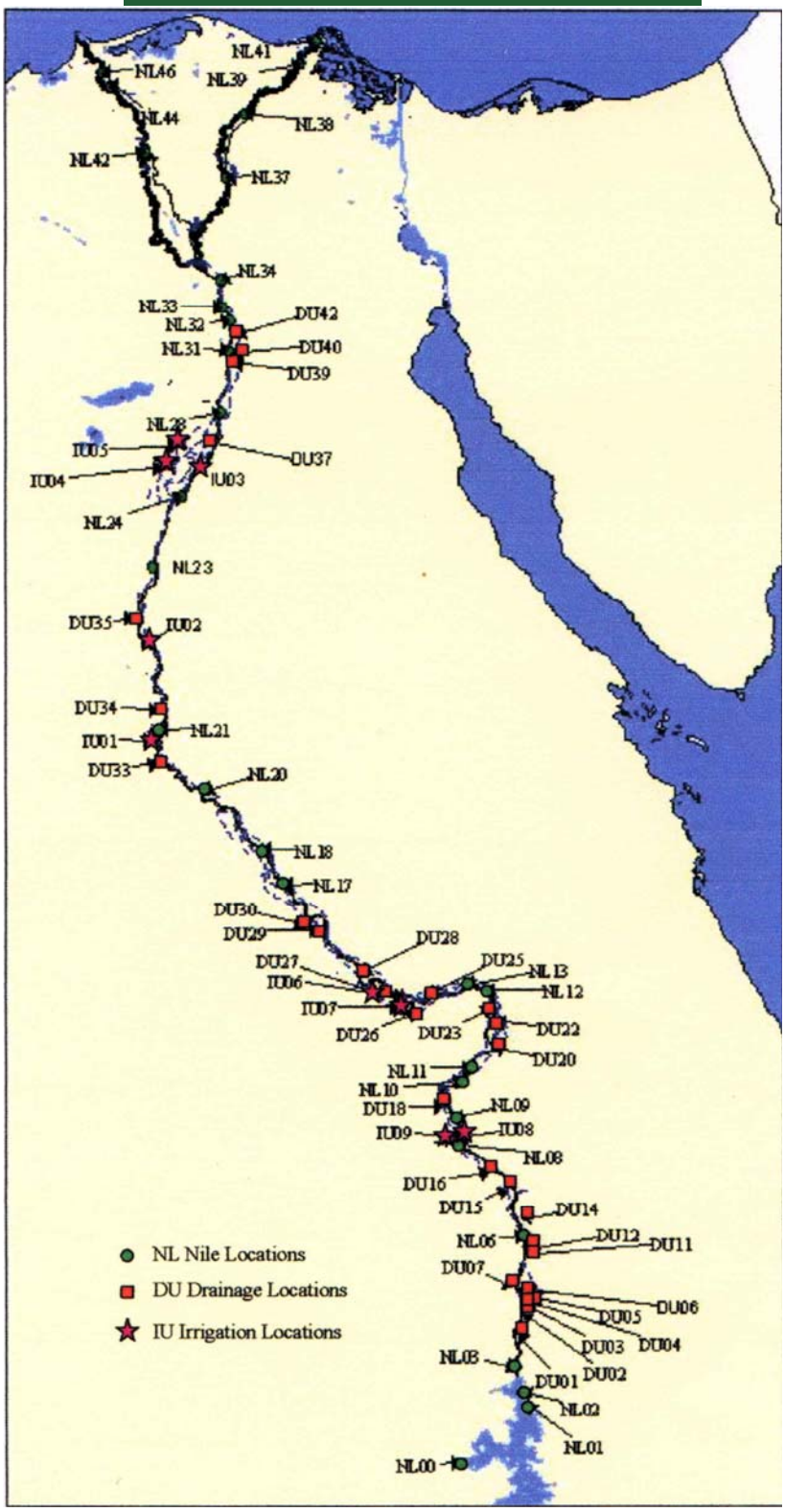
The agricultural sector is the largest water consumer in Egypt. Its quota is almost 85% of the total water demand.

During 1980- 2000, cultivated area has increased from 5.8 million acres to 7.95 million acres. Yield productivity jumped by nearly 180%. Rice and sugarcane are the largest water consuming crops in Egypt. Agricultural expansion has contributed effectively to reducing poverty and hunger, and providing food security.

With population growth, however, any attempt of agricultural expansion would require more irrigation water provision. This necessitates improving irrigation water use, agricultural drainage water reuse, and groundwater utilization. National programs have been adopted to improve irrigation systems, reuse of agricultural drainage and treated wastewater, and make the optimum use of groundwater.

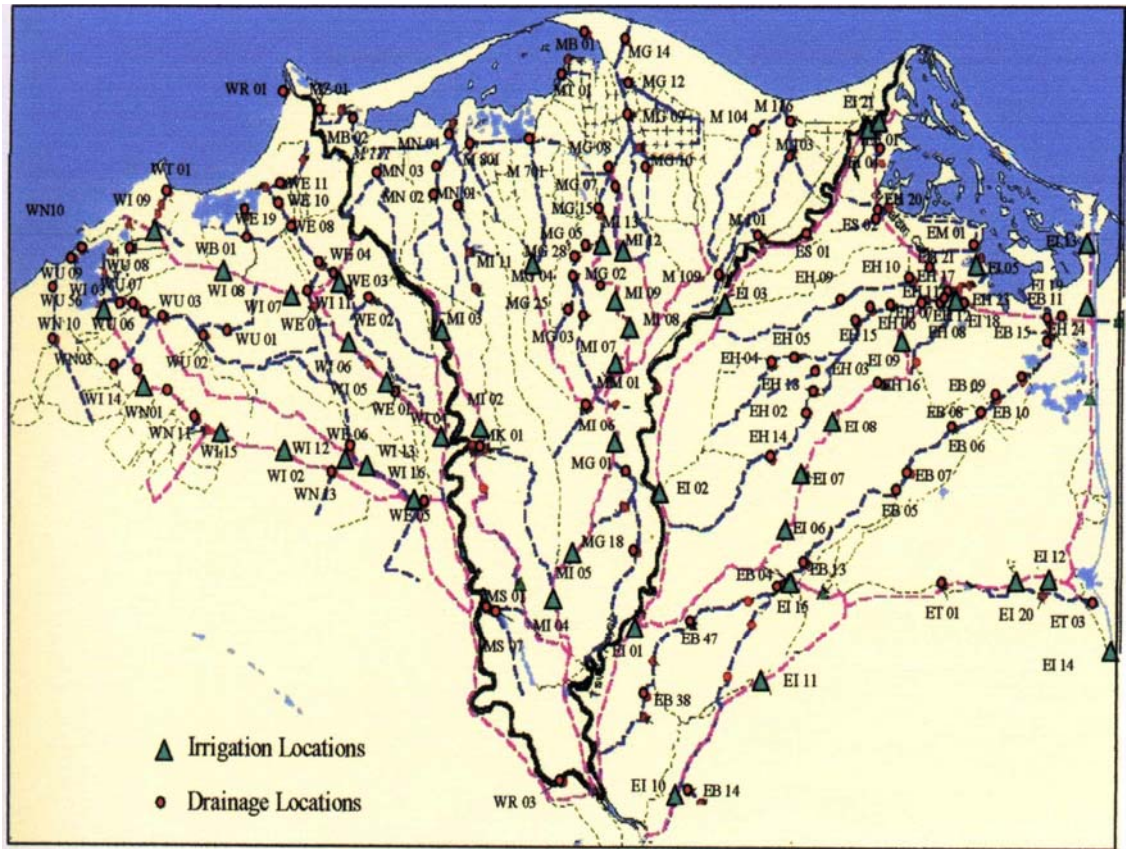
Water quality differs according to locations, flows, water uses, population density, type of pesticide and fertilizers used in cultivation, sanitary drainage and industrial effluents systems, in addition to social and economic conditions. Therefore, preserving the good quality of water is the major environmental challenge in Egypt.

Water Quality Monitoring Network along the Nile



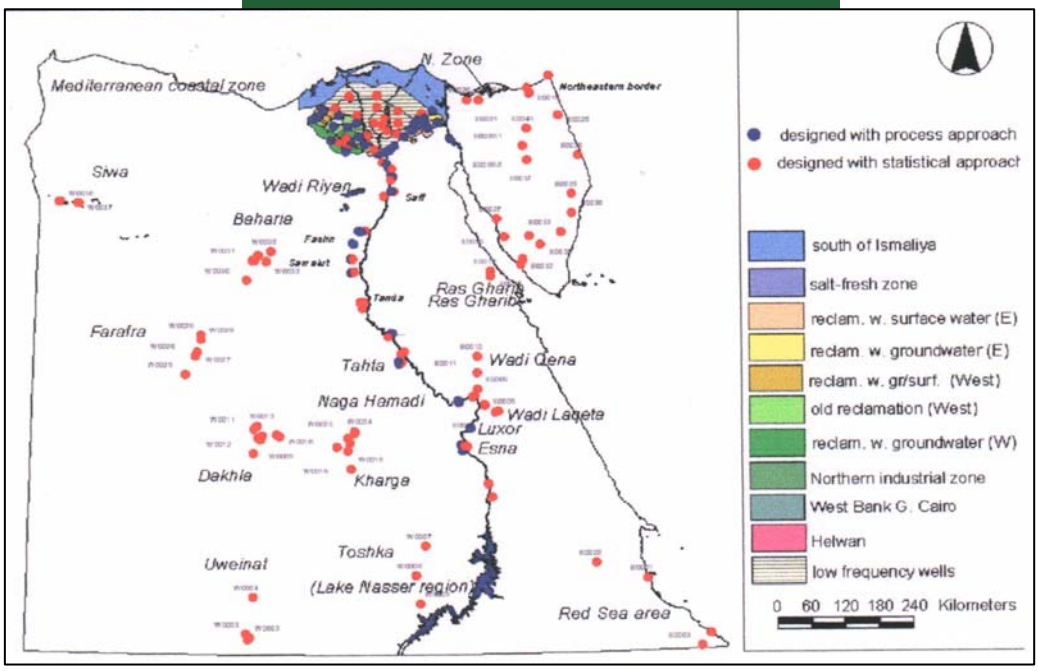
Source: MWRI The National Water Provision and Quality Improvement Project (1992-2005)

Canals and Drains Water Quality Monitoring Network



Source: MWRI The National Water Provision and Quality Improvement Project (1992-2005)

Underground Water Quality Monitoring Network



Source: MWRI The National Water Provision and Quality Improvement Project (1992-2005)

2-d Current Status of Egypt Water Quality

Ministry of Water Resources and Irrigation (MWRI) has, through the National Monitoring Program for assessing and monitoring Surface and Underground Water. 320 surface water sites along canals, main canals, the Nile, Lake Nasser, and drains located in strategic locations, in addition to 250 sites along groundwater aquifers network. MWRI monitors the general indicators of water quality including natural, chemical and biological parameters (such as salts, cations, anions, bacteriological and organic pollutants, Oxygen percentage, heavy elements, and other).

Ministry of Health (MoH) regularly monitors the quality of the Nile water in 10 governorates; Aswan, Sohag, Asiout, Menia, Beni Suef, Gharbeya, Daqahleya, Damietta, Alexandria, and Port Said. While the Egyptian Environmental Affairs Agency (EEAA) runs annual monitoring program for Nile water quality. Monitoring results have indicated slight increase in organic substances above usual limits at some monitoring points in Aswan during certain months represented by Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD), distinctively at the meeting point of Khor Elseil (flood catchments) drain and Kom Umbo Sugar Factory drain with the Nile. However, it was noticed an increase in suspended substances at some points above approved limits which may be due to the existence of cultivation, Kom Umbo Sugar Factory, Edfo Sugar Factory, and sanitary drainage from some villages, towns and floating hotels. As a reference, a monitoring site at Nasser Lake has been chosen.

Lake Nasser

Lake Nasser is considered Egypt's main water reservoir. It regulates the Nile flooding before the Aswan High Dam with storage capacity of 162 billion cubic meters between levels of 83.00 to 182.00. Eighty - five catchments are located along the Lake of which 48 are on the east side and 37 are on the left. Lake Nasser extends 350 km along Egyptian land, and 150 km in the Sudan. Due to tourism, navigation and fish processing related industrial and agricultural activities, the Lake has acquired a major development and economic importance.

Lake Nasser Pollution Sources

Lake Nasser pollution sources are represented in the wastewater of urban establishments, solid waste, and bilge mixed with oils and fuel resulting from tourism and navigational activities. Currently, wastewater of existing buildings is collected and transferred to Aswan tree forests.

The Lake's water quality is regularly monitored. It has been found that all results fall within the Nile water quality approved limits. Lake Nasser is the reference point for the remaining monitoring points along the Nile course.

Measures Adopted to Protect Lake Nasser

- Issuing Ministerial Decree no. 209 of 2005 on the establishment of Coordinating Committee for licensing Lake Nasser Developmental activities in accordance with the controls and standards set forth by the Prime Minister Decree.
- Issuing in collaboration with the Ministry of State for Environment Affairs (MSEA) licensing standards by decision of the Committee formed under

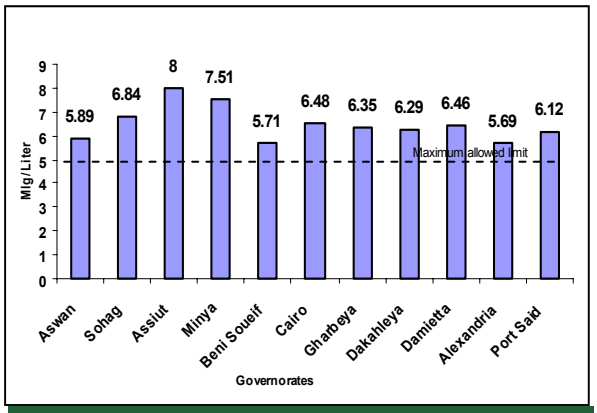
Prime Minister's Decree no. 203 of 2002. The standards allowed seasonal cropping, which depended on soil moisture without using fertilizers, chemicals or pesticides, leaving a 2 km protection strip along the Lake above level 182, while prohibiting the implementation of permanent agricultural projects.

- Application of the Ministerial Decree no 199 and 906 of 1990 issued by the Ministry of Agriculture deeming such areas as organic cultivations, and prohibiting the use of pesticide therein.
- The Egyptian Environment Affairs Agency (EEAA) has coordinated with Aswan governorate to prohibit the use of chemicals in combating Bilharzias snails in Lake Nasser, and to rely only on mechanical methods.
- EEAA Aswan Regional Branch Office (RBO) monitors pollution sources from Misr/Aswan Company for Fishing and Fish Processing. Recently, the factory has complied with environmental requirements on 21st March 2003. Effluents are no longer discharges into the Lake. The factory transfers its effluents (60 cubic meters/day) to the tree forest prepared for this purpose in the desert backlog.
- Implementation of a 30 million EGP sanitation network is currently underway way to which urban buildings shall be connected upon its completion under EEAA supervision.
- Organizing joint campaigns by the concerned agencies, and conducting unannounced inspection on tourist and floating boats.
- Developing a general framework that sets licensing rules and conditions for any activity in the Lake.
- Conducting a comprehensive study on the spreading of crocodiles in the Lake.
- Issuing limitations and controls for preserving the Lake, utilizing its natural wealth, and regulating hunting of water birds, while prohibiting all animal hunting activities, including the Nile crocodile.
- Issuing EIA process guidelines.

In other governorates, results came to be within the accepted limits for the Nile, except for an increase in the percentage of organic substances and suspended particles in some points over permissible rates due to the discharge of industrial effluents into the Nile, or the lack of sanitation networks in some areas. Thus, wastewater is transferred by emptying vehicles and dumped into the nearest watercourse. Soluble salts levels were also found to be higher than permissible limits in some points due to the existence of some drains pouring into the Nile course.

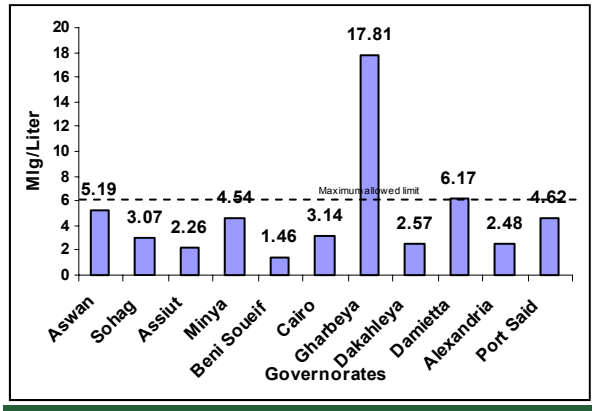
The outcomes reached by different points as regards the Nile water along any governorate reveal that the river water suffers sometimes from an increase in the percentage of organic substances and ammonia, as well as nitrite and nitrate concentrations in the Nile indicating that presence of wastewater discharges from villages and housing blocs located along the two sides of the agricultural drains, discharging in some areas along the Nile. Al-Rahawy drain is considered one of the pollution sources.

The following charts shows comparison conducted among governorates as to the percentage of dissolved Oxygen, Biological Oxygen (BOD) and Chemical Oxygen (COD).



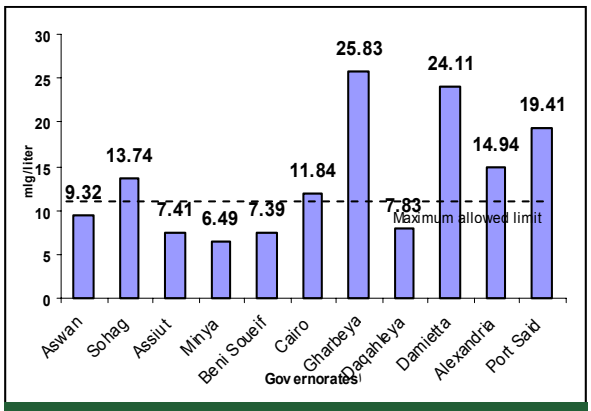
Comparing dissolved oxygen (DO) among all Egyptian Governorates in 2002

Source: Ministry of Health (MoH)



Comparing Bio-oxygen dissolved (BOD) among all Egyptian Governorates in 2002

Source: Ministry of Health (MoH)



Comparison of Chemical Oxygen Demand (COD) Among Egypt's Governorates, 2002

Source: Ministry of Health (MoH)

As a result of water analyses in Rashid Branch at Kafr Elzayat city, it was directed not to license any sanitation or industrial establishment to discharge wastewater or effluents in Rashid Branch.

Al-Rahawy Drain

Al-Rahawy Drain is considered one of the main pollution sources on Rashid Branch. The drain is filled with organic pollutants because of the wastewater discharged by villages located on its sides, either directly or indirectly via drains pouring into it. Moreover, more than 400 thousand cubic meters of untreated wastewater in excess of Abu Rawash Wastewater Treatment Plant capacity are discharges daily in Al-Rahawy drain. Other industrial pollution sources from some of small enterprises can also be found along the drain.

Fish cages in the Nile are considered another pollution source, as some use male hormone to increase the fish productivity in a non-codified manner, or use unapproved fodder produced by unlicensed factories. Water analysis undertaken by the Ministry of Health (MoH) in the fish cages area indicated water pollution. Thus, the People's Assembly Committee on Local Administration and Popular Organizations held a number of meetings to discuss this problem, and came up with the decision to remove all fishing cages from the Nile.

The National Water Provision and Quality Improvement Project implemented by the MWRI National Water Research Institute (NWRI) undertakes periodic monitoring of Nile, canals, drains and groundwater wells water quality through a monitoring network.

Generally, water quality in most of the main canals with respect to dissolved oxygen, and the total of dissolved substances remains within the internationally permissible limits. However, water quality in agricultural drains exceeds those limits, particularly in the Delta drains. The following chart shows that Nile water salinity increases further away from High Dam due to the existence of pollution sources.

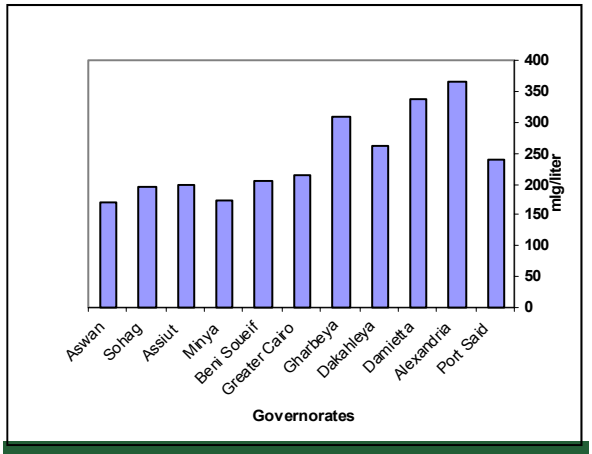
Manzala Lake water quality indicates a decrease in dissolved oxygen percentage, and increase in dissolved salts, in addition, the percentage of all elements is higher than the accepted limits for the Nile, which leads to fish deaths, which is attributed to:

- Inefficiency of connection channels between the Lake and the sea, disallowing proper renewal of Lake water.
- Increased wastewater discharges into the Lake (Bahr Elbaqar Drain).
- Water from agricultural drains containing pesticides and chemical fertilizers. Increased percentage of industrial wastes and effluents.

2-e Water Resources Major Challenges

Environment and water resource pollution is the most important and major challenge. Water resources environmental challenges facing water management in terms of water quantity and quality in Egypt can be summarized as follows:

- Consumption rationalization, reuse and provision of additional unconventional water resources.
- Expansion of sanitation coverage in various communities to avoid watercourses pollution in which this untreated or insufficiently treated wastewater is discharged.
- Identification of alternatives for industrial effluents discharge in canals and drains, as well as the adoption of at-source treatment principle.
- Identification of alternatives for solid waste dumping into water drains.
- Provision of safe drinking water for all urban and rural populations.
- Lack of awareness as to the importance of protecting water against pollution and loss.
- High costs of water projects.
- The obsolescence of applicable legislations on protecting watercourses against infringements and water quality against pollution.

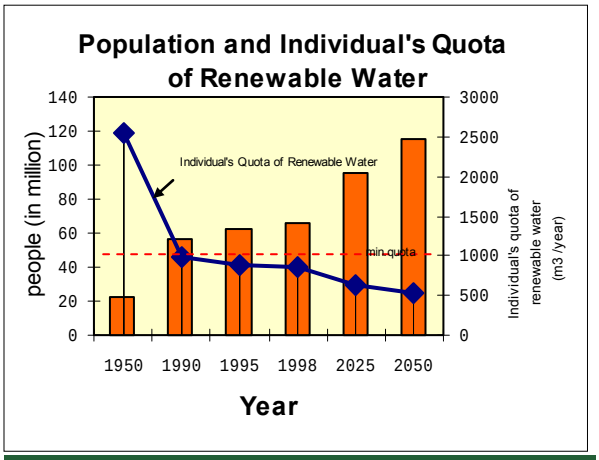


Comparison of dissolved Salts among Egypt's Governorates, 2002

Source:

* National Nile Water and Tributaries Monitoring Network Results, Annual Report, 2002.

* Ministry of Health and Population – Central Department for Environmental Affairs – Environ mental Monitoring and Work Environment Studies Center.



First Challenge: reduce consumption, re-use, and providing untraditional extra water resources

Source: Egypt and Global Water Objectives, 2002

Second Challenge: Identifying alternatives for wastewater discharges into watercourses

Third Challenge: Identifying alternatives for industrial discharges into watercourses

Fourth Challenge: Identifying alternatives for solid wastes dumping into watercourses

2-f Efforts for Meeting Water Environment Challenges

Recognizing the importance of having in place a legal framework to govern the mechanism of preserving environmental components in Egypt, the Environment Law no. 4 of 1994 has been issued, and is being enforced under MSEA and EEAA supervision for the purpose of protecting the environment in Egypt. However, Law 4/94 makes reference to Law no. 48 of 1982 on the Protection of Water Resources in Egypt against Pollution authorizing MWRI the supervision of its implementation in cooperation with other line Ministries. Nonetheless, Law no 12 of 1984 is the law that governs the irrigation and sanitation systems management and operation in Egypt. Currently, a study is being conducted for amending some of the articles in this Law to increase the penalties against on violations and water loss, while increasing the role of private sector and civil society participation (Water Users Associations) in operation and maintenance activities.

Law no 48/1982 has set forth the roles mandated to line ministries. The Ministry of Housing and Urban Communities represented in the National Organization for Po-

table Water and Sanitary Drainage (NOPWASD) is given the responsibility of developing one or more models for liquid waste treatment units generated by industrial, domestic and other facilities in order to ensure compliance with specifications and standards. A license applicant is thus required to submit to MWRI proof that a sanitation treatment unit is in place, as well as submitting a certificate issued by the Sanitation Authority stating that they have inspected and verified the validity of the said unit.

When selecting and using chemicals for combating agricultural pests, the Ministry of Agriculture (MoA) shall ensure that using such chemicals would not pollute water streams they are discharged into, either directly through spraying, or indirectly through mixing with drainage in accordance with MoA, MWRI and MoH approved standards.

MoA shall cooperate with MSEA, while, MSEA shall, in collaboration with the Ministry of Interior (MoI) Environment and River Police, conduct ongoing inspection campaigns on the different activities along the watercourse, charge fines, remove pollution causes and take appropriate legal measures against violators.

The Ministry of Health conducts analyses in the Ministry labs following samplings from liquid wastes and treatment units. EEAA is then notified of the results that are incompliant with controls, standards and specifications governing discharges of such treated liquid waste in watercourse.
Cooperation is also undertaken with the Ministry of Tourism (MoT) by requiring owners of floating housing units and tourist boats to safely dispose of their wastes or collecting them in specified sites, emptying them and dumping them either into the sewage system or sanitation collection systems. They are prohibited from discharging their wastes into the Nile or waterways.

MSEA works in collaboration with MWRI in supervising the protection of the Nile and watercourses against pollution. They also monitor the activities that generate wastes discharged into water streams to ensure the availability of waste treatment units in such a way that comply with legally decreed specifications and standards. Environment and River Police also supervises the removal of all pollution sources.

Among the challenges facing Egypt and most countries of the world is provision of clean water and sanitation services to all citizens. In September 2000, all United Nations member states (191 states) have pledged to fulfill the Millennium Developmental Goals by 2015, which are:

- Eradicate extreme poverty and hunger.
- Achieve universal primary education.
- Promote gender equality and empower women.
- Reduce child mortality.
- Improve maternal health.
- Combat HIV/AIDS, malaria and other diseases.
- Ensure environmental sustainability.
- Develop a global partnership for development.

The seventh goal refers to strengthening environmental sustainability. This objective seeks to reduce the percentage of those who have no access to safe drinking water by 2015 by 50%. It also seeks by 2020 to achieve significant improvement in the lives of 100 million residents in poor areas. Currently, one billion persons worldwide lack access to clean water, and 2.4 billion persons suffer from the lack of basic sani-

tation services.

The Ministry of Housing and Urban New Communities in cooperation with the different governorates are responsible for the provision of potable water and sanitation infrastructure. Despite rapid population growth in Egypt, the percentage of those having access to safe drinking water has increased during the last two decades due to major investments in the water sector. According to the Annual Statistical Report for 1993-1999, 90% of houses in urban communities and 72% houses in rural areas have been connected to clean water, covering 213 city (100% coverage) and 1607 villages (32% of the total number of villages). However, 2368 villages (56% of the total number of villages) have insufficient access to water, while 238 villages (6% of the total number of villages) still have no access to drinking water. In densely populated cities, such as Alexandria, Cairo, Port Said and Suez, clean water has been connected to 91.8% of households. Rural areas, particularly in Upper Egypt, are the most areas lacking appropriate services. Households that have access to clean water in rural areas represent 59.2% only. Areas with no access to clean water satisfy their water needs through underground water wells, as well as through water peddlers, or directly from canals and the Nile.

Although the comprehensive coverage of water availability was rapid and effective, sanitation services coverage remained slow in the various areas. Sanitation network coverage rates, though improved in urban communities, are still much lower than the coverage of water supply works. Currently, 67 cities (32% of the total number of cities) and 170 villages (4% of the total number villages) have access to sanitation services. According to the Statistical Annual Report for 1993-1999, sanitation coverage in urban governorates has reached 66.60% of the population, while it remains lower in rural areas. Sanitation in North Egypt covers 23.5% of the population and only 9.98% in Upper Egyptian urban areas. Sanitation coverage in the densely populated cities reaches 26.84% of the population.

In areas where sanitation is not available, wastewater is usually collected in septic tanks specially designed for decomposing wastewater via organic reactions. Such tanks usually leak or flow due to non-regular emptying. Even if emptied, they are difficult to dispose of safely in appropriate sites. Sanitation is the main reason of water pollution and the creation of unhealthy living conditions.

As regards drinking water, during the last twenty years, 1900 drinking water treatment stations were built to increase water production capacity from 5.8million m^3/day (120 liter/day per capita) to 18million m^3/day (275 liters/day per capita) covering 90% of the population. As for sanitation, 2002 wastewater treatment plants were established to increase treatment capacity from 1 million m^3/day to 8.2 million m^3/day (from 25 liters/day per capita to 110 liter/day per capita).

There are 40 industrial facilities directly discharging approx.190 million m^3 of effluents into the Nile. This has affected water quality from Aswan to Cairo. Most industrial activities discharging into the Nile, including chemical, foodstuff, textile, engineering, metallic and thermal industries are concentrated in Greater Cairo; Helwan, Shubra El-Kheima, Giza, and Basateen. They produce 127 million m^3 of contaminated water annually, of which 80 million

m^3 are discharged into the Nile and its canals, while the rest is discharged directly or indirectly into agricultural drainage canals.

MSEA extensive efforts to control effluents discharge through continuous inspection and monitoring of such activities, as a first priority in order to reduce Nile pollution, adjusting the status of most of such activities, and seeking to achieve compliance of their liquid effluents with standard values stipulated by Law no. 48/1982, have resulted in Nile water quality improvement as revealed by recent analyses.

2-g Future Vision

Egypt water resources sector is facing many challenges. They include meeting the increasing water demand, protecting water against pollution due to population growth and the limited water resources.
One of the challenges identified by MWRI and other line bodies is the need to provide the financial resources required to implement the national program proposed to protect water and eliminate pollution by 2012. The program consists of six elements:

- Supporting industrial effluents treatment projects.
- Supporting sanitation and wastewater projects.
- Surface water monitoring networks.
- Underground water monitoring networks.
- Covering surface canals in areas penetrating residential blocs in cities, markazes and villages.
- Public awareness.

MWRI in cooperation with other concerned bodies has prepared a "National Water Policy" (until 2017) as a plan for integrated water resource management, which has been implemented partially during the last few years. The plan is based mainly on three major elements:

a. Optimum utilization of the available water resources.
b. Preservation of water quality and eliminating pollution.
c. Development of additional water resources in cooperation with Nile Basin countries.

Egypt has accomplished significant progress in strengthening its relations with riparian countries through the Nile Basin Initiative (NBI), which will maximize the benefits for the ten countries sharing the Nile Basin, particularly Egypt, being the last country situated at the mouth of the River Nile. NBI will ensure Nile protection against pollution that will possibly result from the wastewater discharged by riparian countries into the Nile or along its course down to Egypt.

The State seeks to reinforce private sector participation in the field of water resource management and maintenance in order to meet the above challenges.

Feasibility studies, capacity building and training are considered essential elements in the successful implementation of water-related programs, which in turn would require additional funding. ("Synopsis on the State of Egypt" 2000; World Summit on Sustainable Development, Johannesburg, 2002).

A policy aiming at promoting and developing farmers participation in canal and sanitation systems operation and maintenance has been implemented leading to the establishment of nearly 5000 Water User Associations. MWRI Water Information Unit was established to raise public awareness of the importance of water rationalization and its protection against pollution.

Some NGOs and popular organizations, representing the various water sector stakeholders in Egypt, play an active role in the participation in water resource management. The Egyptian Water Partnership, recently established, represents a model of such organizations. It aims to assist the government in achieving the millennium Development goals, World Summit implementation plan, the National Environmental Action Plan (NEAP) and the National Water Policy (NWP). All efforts are concerted in this partnership for direct dialogue among all sectors regarding national water issues. Sectors represented in this partnership are line ministries, the private sector, civil society and users (farmers and others), University professors and youths. The Egyptian water partnership will contribute in involving all sectors, which will accomplish interaction and the principle of participation in charting water policies, through which progress towards water management general and detailed goals can be achieved and monitored.

Egypt's water resources future plan can be summarized as follows:

- Optimum water resource usage and the development of Integrated Water Resource Management Implementation Plans.
  - Improving irrigation efficiency and selecting suitable irrigation systems that rationalizes the use of water.
  - Waste water management, treatment, reuse and recycling.
  - Matching water uses to appropriate water resources.
- Preserving water quality and eliminating pollution.
  - Protecting the Nile, canals and drains.
  - Underground water.
  - Lakes management.
  - Protecting coastal waters.
- Developing additional water recourses
  - Surface water (Providing Nile upstream additional water in collaboration with the Nile Basin Countries.
  - Underground water (Non-renewable underground water in Eastern and Western deserts).
  - Seawater Desalination.
- Improving drinking water coverage in rural areas.
- Improving sanitary drainage coverage in both urban and rural areas.
- Good utilization of rainwater in different areas.
- Institutional development for integrated water resource management support, including broad plans for activating decentralization, the role of water users, legislative development and human capacity development.

2-h References

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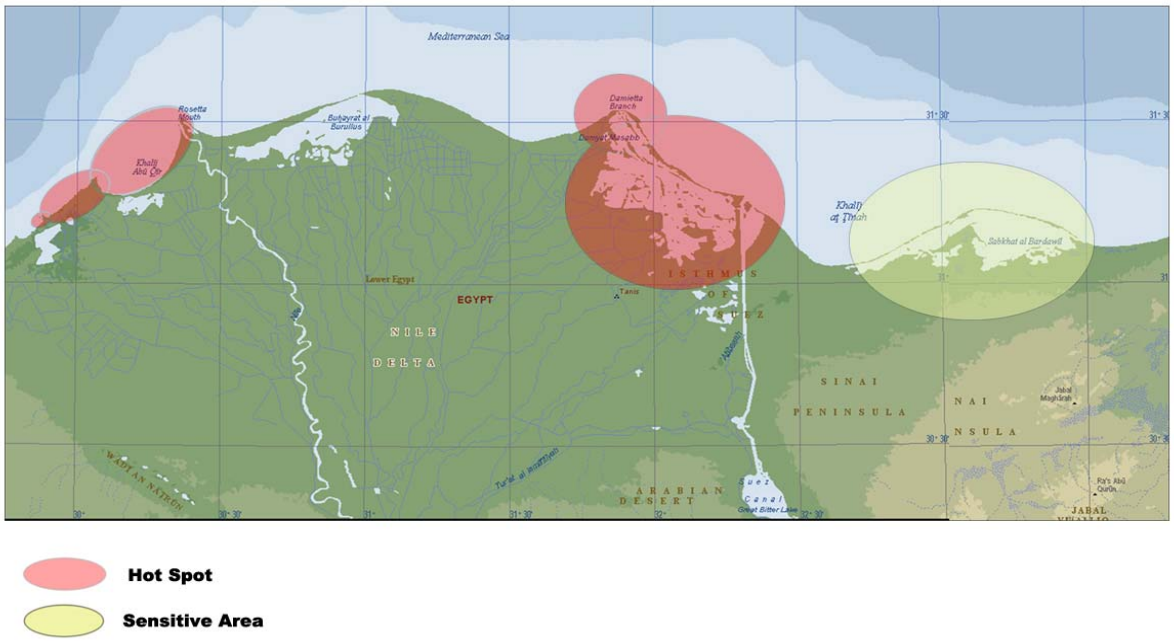


3 Seas and Coastal Zones

3-a Introduction

The Egyptian coastline extends 3000 kilometers (World Resources 2004) along the Mediterranean Sea and Red Sea beaches in addition to the Suez and Aqaba gulfs. Natural conditions on Egyptian Mediterranean coasts differ significantly from those on the Red Sea coasts in terms of salinity, sea currents and temperature. Such difference has led to different biodiversity and ecosystems in each.

By definition, a Coastal Zone is "The scope of marine environment which covers territorial water, and the scope of land extending inwards that can affect or be affected by the marine environment. It extends for not less than 30 Km in desert areas, unless this length is not blocked by any topographic phenomenon. In the Delta depression, this scope extends to contour line +3m".

Half of Egypt's population lives in Egypt coastal zones (World Resources 2004), where sources of food, jobs and income are available. They depend mainly on traditional fishing and to a lesser degree on automation. The Red Sea is characterized by the great diversity in fish production due to biodiversity (coral reefs, sea weeds …etc). The total fish catch of sea fishes (according to 1999 estimations) 172, 400 tons, of which 90,000 is produced from the Mediterranean Sea, and 82,400 tons from the Red Sea. Such industry creates job opportunities for more than 100,000persons; most of them use traditional fishing techniques.

Nearly 40% of industrial development activities are practiced in Egyptian coastal zones, in addition to a number of urban and tourism development activities. Furthermore, coastal zones monopolize the seaports infrastructure, in addition to agricul-

tural and land reclamation sectors, as well as a developed road network capable of accommodating all development aspects. The coastal zones attract increasing numbers of migrating workers from other areas and Governorates.

Egyptian coastal zones production is estimated at 85% of Egypt's production of oil and natural gas; The Gulf of Suez production alone is estimated to be 36 million tons. In addition, the crude oil and natural gas production in the Mediterranean coastal zones is increasing every year. The following table presents the number of oil wells dug and amounts of crude oil and natural gas consumed and produced.

Number of Verified Oil Wells

Year	Number of Verified Wells	Consumption*		Production*	
		Petroleum Products	Natural Gas	Crude Oil	Natural Gas
91 – 92	14	19.8	7.1	43.8	8.8
93 – 94	15	17.5	9.1	45.2	11.3
96 – 97	33	20.6	10.3	41.8	12.9
97 – 98	32	23	10.5	40.3	13.3
98 – 99	31	23.9	11.5	39.5	14.5
99 - 2000	31	23.5	14.3	37	18

* Figures are in million tons.

A number of specialized ports are located in coastal zones, e.g. crude oil, most important of which is Somid Company that transports 117 million tons of crude oil per year from Al Ain Sokhna terminal on the Red Sea to Sidi Krir terminal on the Mediterranean coasts. In addition, there are also ports for shipping some important metals such as Phosphate.

The Red Sea Coastal zone possesses a huge reserve of metals, including phosphate, zinc, iron, tin and precious and semi-precious stones.

Tourism development represents one of the main activities in Egypt's coastal zones, particularly in terms of beach development regarded as the basis of international tourist attraction. Hurghada and Sharm El-Sheikh are two tourist attractions with significant impact on national economy. Further, there is a diverse group of land uses for the purpose of tourism, urban and industrial development implemented in coastal zones.

In coastal zones, enrolment rates in primary and secondary education are higher compared to the national figures. These rates are mainly among women; as rates notably exceed the national average, whereas literacy and unemployment rates are generally low.

3-b Pressures and Hazards on Coastal Environment

Impacts of human activities due to unsustainable fishing practices, abusive use of natural habitats and development pressures resulted in jeopardizing coastal ecosystems. Fresh water resources in coastal zones are expected to constitute critical constraints to development by 2005. Fresh water percentages have increased via desalination in coastal zones, especially in tourism projects.

The quality of marine and coastal environments and their environmental resources in Egypt are threatened by a number of hazards related to the following activities:

- Internal development inside the country whose impacts are carried to coastal zones via the river Nile, agricultural drainage system and air (land sources).
- Coastal development activities leading

to changes in coastal dynamics and consequently, to environmental resources and coastal water quality.
- Activities related to sea transport and seabed resource utilization (marine sources).

a. Land Sources

Large and diverse problems arise from land sources (e.g. sanitation water, organic pollutants, radioactive material, heavy metals, oils, carbohydrates, nutrients, and sediments accumulation and waste). Agricultural and industrial wastewater constitutes major problems.

According to available statistics, Egypt's quota of the High Dam water amounts to 55.5 billion m^3 each year covering Egypt's needs of water for agricultural, urban and industrial purposes. The bulk of water is used in the various activities, while approximately 3 billion m^3 of water are discharged directly through industrial and agricultural drains into the sea through both branches of the Nile and agricultural drains, or indirectly, through the northern lakes.

Monumental amounts of fertilizers and pesticides used in agriculture reaches the sea, via the agricultural drainage network.

Pollution resulting from industrial activities primarily takes place in specific areas, including but not restricted to Alexandria Governorate, especially in Abu Qir and El Amireya. The direct impact of this industrial activity is manifest in Mariout Lake, Malahat, in front of Max pumping station and parts of Abu Qir bay (annexes 1 and 2). In addition, El Zeiteya area in Suez is also an industrial area where petroleum industries are predominant and their impact is obvious and direct on the Suez Gouna.

Pollution from sewage drainage appears in specific areas that suffer from sanitation network problems, as in some areas in the cities of Alexandria, Suez and El Arish. Most sanitation pollution is characterized by being seasonal, related to surges in population, during summer vacations for example, or resulting from northwest winds that drive pollutants to Egyptian borders, as in Rafah and El Arish.

b. Coastal or Internal Resources

Unplanned intensive tourism development resulted in the deterioration in the quality of marine environment in many areas, such as Hurghada, Suez, and the North Coast… etc. The key indicator of such type of hazards is the slow intangible changes, though insignificant on the short-term, yet destructive on the long term.

Perhaps, the most significant and obvious example is the effect of the High Dam on erosion and sedimentation processes in the Mediterranean basin coast, as well as the backfilling of coasts, road building, blocking and changing coastal flood streams. Establishing anchorages and harbors is one of the activities that have significant impact on the deterioration of the quality of coasts and the scarcity of their environmental resources.

c. Marine Sources

Shipping lines crossing the Egyptian coastal zones carry huge amounts of oil, representing one quarter of globally transported oil amounts. 117 million tons of crude oil is transported through Somid pipeline (El Ain El Sokhna) in Suez Gulf to countries on the north and west of the Mediterranean via the shipping port in Sidi Krir. A further amount of about 36 million tons of oil and oil products are annually

transported through the Suez Canal (10 million tons of which are transported to the South).

Statistics indicate that 8940 vessels enter the Egyptian ports every year. These largely contribute to the oil pollution problems. International studies proved that marine environment pollution by oil resulting from freight constitutes more than one third the quantity of marine pollution by oil recorded globally, although the amount of leakage in one incident resulting from the majority of freight does not exceed 7 tons, mainly related to fuel and oil supply.

Maritime shipping constitutes another source of pressure on the coastal environment. Due to the presence of the Suez Canal and Somid Company, approximately 20,000 vessels and oil tankers use the Suez Gulf annually, in addition to the 8,940 ships entering the Egyptian ports every year.

With the increase in recreational activities, the need arose for building new harbors. A port construction plan was therefore developed on three phases until 2017 to serve 50,000 yachts and ships.

Accidents of mine production leakage cause grave seabed harms, as in the case of raw phosphate mines loading ports in the Red Sea (Hughada, El Hamrawein and El Qoseir), raw iron (Abu Ghassn) and the water used in washing raw tin resulting from the experimental factory in Marsa Alam.

3-c Challenges

Tourism development constitutes one of the challenges facing the coastal zones in the Arab Republic of Egypt. This is particularly true for coast development and habitats destruction - the basis for many sensitive ecosystems that represent a major tourist attraction. Furthermore, there are set of diverse land uses for the purpose of internal and recreational tourism development, and urban and industrial development practiced in coastal zones.

Waste management from all sources is one the pollution sources in the coastal environment in general. Areas surrounding human settlements are characterized by the existence of a variety of metal, wood, plastic, wastes and the different building material. Although these wastes are not extremely hazardous to environmental components, they hinder successful tourism development of coastal zones. Currently, necessary measures are being taken to improve municipal waste collection and disposal in many coastal Governorates.

The disappearance of natural habitats is one of the main hazards caused by development and pollution. This problem is widely associated with the construction of harbors and tourism facilities, land reclamation, housing, tourism and industrial development. The primary impacts include total loss of habitats, such as the destruction of mangrove forests or coral reefs. On the other hand, secondary impacts include sedimentation that may harm ecosystems, such as coral reefs and seabed plants. Precipitation may also lead to the grave deterioration of habitats, impacting their quality and productivity, thus their capacity to play a role in the ecosystems they serve, e.g. fisheries, tourist attraction and other development activities. Studies have pointed out that unplanned sports and recreational activities negatively impact on many ecosystems. For instance, coral reefs environment in the Red Sea undergoes great harm due to ship anchorage in coral reefs areas. Fur-

thermore, coral reefs in shallow waters are harmed when divers walk on them to reach greater depths.

Curio collection and trading is widespread in many areas, particularly in Hurghada and Safaga. Most important of these products are rare fishes, invertebrates and coral reefs. Although the types and quantities traded seem very little, the methods used in obtaining these products adversely harm the ecosystem to which they usually belong.

3-d State Efforts in Facing Coastal Zones Problems

General Principles

After surveying the problems facing coastal and marine environment, a number of general principles were set and monitored, which have become widely accepted. These principles are:

- Marine pollution threatens all state sectors; Marine pollution prevention is a collective responsibility, not restricted to one entity.
- Each sector is required to prevent the sources of marine pollution resulting from its activity, in accordance with local laws and according to and in compliance with international and regional conventions.
- Each sector is responsible for protecting its investments from marine pollution hazards and is required to raise its preparedness to address marine pollution to the level corresponding to the hazards such sector causes or is exposed to.
- Encouraging private sector participation in marine pollution prevention, and establishing specialized companies for that purpose.

Measures Implemented

"Prevention is better than treatment" is the principle adopted by the Arab Republic of Egypt. Accordingly, a number of principles were agreed upon to prevent and abate coastal and marine environment hazards.

a. Adopting a group of sustainable continuous activities that allow the detection and monitoring of any changes taking place in the quality of coastal environment (Coastal and Marine Environment Quality Monitoring Program) and other programs that allow continuous follow up of consistent pollution sources. Sound pollution prevention systems should also be established to combat pollution and coastal and marine environment deterioration resulting from accidents, illegal fishing or climatic changes such as emergencies, crises and environmental disasters.
b. Enforcing a special protection system for coastal hot spots that need special protection. This is included within central management responsibilities (For the Protection of Nature and Biodiversity).

1- Implementing Coastal and Marine Zones Integrated Management System

"Integrated Coastal Zones Management" (ICZM) is defined as a continuous dynamic process, designed and implemented by the government with the purpose of solving the problems that may arise between entities that utilize and manage coastal zone resources. It promotes sustainable development and the renewable use of coastal zone resources.

For this purpose, a high-level representation "ICZM Steering Committee" was es-

tablished, mandated with the following tasks:

- Coordinating coastal activities among all entities such as land use master plans and coastal resources utilization activities in order to achieve sustainable development.
- Coordinating and defining the responsibilities of the various administrative organizations in coastal zones.
- Matching the proposed development activities to the ecosystem capacity with the objective of achieving sustainable development.
- Developing the Integrated Coastal Management National Plan and adopting deteriorated coastal ecosystems improvement and rehabilitation programs.
- Revising the different environmental emergency plans for coastal environment protection.

Assessing national development projects planned to be implemented in coastal areas, particularly those in conflict with the renewable use of sources.

Through the different studies, reports and observations, it was also possible to identify the environmental problems hindering the use of coastal zones resources, including:

- Coastal erosion and change in marine sedimentation movement pattern.
- Lack and pollution of water resources, and air pollution.
- Growth in population, tourism resorts, mining and illegal fishing.
- Urban Expansion and traffic bottlenecks (land or sea).
  Threatened species, migrating living things and the loss of habitats.

The most harmed or adversely impacting economic sectors were identified, which must integrate their plans under the umbrella of the ICZM integrated plan. These include:

- Fisheries, fish farms, agriculture, food products and forests.
- Mining; processing; use of oil resources and refineries; energy production; ports; marine warehouses; yacht marinas; maritime navigation and airports.
- Tourism and tourism development.
  Governmental activities, urban development, military usage and defense purposes, etc.

It was agreed that an ICZM integrated plan scope would include:

- Information and data collection.
- Developing a general guiding policy when planning land use and coastal environment resource management.
- Improving the decision-making process.

Administering and Monitoring the ICZM plan implementation.

2- Environmental Inspection Program (EIP) Implementation

The program was established in 1998, with the purpose of verifying the extent of compliance of all fixed sources with discharge limits to the environment in general according to EEAA approved standards pursuant to Law 4/1994 and its executive regulation. A whole chapter is dedicated to this issue.

3- Implementing the Program for Identifying and Controlling Marine Environment Pollutants from Land-based Sources

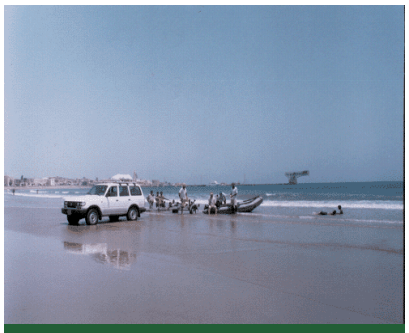
Through many joint efforts on the regional and international levels under the Global Program of Action for the Prevention of Marine Pollution From Land-based Activities (GPA/LBA & MEDPOL), it was possi-

ble to identify many polluted areas in need of urgent action. Most of the adverse impacts were identified and their volume estimated in order to enable their elimination. Data pointed out to the existence of hot spots that need special attention where pollution has exceeded permissible limits, such as Abu Qir and El Max (Annexes 1 and 2).

Environmental inspection program results indicated an increase in the number of land-based sources that have adjusted their status and complied with Egyptian Laws and regulations, or that have active environmental compliance programs in place. Moreover, evidence provided by applied marine environment quality monitoring programs showed a noticeable improvement in the quality of marine environment since the launching of these programs in 1998, particularly in the Mediterranean Sea at the Hot Spots.

4- Implementation of the Environmental Monitoring Program

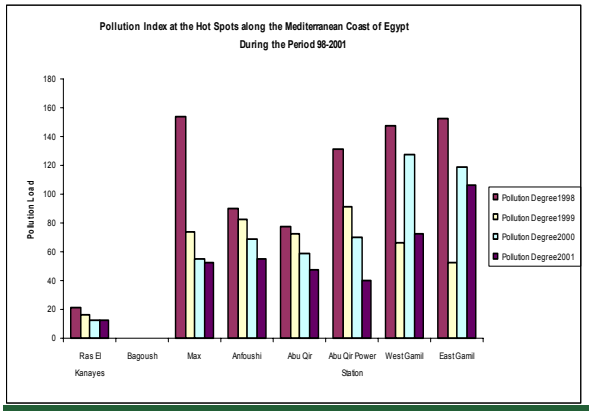
The integrated coastal water quality monitoring program comprises a network of water quality monitoring stations, as reference stations, and other areas for water quality monitoring in polluted areas. Indicators showed a partial improvement in treated sanitation water quality and that most of it was disposed of following different treatment methods. Similar results were provided by marine and coastal environment water quality monitoring programs launched by EEAA - in cooperation with research institutes in Egypt and the Danish International Development Agency (Danida) – and also by pollutants monitoring programs implemented by the Mediterranean Action Plan (MAP) Programs.



Preparation for launching The Axoriac into coastal waters to begin sampling operations and hydrographic measurements

The program included continual sample analysis for four years, from about 48 stations on the Mediterranean Sea and 41 on the Red Sea. Monitoring is undertaken once every two months along the Egyptian coast on the Mediterranean Sea from El Saloum to Rafah and from Suez to Shalatin on the Red Sea. A high-quality database was set up for this program based on international standards.

The different monitoring sites on the Mediterranean and Red Sea Coasts



Pollution Index at the Hot Spots along the Mediterranean Coast of Egypt During the Period 98-2003

In the Mediterranean Sea, the environment quality monitoring program signaled natural levels of fluctuation in all main nutritive mineral components. However, given the presence of a number of hazardous sources, the focus was on the bacteria causing Faecal Streptococci, where mutations appeared in some samples exceeding internationally approved rates. Total count of Colon bacteria nearly followed the same pattern indicating the presence of sources against which no action has been taken.

3-e Marine Environment Pollution Prevention

1- Cooperation with Regional and International Organizations:

As pollution and its spreading do not acknowledge political borders, it was inevitable to cooperate with international and regional organizations in order to identify the marine environment status and determine the major reasons that may lead to the degeneration of its components. This has been implemented through:

a. Mediterranean Action Plan (MAP) (Barcelona Convention)

This is a regional action plan including 21 Mediterranean states as well as European Common Market. It aims at protecting the Mediterranean environment, pollution prevention from its different sources and cooperating in combating pollution caused by accidents the Mediterranean Environment is exposed to. A number of serious studies were conducted resulting in the Arab Republic of Egypt taking the following actions:

- Defining the most polluted areas in the Mediterranean Sea.
- Defining the most hazardous pollution sources at the national and regional levels.
- Initiating strategies to limit marine environment land-based pollution as well as abating and controlling marine pollution resulting from increased marine transport.
- Developing and implementing national programs for monitoring Mediterranean environment quality and inspecting and observing the extent of land-based sources compliance with laws and regulations.
- Initiating the development of a national ICZM strategy.
- Disseminating Cleaner Production technology and the best practice environmental solutions for addressing land-based pollution sources.

b. Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah Convention)

This is a regional action plan comprising 7 Red Sea states. It aims at protecting the Red Sea environment, pollution prevention from its different sources and cooperating in combating pollution caused by accidents the Red Sea Environment is exposed to.
As the activities of this plan are starting

soon, the Arab Republic of Egypt has co-operated with the Red Sea and the Gulf of Eden Action in implementing the Strategic Action Plan (SAP), successfully cooperating with the other member states signatories to the convention. In the framework of this action plan, Egypt has developed an ICZM plan for coastal zones in Sharm EL Sheikh.

Egypt has also donated the site for establishing the Mutual Assistance Center for the member states within the Red Sea and Gulf of Aden work plan to address and combat sea accidents that cause pollution hazards threatening the Red Sea and Gulf of Aden environment.

2- Combating Marine Pollution

To protect sensitive environmental resources and major tourism investments at the Gulf of Aqaba entrance, EEAA has established a Marine Pollution Prevention Center in Sharm El Sheikh, with a direct cost of L.E. 21 million for construction, in addition to L.E. 10 million for studies and land allocation.

The center is equipped with state-of-the-art marine pollution control technologies, ranging from rubber breakers, oil scrapers, and control ships and oil separation equipment, in addition to all required shore cleaning equipment.

The Center can address hazards which the area between the borders of Ras Mohamed and Nabq protectorates might be exposed to. The center can be self-sufficient in responding to accidents caused by oil pollution within 300 tons limit.

The center administration has assigned a specialized company the responsibility of ensuring the center's effective operation and raising staff efficiency as well as the efficiency of technicians working at South Sinai protectorates to seek their assistance during major pollution accidents. This arrangement has proved effective, as the center was able to efficiently handle the Flash Air accident as well as the coinciding oil pollution accident in January 2004.

3-f Future Vision

Evidently, much essential efforts are needed to address all previously identified challenges, of which some were presented in this brief description. These efforts include but are not limited to:

- Directing research and studies to complement the data and information needed by various entities to set forth development plans for all sectors based on sound environmental principles.
- Organizing an environmental databank, and a database for collecting available information and data, including advisory studies and scientific papers.
- Setting priorities for all state economic sectors based on clear economic assessment of these components.
- The necessity of developing a general guiding strategy when developing land use plans and managing coastal environment resources and sustainable development bases.
- Exerting relentless efforts to improve decision-making and taking at the national level for addressing problems.
- Overlaps that may arise among all entities during the development of the various economic sectors.
  Laying down clear bases and specific responsibilities for administering and controlling ICZM plan implementation.

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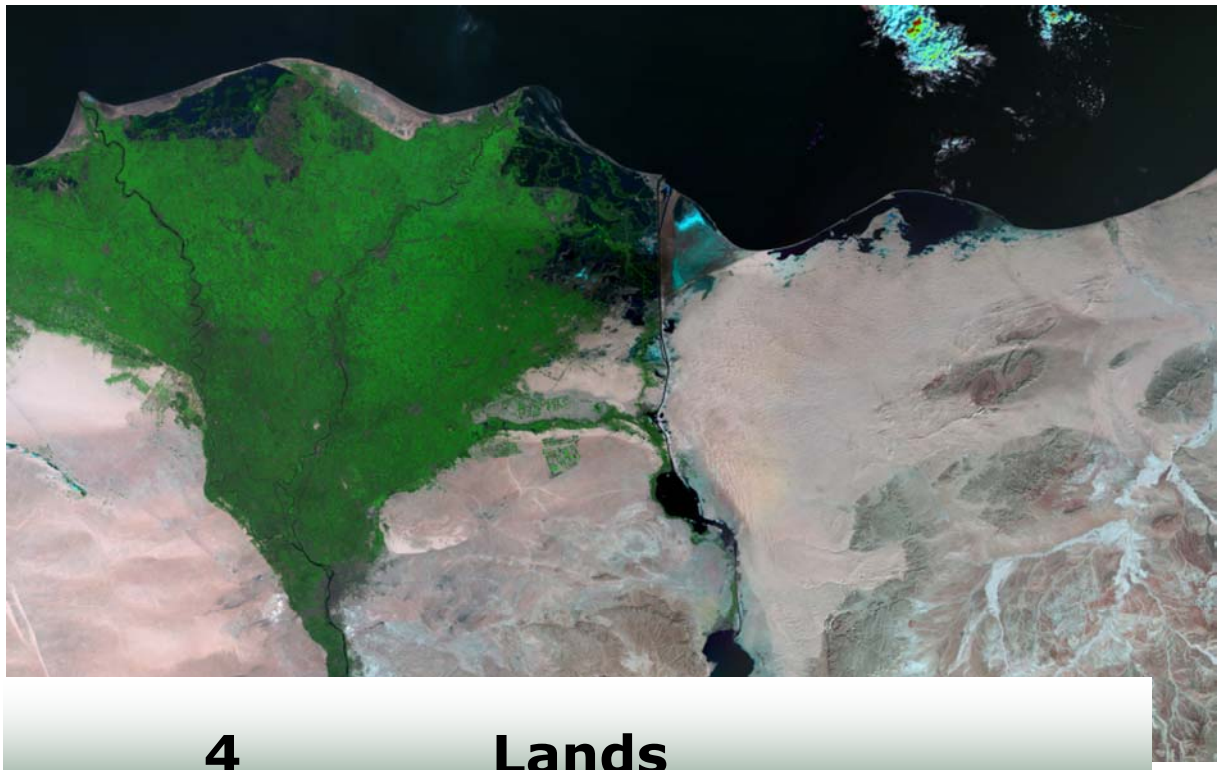


4 Lands

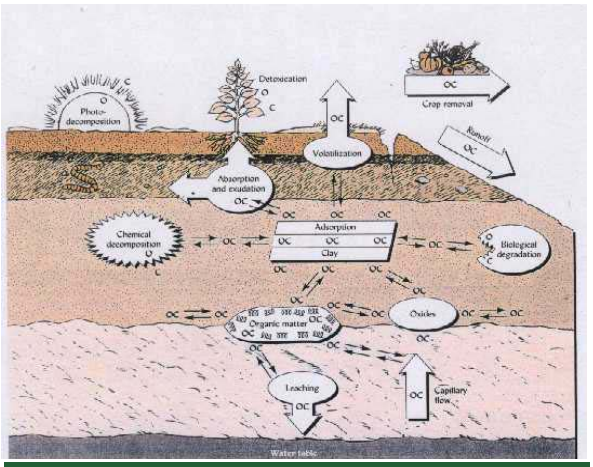
4-a Introduction

During the last years, international organizations as the United Nations Development Program (UNDP), the World Bank (WB) and the World Resources Institute (WRI) and other organizations have been adopting the ecosystem integrated assessment instead of evaluating the sectors' productive capacity and the state of environmental components in isolation. This new approach is significantly important as the integrated assessment of the environment production system enables the assessment of the capacity of such system on producing different products while studying its negative or positive impact on the environmental functions of each component. Thus, it makes it possible to assess the total resultant of productive activity impact, be it negative or positive. Negative impacts are represented in the degradation of environmental components functions under production processes pressures.

Adopting such integrated formula enables the identification of the total outcome of productive activities (negative and positive), which forms a strong basis to select and determine the most positive development plans for present and future generations. It also enables studying the factors leading to improved positive outcome and to develop it always to the better. This approach leads to determining the best techniques and practices to manage natural resources available whether climate, soil, water, plants or animals with the objective of increasing production capacity while at the same time preserving the environmental functions of such natural resources and developing them whenever possible. Thus we will be able to pass available natural resources to future generations in their best productive and environmental state. This is the true meaning of sustainable develop-

ment. It is important to apply this approach on the environmental agricultural system in Egypt so that capacity to produce agricultural products and optimize such production may not compromise environmental characteristics and services that form the main pillars of the ecosystem such as climate, soil, water, plants and animals.

It is important to undertake a qualitative and quantitative assessment of any deterioration operations that might occur to such main production pillars and to translate such degradation in the form of economic and social quantitative and qualitative estimates whenever possible. Thus, this section of the report shall focus on the productive and environmental role of land resources in Egypt.



Productive and Environmental Soil Functions After Brady and Weil (1996)

4-b Pressures on Land Resources

Productive land in Egypt, though limited, is exposed to multiple pressures leading to soil degradation in the form of a partial or total loss of its productivity, even leading in some cases to the loss of soil components themselves. Soil degradation factors differ according to their types and usages, briefly described as follow:

1- Sedimentary Lands in the Nile Valley and Delta

It is one of the oldest agricultural systems in the world, distinguished by high soil fertility due to alluvial deposits brought by the Nile water over thousands of years. This area is also considered one of the most populated regions in the Middle East; population density is estimated to be 8 capita per feddan. Agricultural production of this region is variable in addition to its high production. This fertile region is exposed to the following deterioration factors (El Bagouri & Others 2002).

a. Soil Salinity

Due to the wide use of flood irrigation and unaccounted-for water usage, water irrigation from the Nile is exaggerated leading to soil water logging and poor drainage of excessive water that exceeds the growing plants needs. Thus, soil salinity components reach a level causing damage to plant production and deterioration to some of the chemical and biological soil elements. Some lands become so rich in soda due to the increase in sodium element causing more degradation in physical elements. During the seventies, sedimentary soil area affected by salinity and soda was estimated to be 30 to 35% of the total Nile valley and Delta area (El Gabali 1972).

b. Urban Encroachments

Urban encroachment occurred due to the expansion of cities and villages and the establishment of industrial facilities and infrastructure, in addition to soil surface stripping for manufacturing red bricks. Soil stripping has been nearly overcome as a result of the legislation issued in 1983 and amended in 1985. Other encroachments started during the fifties causing the loss of 15000 feddans annually. Rates of losing

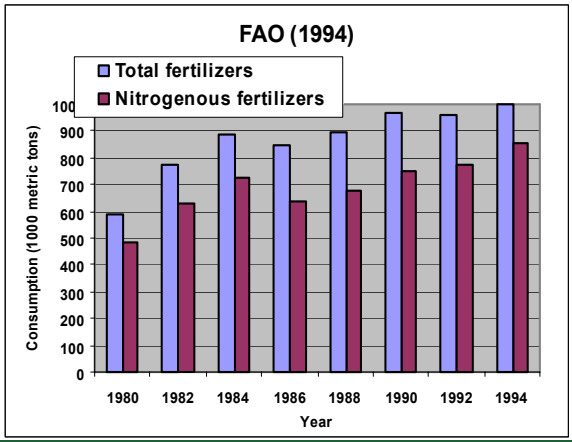
such fertile soil during the past decades till the last twentieth century decade have increased estimated at about 45,000 feddans annually (Land, Water and Environment Institute - 2000). A military order has then been issued to stop and eliminate such encroachments in 1996, significantly limiting such phenomena.

c. Soil and Water Resource Pollution

With the beginning of the seventies, soil pollution impact started due to the excessive use of chemical fertilizers, namely nitrogenous, due to the farmers' wrong impressions after the construction of the High Dam (Science Research Academy -Impact of Reduced Nile Alluvial 1971-1975). Excessive use of chemical fertilizers persisted due to agriculture production intensification and attempts to reach the highest production possible/unit area. Usage rates of fertilizers have soared compared to international rates. This has led to increased concentration of nutritious elements in drainage water leading to the eutrophication of irrigation and drainage water and the pollution of Northern lakes. Soil and water pollution has also increased due to the irrationalized use of different pesticides. In addition, wastewater and industrial drainage leakage into watercourses has exacerbated soil and water resource pollution.

d. The Impact of Sand Encroachment on the Nile Valley and Delta

Due to the active encroachment of sand and sand dune encroachment namely in the Western desert towards fertile sedimentary land, an area estimated of 16% of the old valley land has been influenced. Satellite images reveal the volume of this impact. The area influenced by this phenomenon is estimated to be 1.8 million feddans. Land productivity has diminished by about 25%



Nitrogen Fertilizers Consumption in Egypt (1000 Ton)

compared to its original productivity. (Regional Report on Desertification in the Arab World – Arab Center for Dry and Arid Area Studies - 2000).

e. Erosion of Some Coastal Areas in the North of the Delta

The erosion has influenced some thousands of feddans in the North of the Delta giving way to erosion phenomenon in these coastal areas due to the reduction of alluvial sediments in Rosetta and Damieta branches. (Dr. Hassan Wahbi, 2002).

2- Reclaimed Desert Land

These desert lands have also been exposed to many pressures and degradation factors leading to their reduced productivity and increase in the duration required for reaching their acceptable productivity level and eventually to their ideal productivity, which caused the loss of effort, money and time. Among the most important deterioration factors of these desert lands are: (El Bagouri *et al*, 2002).

a. The usage of organic fertilizer transported from the old valley lands without adopting scientific composting methods

to get rid of weed seeds bioactivity, disease vectors and soil pests. This led to the infection of new pristine lands with much harmful weeds, pests an illnesses adversely impacting, in disproportionate degrees, reclaimed land productivity.

b. The adoption of irrational agricultural management techniques, particularly with respect to crop combinations and appropriate cropping systems due to soil fertility weakness, specially during the first phases of land reclamation, as well as the adoption of traditional ploughing methods to such fragile soil has led to reduced productivity and excessive usage of chemical fertilizers, pesticides and herbicides causing clear damages to the productivity and characteristics of such desert land that has such a weak environmental equilibrium to enable it to resist changes, whether positive or negative.
c. The adoption of flood irrigation system in certain areas at the early years of reclamation as well as the implementation of some low-efficiency irrigation systems of low yield per water irrigation unit.
d. Impact on desert land productivity and on growing plants due to sand winds, sand dispersion and sand dune transgressions in some areas at the boundaries of reclaimed lands. In addition, sand transgression on the infrastructure namely on roads that secure transportation and crop and agricultural products transport to such areas.
e. Salinity of some areas due to excess irrigation, bad drainage and water clogging as a result of water leakage particularly in poorly lined canals.

3- Grazing Lands and Pluvial Agriculture

These areas are exposed to degradation factors, most important of which are periods of dryness, lower rains compared to their annual average, bad distribution of rains during rainy seasons, in addition to the damages caused by soil drifting by air, creating sand and dusty storms, as well as by water due to water agglomeration in valleys with major topographic slopes and the fall of extensive heavy torrents of thunderstorm rains causing the drifting of surface soil layers due to water and flowing load, carried out materials which sediment down the valleys or lost to the Mediterranean or the Red Sea gulfs (Aqaba and Suez).

Overgrazing leads is also considered one of the most soil degradation causes leading to the eradication of most plant cover, which augments soil drifting by wind and water in addition to the erosion and deterioration of natural grazing lands leaving undesired plants. Therefore, grazing lands plant cover degradation poses significant risk to biodiversity in Egypt.

Excessive overgrazing

Socioeconomic conditions of Bedouins living in these areas play an effective role in the area's land degradation, particularly in the lack of micro-credits that allow the funding of handicrafts and artisan industries based on animal and grazing land products.

4- Wetlands

Wetlands are exposed to some pressures due to drying some part for agricultural usages. Thus, their original area shrinks. The increase of organic and non-organic pollutants due to agricultural, human and industrial activities lead to the degradation of such wetlands of international significance and impact on its wild or transiting fauna during their life cycles, such as migratory birds, fishes and others, thus endangering the biodiversity of such creatures.

4-c Current Situation of Lands in Egypt

Egypt has a total area of about one million kilometer square. Egypt is situated in the arid and semi arid zones belt characterized by limited arable land resources, whether irrigated, pluvial agricultural land, natural grazing meadows or wetlands. Currently irrigated and cultivated land in Egypt is about 7.95 million feddans (2002), from which 5.3 million feddans are fertile sedimentary lands in the Delta and the Valley, while the remaining land is desert, reclaimed during the last five decades.

Old irrigated lands constitute one of the pillars and main resources for fulfilling daily life requirements of people, particularly under the current annual population increase reaching around 1.9% in addition to the continuous increase in individual consumption rates of different nutritive and agriculture products. Demographic growth in Egypt has had a clear impact on lowering percapita share of agricultural land, coming down from 0.5% feddan/capita in 1900, to 0.12% feddan/capita according to 2000 statistics.

According to latest Central Authority for Public Mobilization and Statistics (CAPMAS) statistics (2002), Egypt's population has reached 67.5 million, while the total area cultivated is 7.95 million feddans. Thus, percapita share of cultivated land remains fixed at 0.12 feddan/capita.

Change in percapita share of Agricultural land during the past Century

Year	Population (Million)	Cultivable/Arable Lands	
		Total (million feddans)	Land area/capita (feddan)
1897	9.7	4.9	0.51
1907	11.2	5.4	0.42
1917	12.8	5.3	0.41
1927	14.2	5.2	0.39
1937	15.9	5.3	0.33
1947	19.0	5.8	0.31
1960	26.1	5.9	0.23
1970	53.2	6.0	0.18
1980	42.1	6.1	0.14
1990	55.0	7.2	0.13
1998	62.5	7.7	0.12

In general, fertile sedimentary land area in the Delta and the Old valley, which is mainly irrigated by Nile water, was estimated at the beginning of the fifties to be around 6.25 million feddans. Due to different encroachments, e.g. urban expansion, leaving land uncultivated, stripping land surface or constructing industrial facilities and infrastructure, the total area of this land during the last few decades has diminished to be 5.35 million feddans at the beginning of the present century (Scientific and Technology Research Academy, 1995).

Most of the natural grassland is situated at the North coast of the western desert and in Sinai. The total area of these lands is estimated around 6.5 million feddans (Desert

Research Center, 2002). 3.75 million feddans are located in the western North coast and the remaining area in north Sinai. It is marginal lands depending on natural grassland and on sheep, goats and camels. The number of these animals differs according to the availability of rain water which differs in quantity from one season to the other (November- March), associated with some dry waves where rains annual rate drop, as well as pasture load from grazing animals, which is estimated at an average of one million and a half heads. Within the natural grassland abovementioned, limited cultivated areas for cultivating cereals, olives and figs exist.

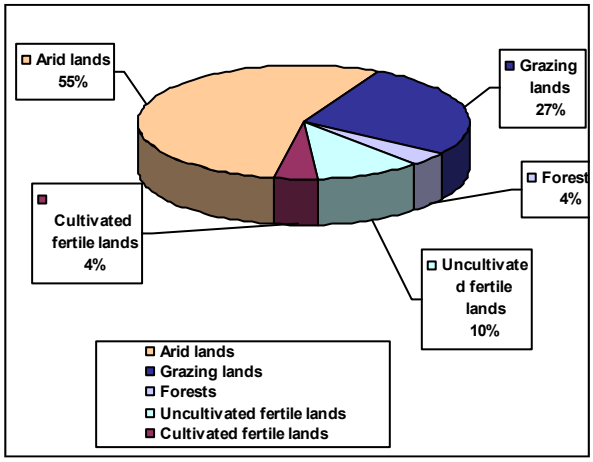
In Egypt, particularly in coastal Mediterranean areas, wetlands zones are found in Edco, Mariout, Borolous and Manzalah. Till very recently (in the eighties of last Century) these wetlands represented 25% of wetlands in the Mediterranean. Egypt has adhered to the International Convention for the preservation of wetlands of international importance, particularly where water birds live (RAMSAR). Egypt has registered Borolous and Bardawil Lakes at the North of Sinai on the list of wetland of this UNESCO convention.

These wetlands provide different products and services as well as a distinguished and unique environmental value. These products and services comprise wild life, birds, fish, leisure activities, organized fishing in addition to the preservation of coastal areas from erosion. Wetland areas obstruct polluted materials before reaching Sea Water. Thus, they could become a mechanism to treat such polluted materials, eliminate them and clean water resources.

4-d Land Resources Challenges in Egypt

Old agriculture lands, reclaimed desert and Nile irrigated areas, reach around 8 million feddans, which represents less than 3.4% from the total area of the Arab Republic of Egypt. This percentage almost corresponds to the percentage of cultivated land in the Arab region where a common market is being established among its countries. The figure below shows clearly that currently cultivated areas reach 4% of the total Arab region area.

The figure shows clearly the extent of limitation of exploitable and cultivable agricultural production lands, which emphasizes the importance of such lands as a main pillar of food security in this region.



Land Uses in the Arab Region
Arab Organization for Agricultural Development (1998)

Undoubtedly, reclaiming desert land has become an urgent and complementary necessity**.** These lands will be added to the fertile Delta and old Valley areas enabling the State confront demographic growth and increasing food consumption rates. As well as to preserve the level of agriculture exportation and agriculture sector participa-

tion in Egypt's annual GDP. The agriculture sector participation reaches at present around 20% of the National income. The agriculture sector also provides employment opportunities to almost 40% of Egypt's labor force.

4-e State Efforts in Combating Land Degradation in Egypt

Due to the continuous demographic growth and increase of per capita consumption rates of food and agricultural products during the last five decades, the State, following the establishment of the High Dam, and stabilization of Egypt's share of Nile water at 55.5 billion cubic meters, has decided to increase the cultivated area through reclamation of the desert at the boundaries of sedimentary areas in Upper Egypt.

Some limited expansions have taken place through cultivating some areas in Sinai and in the Eastern desert valleys by using various types of underground water. The area reclaimed and cultivated in desert lands reaches around 2.60 million feddans. These desert reclaimed lands are low in fertility and have chemical, physical and biological characteristics that need to be developed and reformed during a period of 3 to 10 years until reaching acceptable production level and beyond to reach the optimum production level for such lands.

1- State Efforts for Combating Sedimentary Lands Degradation

The State has deployed great efforts, especially during the last two decades, to face fertile land degradation in the Nile valley and Delta, to preserve on their environment, and to restore their high productivity. Among these efforts are the following:

a. Expanding, developing and completing open canals and drains.
b. Introducing tiled drainage, till 2001, in an area of 5.1 million feddans; of which 3.66 million feddans are situated in the Delta and 1.44 million feddans in Upper Egypt (Dr. Hassan Wahbi, 2002). Tiled drainage is to be continued in an area of 650 thousand feddans among a quinquennial plan from 2002 till 2007 (Ministry of Planning, 2002).
c. Improving degraded lands by soil laser leveling and adding conditioners to treat and resist soil salinity.
d. Producing highly productive species and varieties of field crops like rice, wheat, corn and some vegetables, and developing fruits varieties like grapes and bananas.
e. Adapting Integrated Pest Control Systems using modern methods in order to resist pests and weeds in order to limit the excessive usage of soil and waterways polluting pesticides. This policy has led to a reduction in pesticide consumption.
f. MSEA has exerted distinguished efforts for limiting pollution sources of Nile water used to irrigate agricultural lands.

Integrated Benefit of State Efforts in the Old Lands

These integrated efforts, particularly undertaken by the MALR, MWRI and MSEA, have led to the improvement of soil fertility, restoring its high fertility level. Production of some crops, such as rice and sesame, has increased reaching the highest production level in the world, in addition to some other field crops as wheat and corn, which have also registered highest records at the level of national production. The same applies to vegetables and fruits such as tomato, grapes and citrus. Added to these production and economic returns is the reduction of old agriculture land and

water resources pollution levels in order to improve the ecosystem and ensure food and agricultural products safety.

2- State Efforts in Reclaimed Desert Areas

a. During the last few years, the state has exerted tremendous efforts to increase the rate of desert land reclamation via three mega projects, two of which were accomplished by using Nile water: El Salam Canal, reclaiming about 400 thousand feddans at the North part of Sinai, and Toushki project, reclaiming around 500 thousand feddans in the South of the Western desert. In addition, East El Ouyanat Project intends to reclaim about 100 thousand feddans by using fresh water from the Nubian sand stone Dam located in the southwest of the Western desert.

Desert Lands

b. Completing and developing open drains, tight lining of irrigation canals and encouraging the use of modern irrigation systems.
c. Distinguished forestation efforts, particularly the establishment of windbreakers around desert land plots, protection of roads and infrastructure, especially irrigation canals, fighting against sand dispersion, stabilization of sand dunes, cultivating tree combinations by using treated wastewater and establishing parks and gardens for tourism and leisure purposes.
d. Intensive training courses shall be established to train fresh graduates, farmers and investors. These courses shall have scientific and modern basis to reclaim and manage resources in desert areas and in reclaimed lands. Also, extension agencies and techniques shall be developed.
e. The ministry of Environment has given great importance to the National Waste Management Program. According to 2003 estimates issued by the Ministry of Local Development (MoLD), General Secretariat of Local Administration and MSEA, the quantity of municipal waste generated in all of Egypt is in the vicinity of around 60 million tons/year.

Pressing rice straw using MSEA press machines

The Ministry of Environment has also encouraged the establishment of waste recycling plants and the production of organic compost according to sound scientific and development bases. According to MSEA estimates and MoLD data, 63 plants have, until 2003, been established for recycling solid, agricultural and rice straw wastes.

Rice Straw

Integrated Benefit of State Efforts in Reclaimed Lands

Integrated efforts had important impacts on the protection of reclaimed desert land, infrastructure and roads against damages resulting from reptant sand and sand dune movement, thus, providing environment protection for people living in these regions. In addition, agriculture and trees productivity have been increased. The production of organic compost on sound basis from cities and agriculture waste recycling provided high quality compost free from disease vectors in order to develop reclaimed desert lands and to raise its productivity.

Training and extension efforts as well as the improvement of irrigation and drain techniques have played a positive role in improving reclaimed land economics and attracting investors at different levels to work in desert land reclamation. During recent years, State efforts have been focused on supplying these regions with infrastructure significantly reducing the financial burden endured by the State during the second half of the last century.

3- State Efforts in Grazing Lands and Rain Areas

a. The state has established several projects since 1970 in order to improve natural pastures and apply harvest and rain water distribution techniques. The rain water is stored in underground reservoirs which included rehabilitation of some old roman reservoirs or establishing new ones at the valley terminals. The objective is to exploit the land in these marginal regions by cultivating some adequate areas with vegetables and fruits and increasing their productivity through complementary irrigation following the end of the rain season.
b. Applying several technologies and grazing techniques aiming at recovering the natural vegetation cover, its preservation and developing its productivity animal grazing capacity. The objective also is to limit soil drifting by wind and water.
c. Improving socioeconomic conditions of Bedouins the residents in these areas, and providing them with financial assistance to limit their urban migration and raise their socioeconomic standard.

Integrated Benefit of State Efforts in Pasture and Rainfed Areas

Improvement of the features and productivity of this marginal ecosystem has started through settling several Bedouin families and increasing range productivity, particularly with respect to sheep, a large number of which is exported during good rainy seasons to Libya and Saudi Arabia during the Haj (Islamic pilgrimage) season. It was noticed that Bedouin respond well to the application of modern and suitable techniques for harvesting and storing rain waters in an increasing number of cisterns and reservoirs. They also cultivate grazing shrubs and trees in order to develop land productivity and protect the soil against drifting by wind and water.

4- State Effort for Preserving Wetlands

In recent years, the state has been, and is still exerting joint efforts with some international organizations like Wetland Preservation Convention (RAMSAR), the Global Environmental Facility (GEF) and United Nations Development Program (UNDP) through EEAA to take measures for the preservation of wetlands against agriculture, urban and other transgressions, in addition to the initiation of some pollution prevention field technologies for combating pollutants and reducing their concentrations in order to preserve products and productive and environmental services provided by these wetlands.

4-f Future Vision

From the above review, it becomes obvious that the productive lands in the Arab Republic of Egypt are limited, making them a national wealth that should be preserved quantitatively and qualitatively in order to reinforce their several and diverse productive and environmental functions, as pointed out in above sections. Achieving this would require concerted efforts by the government, media and non-governmental organization (NGOs) as well as the support of the roles of women, youth and civil society institutions in an integrated work system to realize the following:

1. Participate in the development of media campaigns reaching out to the different community groups using appropriate means to clarify the hazards of degradation factors on the environmental productivity system of productive lands in Egypt.
2. Active participation in monitoring pollution sources, degradation and wrong practices leading to land degradation in Egypt and to work, each in their respective domains, in order to combat these practices.
3. Preserving new desert land sound environment against old environment pollution sources, to exploit its competitive advantage in implementing approved organic agriculture practices and to allocate their products for boosting agriculture exports.
4. Introducing modern agriculture systems in reclaimed desert lands such as:
    a. Irrigated fodders system/ animal production.
    b. Processed crops system namely in remote areas to reduce quantities of inputs and outputs.
    c. Non conventional plants like halophytes, cultivating them in saline lands.
    d. Cultivation of natural plants of high economic advantages.
5. Applying integrated management techniques that comply with the nature and profile of the four types of land above mentioned.
6. Use newly introduced GIS and remote sensing systems in order to monitor the progress in the four land types mentioned above and to take the right decision to preserve these gains.
7. To establish databases on land resources and their related activities such as crop areas and local and international marketing data to reinforce extension methods and develop relevant training programs.

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5 Afforestation

The Role of Ministry of State for Environmental Affairs in implementing the National Program for safe use of treated sewage water for afforestation

5-a Introduction

The Arab Republic of Egypt is concerned with maintaining a clean environment (air, water and soil). Consequently, it gives extreme priority to meeting the different environmental challenges, correcting wrong practices that lead to environmental pollution and impose a risk on citizens' health, or to those which deplete natural wealth due to over exploitation of water, air or soil natural resources.

To contribute in this respect, the Ministry of State for Environmental Affairs has developed a plan for the protection of water resources from the different types of pollution, and for the safe utilization of treated tember trees wastewater in planting man-made forests that can be of economic benefit, as the State is currently spending billions of pounds on the treatment of such wastewater without benefiting from it.

The reuse of treated sewage water in afforestation is considered a fundamental adjunct to Egypt's water resources. This quantity, which amounts until today to 2.4 billion cubic meter/year, was never exploited, but was considered a significant burden, since it pollutes the environment when discharged into the Nile, sea or in the desert; sometimes, it is left to seep into the soil, thus polluting aquifer stocks and increasing the underground water table. With scientific progress and increase of environmental awareness, exploitation of such type of water has become a strategic inevitability.

The Ministry of Sate for Environmental Affairs (EEAA) is responsible for the implementation of the National Program for

Egyptian-Chinese Friendship Tree forest at Sadat City

for afforestation Safe Use of Treated sewage water in cooperation with the Ministry of Agriculture and Land Reclamation (Undersecretary of State for Afforestation and Environment), the Ministry of Housing, Utilities and Urban Communities (MHUC), the Ministry of Health and Population (MoHP), the Ministry of Local Development (MoLD), the Ministry of Water Resources and Irrigation (MWRI) and Specialized Research Centers.

5-b Objectives of The National Program

a. Strategic Objectives

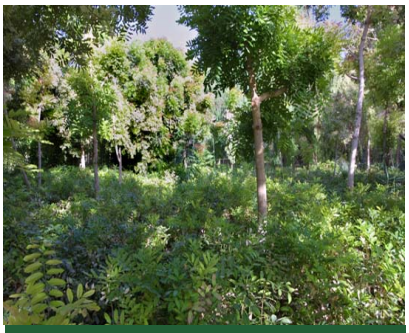
- Solving the problem of 2.4 billion cubic meter of accumulated wastewater; Disposal of such quantity represents a major environmental problem.
- Benefiting from this huge water quantity and not squandering a water resource that could be exploited economically.
- Limiting the discharge of wastewater into the River Nile or in seas in order to prevent bacteriological and chemical pollution of water (from heavy elements and harmful organic compounds), and the degradation of fish wealth, river and marine bio-ecological systems. Discharging into open desert also pollutes both surface and deep underground reservoirs.
- Preventing adverse practices related to the use of untreated wastewater in producing agriculture and food products.
- Contributing to the provision of health benefits to individuals as a result of eradicating reproduction sources of insects and disease vectors caused by the accumulation of stale wastewater.
- Transforming an area of 400,000 feddans from desert into ecologically rich areas in terms of:
    1. Preserving the soil.
    2. Enriching natural and biological components in arid and semi-arid areas.
    3. Forming attraction and development zones for potential inhabitants of these areas.
    4. Adding productive desert lands to the agricultural environmental system.
- Participating in cleaning air pollutants, adding climate soothing factors in arid and semi-arid areas mostly adjacent to desert boundaries, and protecting cities and housing areas from sand dispersion and dust storms.

Workers in timber forests observe environmental

- Participating in restoring the equilibrium of the biosphere components through increasing oxygen quantity and absorbing quantities of carbon dioxide.

b. Direct Economic Objectives

- Create agricultural industry based on woods as:
  1. Bio-diesel oil extraction and refining units from the seeds of *Jatropha curcas* trees.
  2. Establishing small plants for the production of silk yarn from silkworm breaded on mulberry trees.
  3. Establishing a factory for the production of ropes from the cultivation of *Agava sisalana*, used for anchoring ships and in port uses.



Mahogany Trees in Luxor forest

- Benefiting from treated wastewater and transforming it into an economic value sharing in some offsetting the high costs of for establishing wastewater treatment plants.

Jatropha curcas in Luxor Forest

- Establishing a wood factory to be used in the manufacturing of furniture, housing and coal industries.
- Replace imported wood by locally produced wood, which would improve the balance of payment.
- Create job opportunities for genders living in the areas where these activities will take place.

c. Indirect Objectives

- Improve air quality.
- Protect water and soil sources from pollution.
- Cultivate new lands and combat desertification.

400,000 feddans of unexploited sandy soil	+	2.4 billion cubic meter of unexploited wastewater	=	400,000 feddans of productive tember-trees

Forest-trees cultivation using wastewater

5-c Program Implementation Sites

This program is implemented in areas surrounding wastewater stations in the different Egyptian governorates with a desert backlog.

List of established Afforestation Areas Irrigated by Treated Sewage Water

Sr.	Governorate	Forest	Area (Feddan)	Plant Discharge Capacity (m^3)/day	Irrigation System	Cultivated Plant Varieties
1	Ismailia	Sarabioum	1000	90000	Drip irrigation	Cupressus sp. – Pinus sp. – Khaya senegalensis – Casuarina sp. – Eucalyptus sp. – Morus sp. – Concarpus sp. – Agava sisalana – Dendrocalamus strictus
2	Mounefia	El Sadat*	500	18000	Drip irrigation	Cupressus sp. – Pinus sp. – Acacia saligna – Casuarina sp. – Eucalyptus sp. – Agava sisalana – Morus sp. – Khaya senegalensis – Ornamental trees and plants
3	Luxor	Luxor	1700	30000	Modified Flood and Drip Irrigation	Khaya senegalensis – Eucalyptus sp. – Acacia saligna – Morus sp. – Jatropha curcas
4	Kena	Kena	500	23000	Modified Flood Irrigation	Eucalyptus sp. – Khaya senegalensis
5	South Sinai	Tur Sinai	200	3500	Modified Flood and Drip Irrigation	Casuarinas sp. – Eucalyptus sp. – Morus sp. – Popular sp.
6	Aswan	Edfu	300	8000	Modified Flood Irrigation	Khaya senegalensis
7	New Valley	El Kharja	400	13000	Modified Flood Irrigation	Khaya senegalensis – Casuarina sp. – Eucalyptus sp. – Terminalia sp. – Tamarix sp.
8	New Valley	Paris	200	18000	Drip Irrigation	Cupressus sp. – Pinus sp. – Acacia saligna – Casuarina sp. – Eucalyptus sp.
9	Giza	El Saf	500	65000	Drip Irrigation	Khaya senegalensis – Casuarina sp.
10	Dakahleya	Gamasa	150	1500	Drip Irrigation	Cupressus sp. – Pinus sp.
11	South Sinai	Sharm El Sheikh	60	3000	Drip Irrigation	Casuarina sp. – Eucalyptus sp. – Ornamental trees and plants
	Total		**5510**			

* Egyptian-Chinese Friendship Forest

List of Under Establishment Afforestation Areas Irrigated by Treated Sewage Water						
Sr.	**Governorate**	**Forest**	**Area (Feddan)**	**Plant Discharge Capacity (m^3/Day)**	**Irrigation System**	**Cultivated Plant Varieties**
12	Aswan	Aswan	500	8000	Drip Irrigation	Khaya senegalensis – Acacia saligna – Eucalyptus sp. – Terminalia sp.
13	Aswan	Nasr El Nouba	100	1400	Drip Irrigation	Khaya senegalensis – Acacia saligna – Eucalyptus sp. – Terminalia sp.
14	Beni Sueif	El Wasta	500	10000	Drip Irrigation	Khaya senegalensis – Jatropha curcas
15	New Valley	Moot	700	10000	Drip Irrigation	Terminalia sp.
16	North Sinai	El Arish	200	15000	Drip Irrigation	Khaya senegalensis – Jatropha curcas
17	Assiout	Assiout	40	50000	Drip Irrigation	Khaya senegalensis – Jatropha curcas
18	Sohag	West of Sohag	1000	28000	Drip Irrigation and Modified Flood Irrigation	Khaya senegalensis
19	Sohag	East of Sohag	1000	28000	Drip Irrigation and Modified Flood Irrigation	Khaya senegalensis
20	Red Sea	Hurghada	200	10000	Drip Irrigation	Casuarina sp. – Khaya senegalensis
21	South Sinai	Noueiba	200	4000	Drip Irrigation	Casuarina sp. – Khaya senegalensis
22	Suez	Attakah	400	30000	Drip Irrigation	Jatropha curcas – Eucalyptus sp. – Cupressus sp. – Casuarina sp.
	Total		**4840**			

5-d Ongoing Activities and Future Action Plan

Afforestation are currently cultivated and irrigated by treated sewage water. Some tember forests have been planted, and there are plans for providing necessary funding for cultivating 80 thousand feddans of forest-trees (10 thousand feddans annually), adjacent to sewage water treatment plants on the desert backlog. The project aims to cultivate 400,000 feddans using 2.4 billion cubic meter of treated wastewater annually.

Types of Tember Trees Cultivated in Forests

Tember trees varieties cultivated in forests have been selected carefully based on sound scientific experience providing high economic value, and suitable for the region's ecological (environmental) conditions (soil and climate). Windbreakers have been planted for roads and cultivated areas to suit local climatic conditions.

Eucalyptus sp

5-e Benefits from State Afforestation Planting Efforts

a. The program realizes one of aspects of the safe use of treated sewage water in the cultivating of man-made forests. During the current phases, the program has several objectives including:

- Benefiting from treated wastewater in cultivating forests and improving environmental conditions with respect to climate and increased biodiversity.
- Reclaiming and adding new desert areas, and establishing new communities adjacent to these forests.

Cupressus sp.

- Creating wood industries and adding new income sources of secondary production such as breeding silkworms, silk and Agava sisalana industries, and biodiesel oil and ornamental plants production.

Types of Tember Trees Cultivated in Forests	
1	Cupressus sp.
2	Pinus sp.
3	Khaya senegalensis (African Mahogany)
4	Eucalyptus sp.
5	Acacia saligna
6	Morus sp.
7	Agava sisalana
8	Casuarina sp.
9	Concarpus sp.
10	Dendrocalamus Strictus (Bamboo – Under experimentation)
11	Jatropha curcas
12	Terminalia sp.
13	Popular sp.
14	Some ornamental trees and plants

- Providing new job opportunities for genders.
- Protecting water sources and soil from

pollution.

- Satisfying part of the wood demand from locally produced wood instead of imported wood, thus improving the balance of payment.
- Protecting desert areas and new cities from winds, sand dispersions and sandy storms with their associated health and environment adverse impacts.

Flamenco at Sarabium Forest

- Using these forests as domestic tourist sites and as entertainment places for the residents in the new cities.

b. Feasibility Study Financial and Economic Results

Return percentage per pound (cost and value) = LE1.34
Domestic return rate = 15.6%

silkworms on mulberry leaves at Sarabium Forest in Ismailia

c. Social Feasibility Results

- Participating in solving unemployment problem among gender by providing 5 feddans in average to each graduate.
- Transforming treated wastewater to an economic added value to national production, resulting in increased national income.

Concarp sp.

Improving balance of payment deficit by replacing imported woods by locally produced woods.

d. Environmental Impact Assessment (EIA) (Environmental Feasibility)

- Improving air quality and decreasing pollution.
- Safe disposal of wastewater, thus reducing pollution.

This shows that the National Program for the safe usage of treated sewage water for Afforestation has an economic advantage and no harmful environmental impacts; rather, it improves environmental quality. Thus, several international bodies and Arab states are encouraged to participate in this program and transfer the pioneering Egyptian experience in this domain. The Algerian Popular Democratic Republic was the first Arab state to adopt this program.

5-f Tree Planting and Green Areas in Egyptian Governorates

Tree planting projects and increasing green areas are considered one of the most important projects given particular concern by the Ministry of State for Environmental Affairs. The implementation of these projects results in:

- Improving air quality, reducing pollution rates and air suspended dust.

Agava sisalma in Ismailia Forest

- Upgrading air quality, thus improving public health level. With the assistance of all Egypt's governorates, municipalities and several organizations and NGOs, the Ministry has provided technical and financial support for establishing nurseries for tree planting projects in governorates as well as for providing necessary seedlings required for tree planting.
- The Ministry puts great efforts in contributing in the establishment of gardens in Greater Cairo and all other governorates. The Ministry has also provided technical and financial contributions for developing slum areas and establishing public gardens and tree planting in their access roads, as well as exploiting empty spaces within cities and residential neighborhoods to increase green areas.

5-g Green Belt Project around Greater Cairo (Cairo, Giza and Qalioubeya)

a. Project General Objectives

- Spreading green areas in available empty spaces around the ring road of Greater Cairo to beautify the capital, develop a feeling and care for trees and the taste of citizens.
- Contributing in environment pollution protection by intensifying greenery around Greater Cairo in order to mitigate harmful vital impacts affecting public health and safety.
- Investing the areas around Greater Cairo through tree planting for achieving national economic benefit from cultivated trees.
- Protecting Greater Cairo residents against chest and allergy diseases and preserving their health.
- Providing employment opportunities to young graduates through orienting them with project activity-related maintenance techniques.
- Benefiting from the treated wastewater used to be wasted into the desert to avoid the loss of the huge investments spent on treatment.

b. Direct Objectives

Green Belt Project will contribute in preventing:

- Increased air pollution rates around Greater Cairo.
- Increased rates of gaseous pollutants, emissions and dust harmful to health.
- Weak capacity of the ecosystem in Greater Cairo to undertake its essential vital functions requested for human health, creatures and development.
- Negative health impact on Greater Cairo residents.

A nursery for producing Mahogany trees seedling at Luxor Forest, producing around one million seedlings per year

Implementation Phases

The targeted area to be planted is 100 km long and 25 m wide on both sides. There are four implementation phases:

Phase One: 50 km in Cairo governorate, 28 km in Giza governorate and 22 km in Qaliubeya.

Phase Two: Includes the roads intersecting with the ring road, with a depth of 25km on both sides.

Phase Three: Establishment of 80 feddans gardens, in addition to gardens and forests in the forests in October Panorama, El Roubeki, Tenth of Ramadan, Imbaba airport, El Saf, 15 May, 6 of October and El Tebin.

Phase Four: Green belts around new cities.

Tree planting in Environment Youths Neighborhood, El Kharga Oasis

The investment cost of the first phase on the ring road is LE 13,721,000.

Technical studies have been completed. Tendering procedures are currently being undertaken for the project first phase among major Agriculture Companies.

5-h Future Vision

MSEA Afforestation and tree planting efforts have major importance and environmental impacts including the full reuse of huge quantities of sewage water, constituting a heavy burden with respect to their disposal, in activities of economic, social and environmental benefits, contributing in the sustainable development of marginal and unexploited desert areas.

These fruitful efforts will have great impact on the future represented mainly in the continuous increase in treated wastewater quantities; the successive establishment of wastewater treatment plants countrywide. The current quantity estimated at 2.4 billion m^3/year is expected to increase to more than 4 billion m^3/year within the coming few years.

This would require an increase in the constructive efforts by MSEA and other line ministries in collaboration with relevant organizations in afforestation and tree-planting using treated wastewater.

MSEA is adopting leading projects for studying the potential of using treated sew-

age water in new developed activities to be implemented in the near future with the objective of diversifying the methods of using such wastewaters safely in the production of safe products such as agriculture non-edible products used in advanced agriculture industries.

The future MSEA efforts will comprise the transfer of more unexploited desert areas into economically productive areas participating in environment improvement in the Arab Republic of Egypt. The Ministry is also planning to intensify tree planting efforts and the establishment of gardens in old cities as well as in new urban communities due to their health, aesthetic, environmental and tourism beneficial impacts.

General Information on The Advantages of Tree Planting

- A medium size tree absorbs 1.7 kg of carbon dioxide daily, and produces 140 liters of oxygen daily.
- A medium size car generates around 11.9 kg of carbon dioxide daily (if it moves 50 km/day).
- 7 trees should be planted for eliminating the pollution impact of one car. Since in Cairo, 1.5 million cars circulate daily, it would be necessary to plant 10.5 million trees.
- In addition to the benefits of trees in absorbing carbon dioxide, they also reduce the speed of air carrying dust, which would cause suspended pollutants to deposit leaving the air cleaner.

Jatropha flowering and fruiting before

Ornamental shrubs

Sericulature activities

Larvaes in the third stage

6 Biodiversity

6-a Introduction

The Arab Republic of Egypt (ARE) has paid special attention, over the past years, to issues of natural resources protection. It has also established a system and legislation for conservation of natural heritage under directives and support of the political leadership, emphasizing integration of development sectors with environmental protection and natural resource conservation for the benefit of the present generation and the generations to come. In 1983, law 102 of Protected Areas was issued, followed by the declaration of Ras Mohammed, South Sinai, the first protected area in Egypt. By 2003, Egypt had established 24 protected areas, extending over 10% of the total area of Egypt, and approaching the Global target.

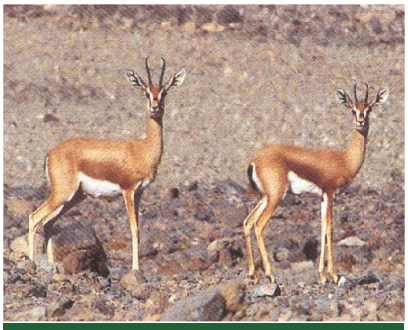
Egypt has been in the vanguard of countries signing the Convention on Biodiversity (Rio 1992), which it ratified in 1994. It developed the National Biodiversity Strategy and action plan in 1997, with the participation of decision makers, representatives of the People's Assembly and NGOs. Law 4 / 1994 on environment protection; constituted a supportive national legislation helping to fulfill Egyptian obligations to the Convention on Biodiversity.

Like most countries, Egypt has faced many challenges due to technological development and interlinked global ecosystems, as well as, revolutionary genetic engineering, free trade, growing world tourism, along with limited financial resources. Therefore, Egypt has considered international cooperation in nature protection as a top priority, which played a pivotal role realizing intended goals.

6-b National Policy and Strategy

Nature Protection Policy

The government of Egypt has adopted a clear policy for protecting the rare natural wealth and its unique biodiversity and to serve as the basis for achieving economic and social development, providing ecological balance, and ensuring a better future for our citizens. The Nature Protection Policy relies on the following principles:



Elba Protectorate

- Conserving natural resources for Egyptian, both present and future generations.
- Conserving national biodiversity as a basis for sustainable development and achieving integration with the different sectors of the state.

Taba Protectorate

- Establishing a representative National Protected Area Network including all vital ecosystems, and endangered species.
- Employing economics-based, scientific management of protected areas, and supporting ecotourism in Egypt.
- Implementation of relevant legislations and international and regional agreements, in addition to raising ecological awareness.
- Cooperating with international organizations and donors to implement projects in protected areas.

National Biodiversity Strategy (1997-2017)

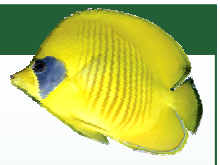
The National Biodiversity Strategy was developed by almost 5000 Egyptian decision makers, scientists and experts in cooperation with ministries, governates and universities. It was discussed in a national conference. The Strategy was later incorporated in the National Plan of the Ministry of Planning as a basis for sustainable development of natural recourses in Egypt.

Red Sea

Strategy's Main Objectives

- Management of natural resources, and the numerous other elements, should be based on scientific grounds in order to ensure continuity of the natural ecological balance and prevent deterioration of ecosystems, and protecting creatures from loss or extinction.
- Developing Egypt's scientific and technological capacity in areas of biodiversity conservation, natural resource de-

Milestones on the Way towards Conserving Biodiversity in Egypt



- Law 102 issued in 1983 on Protected Areas.
- Establishing Ras Mohammed Protected Area in 1983, the first national park in Egypt.
- Developing Ras Mohammed Protected Area in 1989 in cooperation with the European Union.
- Egypt signed the Convention on Biodiversity in 1992, which was ratified in 1994.
- Law 4 was issued in 1994 on Environment Protection.
- Developing South Sinai, Red Sea and Fayoum protected areas in cooperation with donor countries in 1996.
- Adopting the National Biodiversity Strategy and Related Plan of Action (1997-2017).
- Presidential Decree 154 of 2001 State-Owned Land use including protected areas.
- Extending the Protected Area Network over about 10% of the total area of Egypt in 2003.
- Intellectual Property Law was issued and the Biological Safety Law was adopted in 2003.

velopment, and executive and administrative capacities that attain intended goals, and proceeding with research and studies.

- Mobilizing national efforts to conserve biodiversity with all its ecological, biological, and genetic elements, in order to ensure sustained survival and optimal use.
- Setting the plan of action aiming at involving civil society, individuals or NGOs - in Biodiversity Conservation.
- Establishing legislative basis and economic and social incentives that support conservation of biodiversity and sustainable development of natural resources.
- Integrating national action with regional and international action, and utilizing the bulk of scientific and technical expertise concerning conserving resources of biodiversity including gene resources.

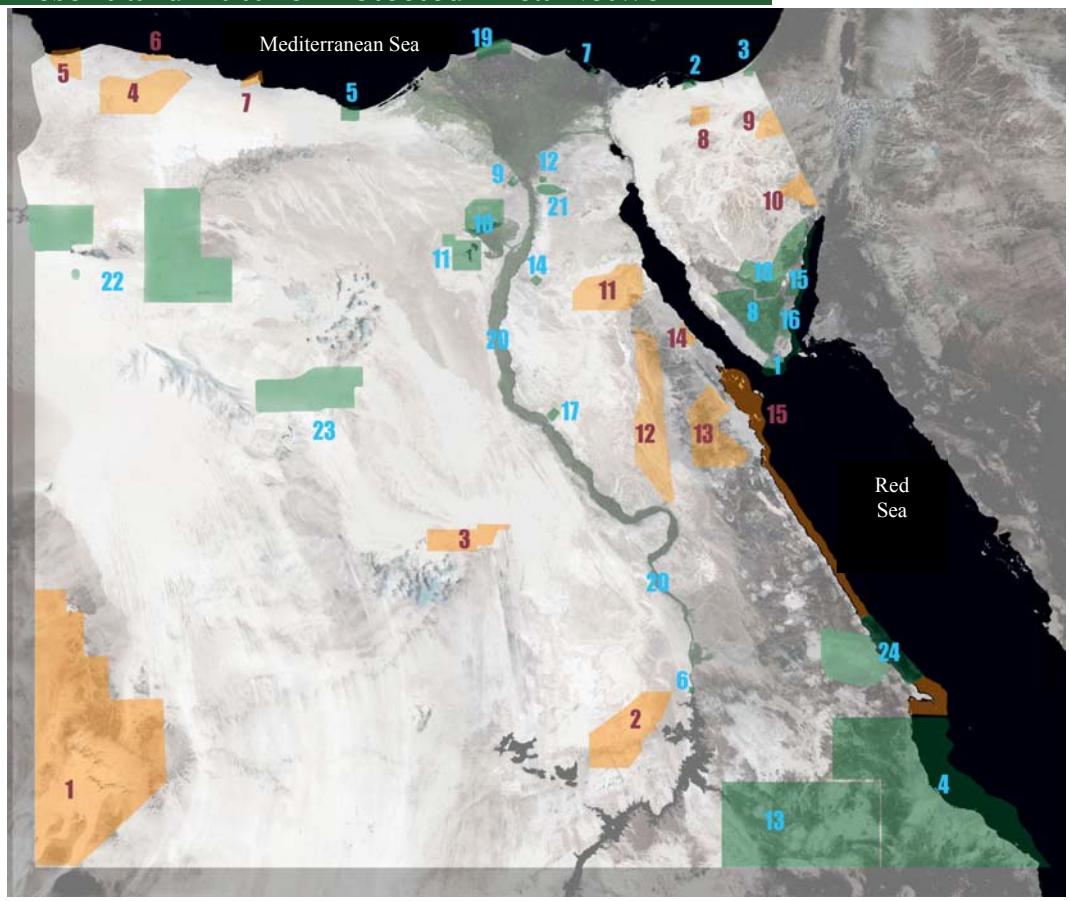
Principles of Strategy Implementation

- Biodiversity is ecologically and economically significant, and is a corner stone of sustainable development.
- Conservation of Biodiversity is a tool for developing natural resources, now and in the future, for the benefit of sustainable national development.
- Biodiversity is part of Egypt's natural heritage and conserving it is a national an international obligation.
- Successful biodiversity conservation efforts rely on scientific studies and environmental monitoring of internal and external interactions.
- Building of national capacity, implementation and sound management of biodiversity conservation programs and public awareness.
- Implementation of environmental legislations and observing relevant international conventions.

This strategy is translated in five consecutive nature protection five-year plans. Currently, the 2002-2007 plan is underway. The plan includes 20 projects aiming at realizing the following goals:

- Sound management of natural resources with view to striking a balance between development and ecosystems.
- Integrating national action with regional and international action for biodiversity conservation and sustainability.

6-c Present and Future Protected Area Network



Current Protected Areas					
1	Ras Mohamed	2	Zaranik	3	Ahrash
4	Elba and Red Sea islands	5	Al Omayed	6	Saluga & Ghazal
7	Ashtum El Gamil	8	Saint Katherine	9	Dome Hassana
10	Qaroun Lake	11	Wadi El Rayan	12	Petrified Forest
13	Allaqi Valley	14	Wadi Sanour Cave	15	Abu Galum
16	Nabq	17	Wadi El Asiouty	18	Taba
19	Burulus	20	Nile Islands	21	Wadi Degla
22	Siwa	23	White Desert	24	Wadi El Gemal - Hamata

Future Protected Areas							
1	El Gilf el kebir	2	Kurkur & Dungul	3	Om El Dabadib	4	El Qasr
5	El Saloum	6	El Shuwaila	7	Ras El Hekma	8	El Maghara
9	El Qusima	10	Wadi Gerafi	11	El Geleala El Qebleya	12	Wadi Qena
13	Shayeb El Banat	14	Malahet Ras Shu-qeir	15	The Red Sea	16	Qattara Depres-sion

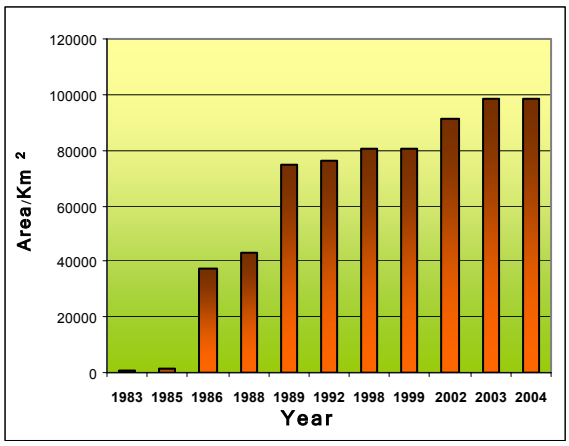
Major international and regional agreements that Egypt has signed

- The African Convention on the Conservation of Nature and Natural Resources (Algiers 1968).
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR 1971).
- Convention concerning Protection of the World Cultural and Natural Heritage (UNESCO 1972).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973).
- Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona 1976).
- Regional Convention on Protecting the Environment of the Red Sea and the Gulf of Eden (PERSGA 1982).
- Protocol on Mediterranean Special Protection Zones (Barcelona 1982).
- Convention on Biodiversity (Rio de Janiero1992).
- Biological Safety Protocol (Cartagena 2003).

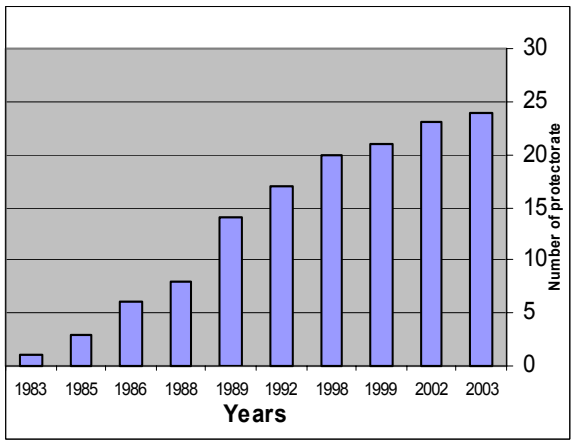
- Developing scientific, technical, managerial and executive capacity for protecting nature.

Development and Classification of Protected Areas

In the light of the National Biodiversity Strategy, 24 protected areas were declared till 2004 extending over 100,000 square kilometers , representing 10% of the total area of Egypt. The Network is due to cover 40 protected areas extending over 17% of the area of Egypt. Out of its firm belief that these protected areas are closely connected with development activities, the government has placed protected areas on the National Land Utilization map issued by Presidential Decree no.154 of 2001; consistent with other developmental activities related to agriculture, industry, tourism, urban development, petroleum, mining, antiquities among others.



Protectorate Area Development until 2004



Development in Declared Protectorates

The Current Protected Areas Fall Under Four General Ecological Groupings

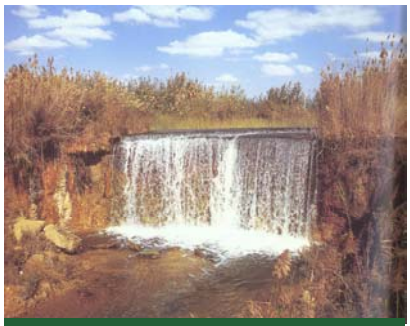
Marine Protected Areas (5)

Generally, they are found on the Red Sea and al-Aqaba Gulf zones. They include interconnected marine and terrestrial sectors based on conserving coral reefs and accompanying systems, marine biome, mangrove bushes, marine islands and adjacent mountain and desert areas. They also serve as attractions for tourist seeking scuba diving and water sports in Egypt. These protected areas include: Ras Mohammed Protected area, Nabq, and Abu-Galum in South Sinai governate, and Elba, (the Red Sea islands) and Wadi El Gemal in the Red Sea Governate.

Ras Mohammed

Wetland Protected Areas (8)

These areas are located largely in the Mediterranean shores and the Nile River banks. They specifically include some northern lakes and coastal zones as well as the Nile islands.



Wady El-Rian

This sector mainly protects resident and migratory bird habitats, assists in managing of fisheries, local communities development and promotes ecotourism. Among these protected areas are: Zaranik in North Sinai Governorte, Ashtum El Gamil in Port Said Governorte, Omayed in Matrouh Governorte, Lake Qarun and the Wadi El-Rayan in Fayoum Governorte, and Saluga and Ghazal Islands in Aswan Governorte, in addition to 144 Nile Islands.

Desert Protected Areas (7)

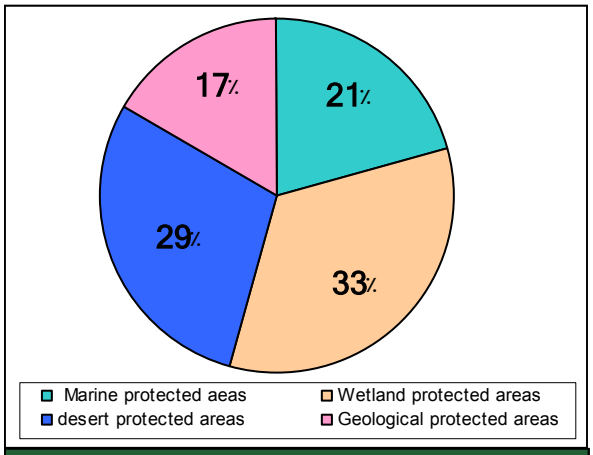
Those are located in Sinai and the Eastern and Western Deserts, they include mountains, plains and wadis. They protect flora and fauna diversity in these regions, regulate and promote safari tourism, and support local communities. They are the Al-Ahrash protected areas found in North Sinai Governorte and Taba and St. Katherine in North Sinai Governorte, Siwa in Matrouh Governorte, White Desert in New Valley Governorte, Wadi Asiuti in Assiut Governorte, and Wadi Allaqi in Aswan Governorte.

Saint Catherine

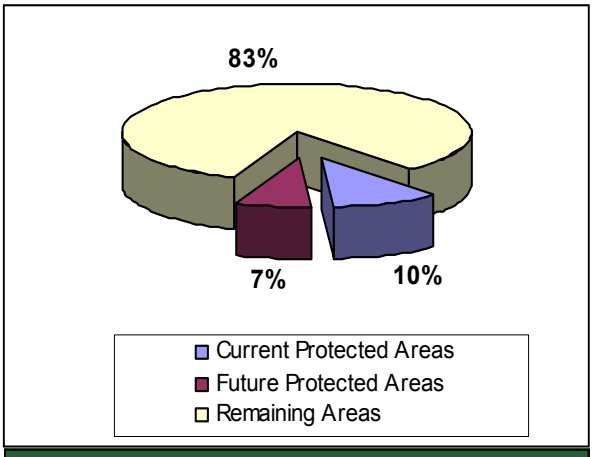
Geological Protected Areas (4)

They constitute unique geological phenomena identified as scientifically and touristically important destinations. They are: the Hassana Dome, the Petrified Forest, and Wadi Degla in Cairo Governorte, and Sannur Cave in Beni Sueif Governorte.

Wadi Sannour Cave



Classification of protectorates
(10% of Egypt's area)



Percentage of Protected areas
to Egypt's total area

Siwa

6-d Current National Efforts

Nature Protection Institutional Support

A study has been conducted on developing the organizational structure of Nature Protection Sector to meet national and international obligations in the light of contemporary changes and globalization. Preliminary development phases started in 1996 funded by Gulf of Aqaba Protected Areas Development Programs in cooperation with the EU. It has become sustainable since 2000 with support of Environmental Policy Program in cooperation with the USAID.

Training Center

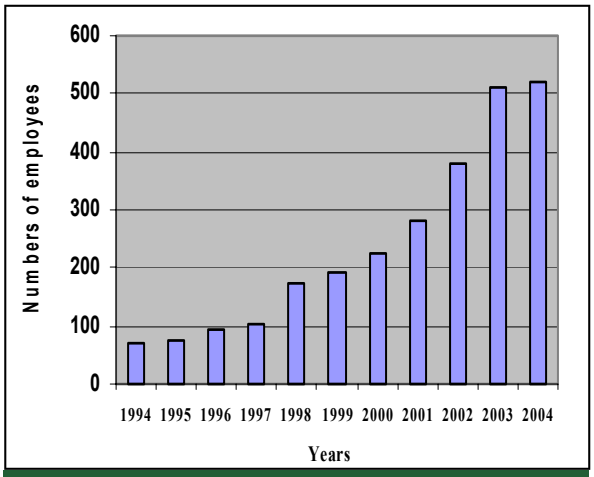
The experimental organizational structures of managing Sinai and southern zone protected areas were issued to be later adopted in order to match with the responsibilities and development intended in these areas.

Protected areas are provided with manpower reaching currently over 500 qualified stuff, constituting 50% of the planned task force.

Total habitat represented in Nature protectorates	Red Sea islands	Elba	Wadi El Gemal	White Desert	Siwa	Fegla	The Nile	Borolus	Abqui valley	Saluga & Ghazal	Asciuty Valley	Semmour Cave	El Rayan Valley	Qarun	Qobet El Hassana	Fossil Forest	El Aneed	Ashtum el gabal	Zaranig	Ahrash	Saint Catherine	Taba	Abu Galum	Nabq	Ras mohamed	
7																										Mountains
18																										Hill
12																										Valley
7																										Sand dunes
6																										Oases
2																										Mediterranean Coast deserts
4																										Fresh water swamps
10																										Lakes
6																										Rivers/canals
5																										Salina
12																										Mangrove
5																										Sludge
11																										Coral reefs
6																										Sea weeds
5																										Mediterranean
3																										Red Sea
6																										Marine islands
4																										Pastures
9																										Total habitats/Nature protectorates
	7	13	11	6	12	2	3	9	6	3	3	1	7	8	9	1	2	5	5	5	6	5	6	9	10	

Environments Represented in Protectorates

Visitors and administrative facilities of around 50% of protected areas have been completed and furnished with equipment necessary for management. Moreover, 105 rangers were trained last year in various specializations. The Conservation Sector now employs 5 PhD holders and 11 MA holders. 20 other rangers have already registered to attain MA degrees in Egyptian universities. The government has established the Nature Conservation Training Center and the Environment Center in Sharm El-Sheikh in cooperation with the EU at the highest international standards. Several training courses and workshops are offered to Egyptians as well as students from other countries in the region.

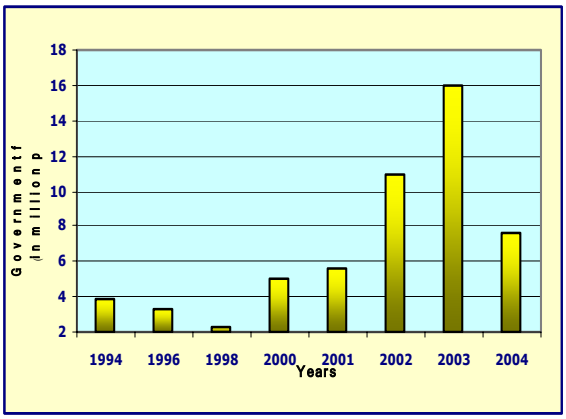


Development of number of employees in protectorates in Egypt (1994 – 2004)

Developing Protection and Maintenance Techniques

- The Protected Area Network is being expended in phases. The most recently declared protected areas are Siwa in Matrouh Governorte, the White Desert in New Valley Governorte2002, and the Wadi El Gemal-Hamata in Red Sea Governorte, bringing the total number of protected areas in Egypt up to 24.
- Maintaining the five South Sinai protected areas- Ras Mohammed, Nabq, Abu Galum, St. Katherine and Taba- that were previously developed through the EU cooperation program. The Red Sea Environmental Policy Program finally received funds from the USAID

to support protection of marine biome and protected areas in the Red Sea. This cooperation will be sustained through launching a the LIFE project in 2005. The Italian government is also providing assistance through the Siwa and Wadi Rayan Protected Areas Development Projects Phase II.



Development of Government Funding to nature Protectorates (1994 – 2004)

- The Wetland Conservation project (MedWet) in Zaranik, Lake Burullus and Omayed and the Medicinal Plants Development Project in St. Katherine are carried out in cooperation with GEF and UNEP. The Mangrove Conservation Project is carried out in cooperation with FAO.

El Gemal Valley

- The State budget for nature conservation has been channeled since 2004 towards developing the central sector Protected Areas including Wadi Degla, Fayoum, Wadi El-Rayan, and Sannour Cave as one-day tourist destinations. In addition to supporting sustainability of Protected Areas and transferring responsibilities after termination of the projects there.
- Setting up a database for endemic and endangered animal and plant species, and acting on classifying and specifying their economic and social value in coordination with academic and research centers, as well as participating in the Global Biological Taxonomy Initiative.

Nabq Protectorate

- A national Committee was formed prepare a national law on biosafety; the bill was drafted to be submitted before the People's Assembly.
- Developing Species and ecosystems restoration programs which have been negatively affected by human activities, such as coral reefs and mangroves and Acacia. Regulating scuba diving and other water sports according to the capacity of coral reef systems, and rational utilization of aquaculture.
- Submitting reports to international organizations regarding development of conservation procedures and on biodiversity the effects of global climate change. Implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in cooperation with police, the

customs authority, the Ministry of Agriculture, Border Guards and NGOs.

Saint Catherine

- Using Information Technology and Geographical Information Systems in monitoring and assessing the conditions of important ecosystems and endangered species to help decision makers as well as academic researchers.
- Coordinating and cooperating at the local level with the ministries of Agriculture and Land Reclamation, Tourism, Local Development, Transportation, Interior, Defense, Culture, Information, Higher Education and Academic Research and affiliated administrations. Moreover, coordinating cooperation at the international level, and exchanging expertise, with UNEP and UNDP, IUCN, UNESCO, International Environmental Conventions Organisations and donors.
- Taking part in many international and national fora, most recently, the recently held Johannesburg World Summit on Sustainable Development, the Fifth Global Conference for Parks in Durban, the Eighth Conference of the Convention of the Parties (RAMSAR, Germany), the Fifth International Conference on Bird Migration (Spain), the Egyptian International Conference concerning Protected Areas (Sharm El-Sheikh), the First Conference of Parties to Cartagena Protocol on Biosafety, the Second Exhibition of Mediterranean Parks, and finally, the International Summit on Sustainable Development in Small-Island Developing Countries.

Ecotourism

Ecotourism is a responsible type of tourism that is well-aware of ecological sustainability, the matter which ensures repeated visits of tourists to enjoy the charming nature and biological riches. Out of this concept, ecotourism activities were incorporated into the National Biodiversity Strategy, and ecotourism became one of the fundamental principles of declaring new protected areas.

White Desert

The current and future protected area network is the cornerstone of ecotourism where the unique natural and cultural heritage abound, the diverse flora and fauna and geological formations, that are all well managed by high quality cadres with the participation of local population. Tourism investors are now genuinely convinced of the need to protect these areas, for they constitute capital assets for their investments and ensure sustainable viability. More than a million tourists, 70% foreigners, visited these protected areas in 2004, which in turn supported other surrounding attractions. In the Protected Areas Training Center, tourist guides are made aware of and acquainted with the scientific ways and techniques of protection.

Elba Protectorate

Since most of the protected areas are found in remote areas which lack in basic infrastructure or services, they turn to play a very crucial role in providing an outstanding tourist service and taking much care of the visitors, as well as giving assistance to local communities. The Protected areas have modeled the typical Bedouin ecolodges, in St. Katherine and Taba protected areas, using local materials compatible with the surrounding environment and clean energy; the private sector also has established a Bedouin ecolodge in Siwa. Currently, other designs are being made in Wadi El Gemal-Hamata protected area. All those mentioned constitute a significant tourist attraction as tourists are provided the opportunity to live genuinely rustic, Bedouin life.

Supporting Local Communities and Women

Protected Areas Management and Development projects open up a lot of job opportunities in their local areas works in terms of direct or indirect technical, environment, or services. The Egyptian State Ministry for Environmental Affairs employs resident Bedouins and local population in managing and monitoring wild life, developing the endangered species, and managing solid waste. Moreover, the Ministry supports them to undertake environment-related tourist activities.

Protected areas give assistance to local communities through assigning caravans to visit valleys and mountains and provide the locals with medical and vet care and administer free medicines. They also provide citizens with technical guidelines and environmental advise concerning development of endemic plants, collecting and marketing medicinal plants; and their drying clean agriculture , as well as encouraging citizens to undertake small-scale projects and traditional fishing to upgrade their production.

Saint Catherine Bedouins

Protected areas give special concern to Bedouin women who are the real cornerstone in such communities; Bedouin women are given training in manual artifacts, and support to form NGOs that would help them promote their products. Bedouin women also have a role to play in operating the Protected Areas either through management or secretary works. Women in these areas are taught first aid basics to be administered to women and children and are provided first aid bags.

In this respect, many successes have been achieved in South Sinai, Red Sea, and Matrouh Governorates, which will be furthered and conveyed to other zones.

Environmental Awareness and Education

Protected Areas and awareness raising Biodiversity Conservation programs are a cornerstone in achieving sustainable development. That's why those programes varied according to the cultural and scientific levels, the quality of participants and beneficiaries of the protection. Awareness activities are carried out through several mechanisms, among conferences, symposia, workshops, or meetings, in addition to the CDs, posters, brochures or others. The Nature Conservation Training Center in Sharm El-Sheikh plays a very important role in providing environmental education to divers, safari organizers, local administration personnel and investors, sensitizing them with the value of protecting natural resources and how far they are interrelated with their future career and incomes. Moreover, visitor reception centers have been established in more than 50% of the protected areas to raise awareness of the manpower there.

Environmental Awareness

Collaborative action is underway with the different mass media, both national and foreign, to promote Egypt's natural and cultural wealth and sensitize people with the importance of stewarding this wealth for the good of the generations to come.

6-e Future Challenges

- Egypt, like many world countries, is heading towards economic transformation within globalization and free foreign trade and the definite accelerating growth of national investments and the increasing volume of trade. This will be further reflected as the demand on natural wealth increases, necessitating striking delicate balance between conservation and development activities, and maximizing economic and social revenue of natural resources.
- There is still a range of protected areas that lack in adequate infrastructure, human cadres and capabilities necessary to achieve sound management and conserve their natural wealth, such as Elba, White Desert, Siwa, Degla and Nile Islands protected areas. These protected areas harbor a wealth and diversity of natural and aesthetic heritage that enable them to increase tourism added value and the economies of these zones.
- Enhancement of tourist development, as an important resource of national income, and further development of urban communities with the increased population growth, have constituted pressuring factors on the planned protected areas.
- Out of the experience gained over the past twenty years, protected areas should be declared in sequence and provided with human cadres and capabilities before their fundamental elements are adversely affected.
- Protected areas need to be constantly funded to ensure updating of protection systems with advanced scientific techniques, utilizing biotechnology and the IT booms.
- It is one world now. Like other countries, Egypt is liable to invasive species

that travel across countries and influence their biodiversity, as well as genetically-engineered species and other organisms that negatively affect safety of humans, animals and plants, in addition to the global climate change and other cosmic factors. All this necessitates reinforcing national capacity, national and international cooperation in order to face these changes.

- Due to the open skies among nations, mobility of transport, growth of global tourism and increased research and studies, it has become imperative to exert more efforts to protect intellectual property rights of the national gene resources and the cultural heritage that constitute strategic stocks for the generations to come.
- In order to start building upon the past twenty year achievements and realizing the objectives of the National Biodiversity Strategy (up to 2017), one of the major priorities is to develop scientific management in protected areas especially following the termination of foreign cooperation projects.
- All these challenges and other internal and external factors command considering radical solutions to achieve self funding for Biodiversity and Protected Area management programs, as well as economics-based institutional development of the nature protection sector, and forming national board of trusties for overseeing biodiversity conservation.

6-f Future Vision

- Providing institutional support to activate the national Biodiversity Strategy though forming a Supreme Board/ Authority for overseeing the national program and mobilizing financial and technical resources, both internal and external, to undertake its activities under the international changes.
- Developing a balanced organizational structure for nature protection, within jurisdiction of the State Ministry of Environmental Affairs, and providing specialized manpower and adequate financial capabilities to achieve protection and conservation over 15-17% of the area of Egypt, in addition to conserving biodiversity in Egypt within the context of the national and international obligations. A proposal has been submitted to the Cabinet Premier in 2003 on the economic management of protected areas through establishing a holding company involving three companies for ecotourism breeding of wild animals and planting medicinal and aromatic plants. The preliminary economic feasibility study indicated that this holding company could achieve a 25% annual investment return.
- Standardizing management, monitoring and evaluation systems in the protected areas and important ecosystems according to agreed specific standards and indicators, and continuing the Protected Areas management plans and developing all related scientific and technological capacities, and enhancing integration of these protected areas into the national economy and public involvement.
- Developing a National Ecotourism Strategy in Egypt in cooperation with the Ministry of Tourism, the Egyptian Federation of Tourist Chambers, investors, and the Civil Society. Setting a well-defined plan of ecotourism activities that identify the roles played by the different sectors and overseeing its implementation. Moreover, setting a remarkable map designating the hundred

most important ecotourist destinations, in which current and future protected areas stand as pilot models. In addition to participating in media and cultural program campaigns as well as Specialist Training programs.

- Achieving maximum benefit from foreign cooperation programs, particularly natural resources management in the Red Sea in cooperation with the USAID; Conservation of medicinal plants in St. Katherine in cooperation with GEF; Rehabilitation of Mangrove trees in cooperation with the FAO; Achieving regional development in South Sinai in cooperation with the EU; Realizing sustainable development along the coastline of Ras Mohammed Protected Area. Sustainable management of biological resources and developing the Wadi Rayan, Siwa and Elba protected areas in cooperation with the Italian Government. Sustainability must be ensured for all these programs after they have reached their end of term.
- Preparing academic and technical studies of natural wealth and biodiversity in order to declare new protected areas according to the priorities of zones in the Egyptian Western Desert. Encouraging cooperation with donors to develop these protected areas, as well as projects of establishing the Egyptian museum natural history breading centers, gene banks and rehabilitation negatively affected species.
- Setting and implementing ad hoc programs on fighting all invasive species, issuing the Biosafety Law, and activating the Intellectual Property Act on natural and cultural heritage and participating in development of environmental laws. In addition to developing capacities and achieving coordination and cooperation to address these challenges.
- Supporting and developing all education, awareness raising, and information programs and involving civil society and women to further reinforce protection and conservation techniques in a manner that enhance public opinion and promoting their partnership.

7 Climate Changes and Protection of Ozone Layer

7-a Introduction

It has become evident to decision makers, energy and water resource professionals and the like in Egypt that we are facing alarming climatic changes that command more caution and further examination to determine the present conditions as well as the adverse effects of such changes on all aspects of life, along with the measures to be taken to avoid dangers. Climatic Changes indicators include:

1. An increase in surface air temperatures all over the globe; the global average increased by 0.3 to 0.6 % last year.
2. Change of temperature average distribution and rainfall rates in many zones.
3. Increase of hot waves and storms in many areas. Different scenarios of adverse climates indicate that a remarkable drop of the Egyptian national crop production is likely to take place, in addition to the negative effects of rising of water temperatures on the Red Sea coral reefs.
4. Decrease of Nile water resources in some years to an alarming degree.
5. Rise of Seawater level, some research and studies supervised by the Climate Change Unit – the Egyptian Environmental Affairs Agency – indicated that this will probably cause significant zones in the Delta to be flooded threatening with loss of populated fertile lands.

7-b Actors, Pressures and Impacts

Several research and studies proved that climate changes occur due to high emission rates of Green House gases (GHGs), Carbon Dioxide (CO2) in particular, Methane in addition to other GHGs.

These climatic changes are going to induce major effects on different sectors world-

wide. Egypt has taken the initiative to study how far the effects of climate changes are on the different sectors, especially the water resource – agriculture sector and coastal regions, in addition to other sectors such as the Energy, tourism, industry and livestock. These sectors were found to be largely vulnerable to climate changes. Impact on the vulnerable sectors are summarized as follows:

Water Resources

- Adding further pressure on water resources, agriculture and industry.
- Changing amounts, locations and seasons of rainfall.
- Increasing rates of pollution due to increased cases of atmospheric stability.
- World environmental models are still unable to make accurate predictions; however, some studies are conducted on the regional models in a bid to predict venialities of water amounts that are going to reach the Nile River due to climate change.

Agriculture, Livestock and Food Sources

- Less agricultural productivity and food sources (some crops are even more vulnerable).
- Changing the plans of geographical crop distribution.
- Adverse effects on marginal crops, and increased desertification rates.
- Increased demand on water.
- Negative effects on agriculture due to changed rates and timings of hot waves.
- Adverse social and economic effects.

Coastal Regions

- Some low zones in the Nile Delta, and other coastal zones, will be flooded.
- Increased rates of shore erosion and sea water infiltration.
- Increased rates of coastal lands salination, high levels of ground water and low agricultural productivity.
- Changed rates, areas and timings of rainfalls.
- Perturbed fish production due to changed ecosystems in coastal areas.
- Accompanying economic and social effects subsequent to all previous effects.
- Health effects due to water shortage, higher temperatures, higher humidity and higher hot and cold waves.

Tourism

- Adverse effects become even fiercer at high temperatures and changeable weather conditions.
- Putting more pressure on investment areas and both the Red Sea and the Mediterranean Sea coasts.

Energy Sources

- Adding more pressure on energy for domestic air conditioning.
- Increased temperatures could result in increased air speeds, a matter which can be positively utilized in generating air and solar energies.
- Affecting the High Dam-generated energy.

Population

- Coastal populations: (rising sea level, increased rates of storms, rainfall and hot waves).
- Inland populations: (hot waves, unexpected torrential rain, more air-borne dust).
- Social and economic effects.

In Coastal Zones

- Migration of agricultural workforce and fishermen.
- Decreased viable beaches will negatively affect tourist services, the matter which will lead to quick deterioration of such beaches and consequent decreasing rates of tourism and increasing rates of unemployment.
- Heat impacts on archeological sites leads to their rapid deterioration thus to declined tourism rates and increased unemployment.
- Increased unemployment rates lead to political instability.
- Rising levels of ground water lead to increased rates of diseases and monument corrosion.

In Inland areas

- Slums are the most vulnerable to changes of wind and torrents.
- Rising temperatures raise infant mortality rate.
- Rising humidity rates increases the feeling of discomfort, reduces labor efficiency and productivity and minimizes tourism and buildings and monuments life cycle.
- Rising temperatures raise soil erosion rates and minimizes the potentialities of cultivating marginal areas.
- Increased rate of wind speed and rising temperatures raise rates of dust, the matter which negatively affects electric equipment and increases rates of fire accidents in rural areas and slums, as well as giving rise to road accidents.
- Negative health effects due to heat, dust, humidity and wind speed.

Ozone Erosion

The Ozone layer depleted due to using synthesized chemicals and increased use of ozone-depleting gases. Found in the stratosphere, the ozone is the layer that contains the ozone gas among the atmospheric components.

The ozone lies at altitude 10 to 18km from the earth's surface, at the nearest end. It is 3 to 4km in thickness. The ozone layer protects living organisms on Earth from the receiving the harmful ultraviolet rays. Among the most important chemicals that damage the Ozone layer:

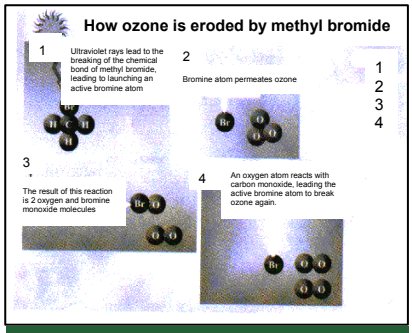
- The chlorofluorocarbons and the hydrochlorofluorocarbons (HCFCs) used largely in domestic, commercial, and industrial coolers and air conditioners.
- Halons used in fire fighting ad air conditioning systems.
- The Methyl Bromide, used as an insecticide, in storing agricultural crops and sterilizing agricultural soil.

How does Methyl Bromide deplete erode the Ozone layer?

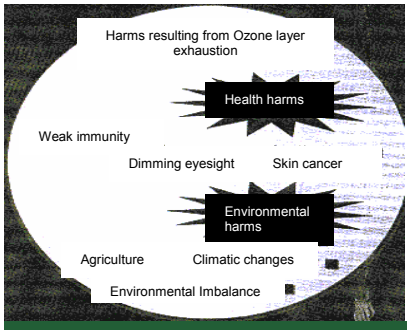
A methyl bromide particle consists of three hydrogen atoms, one carbon atom, one brome atom. While an ozone particle consists of 3 oxygen atoms in the high atmospheric layers. The brome atom disintegrates due to the ultraviolet effects. It interacts with the ozone particle resulting in disintegration of the oxygen atom from the ozone particle that turns into an oxygen particle, the matter which leads to depletion of large amounts of the ozone. It is noteworthy that the Chlore atom found in the chlorofluorocarbon (CFC) compounds has a detrimental effect on the ozone layer.

Environmental damages resulting from the ozone layer are largely reflected in the climate changes to the globe, and the ecological imbalance ensuing, whereas health det-

riments are reflected in the spread of leukemias, impairing human natural immunity and causing some ophthalmic diseases such as the glaucoma.



Ozone Depletion Method



Environmental harms

7-c Government Efforts to Address Effects of Climatic Changes and Ozone Depletion

Addressing Climate Change

Given the significance of the Climatic Changes problem, an urgent need to develop Egyptian national policies emerged to address this problem, particularly for the potential impacts on Egypt. Within this framework, several seminars have been arranged. Politicians, organizers, researchers, and environment-related NGO members participating these activities. The proceedings of these seminars tackled the issue of climatic changes, and more specifically to Egypt, the anticipated impacts, necessary strategies, and the Egyptian negotiating situation as well as its obligations within the framework of the Convention of Climate Changes and the role of relevant bodies. The issue of climatic changes has been placed on top of the list of national concerns, out of the concept that Egypt is vulnerable to climate changes according to international reports. This also gave rise to the need to obtain well-defined contributions in all fields - training, education, communication, raising awareness regarding scientific and economic dimensions of the Climatic Changes phenomenon. As well, an urgent need has emerged to open up opportunities of international cooperation in terms of clean technology.

On the other hand, some obligations ensuing from signing the framework Convention on Climatic Changes stipulated submitting the national communication report and realizing integration between the development policy in Egypt and climate changes. In addition to awareness raising, and preparing national human cadres capable of tackling all aspects of the issue in question, as well as defining policies and programs required for addressing such an issue. This was done in the Initial National Communication submitted to the UN 1999. Noteworthy, however, that many measures have been taken to control green GHGs at the different sectors in Egypt.

Egyptian Actions As Regards Climatic Changes at the International Level

Given the serious and critical nature of the negative effects of climate changes on all aspects of life, constant follow-up of this phenomenon as well as effective participation in international fora were inevitably necessary. Egypt had a remarkable role in international fora, especially as regards the

following proceedings:

- Coordinating and cooperating with the G-77 and China, and supporting all attitudes that are consistent with the national interests.
- Further demanding industrial countries to necessarily fulfill their obligations contained in the Convention on Climate Change, particularly those on assisting developing countries through technology transfer and capacity building as well as providing insurance necessary for controlling the adverse effects of climate change.
- Reaffirming disapproval of incorporating any mechanism for imposing obligations on African states.
- Reaffirming refusing attempts of some industrial countries to link adaptation to effects of Climatic Changes with the Climatic Changes mitigation measures.
- Reaffirming the need to put article 2 (paragraph 3) of the Kyoto Protocol on the adverse effects of the response measures.
- Calling for encouraging and employing new CO2-absorption technologies.
  Motivating research and studies centers and universities to coordinate in order to conduct studies on Climatic Changes and ensuing impacts on the Arab region.

Given that emissions ensuing from human activities are the actors of climate changes, Egypt has put climate changes in perspective in terms of lack of certainty and the probable impacts they may have on all sectors of the society. To this end, Egypt has adopted two basic principles: a no-regret policy and the precautionary principle in development planning. In 1992, Egypt signed the Framework Convention on Climatic Changes (UNFCCC), and ratified it on December 5, 1994 - and set up a primary inventory of GHG emissions. A number of studies have been conducted to determine how far water resources, agriculture and coastal zones are affected by climate changes. These studies referred to the need to take into account the vulnerability of these sectors to climate changes in future development plans. Through this Convention, necessary human cadres were prepared. Egypt has participate in meetings of the contracting parties on climate changes, ever since the Berlin Conference 1996, and set up the Climatic Changes Committee out of representatives of relevant ministries at the highest levels, thus leading to form human cadres necessary for developing anti-Climatic Changes policies.

Within this framework, Egypt issued in 1999 the first national communication report to the UN secretariat which contained an inventory of GHGs and the means to control them, and adaptation to adverse phenomena, as well as the national precautions necessary for addressing this phenomenon. The Egyptian government has also developed the national plan of action in August 1999 that involved a careful definition of policies to be adopted by in areas of energy, agriculture, water sources and wastes among others.

Over the last period, Climate Change Unit focused activities on supervising and following up several projects associated with the aspects of emission sources, in addition to the policies to be taken to control adverse effects.
Central to these adverse effects are:

- GHGs inventory and economic assessment of reduction. It was made clear that total emissions amounted to 116.608 Gega gm CO2.
- Capacity building of national capacity in terms of climate changes. This pro-

ject was concerned with training national capacities to be able to fulfill obligations ensuing from signing the Framework Convention on Climate Change.

- Energy and environment review. Of the most significant outputs was the present policy analysis in the area of energy, as well as studying adverse impacts ensuing from application of these policies. The project has applied the cost-benefit analysis methodology.
- An experimental project for converting gasoline-operated engines of motorcycle to natural gas-operated engines. Among the most significant outputs of this project are reaching a possibility of controlling GHGs ensuing from operating motorcycle with liquid fuel.
- Recovery the methane gas emitting from sanitary land filling.
- GHG inventory of sanitary landfills. Results indicated that average percent of the methane gas is almost 30%.
- National Study for Clean Development Mechanism aiming to prepare an integrated group of projects that can be implemented through this mechanism, and institutionalize the project implementation mechanism, as well as studying promotion of Egyptian projects in the world market.

Presently the Regional Project for Cleaner Production Mechanism is being put into force in Egypt through projects provided by the developed countries with view to buying out quotas of GHGs from developing countries. As well, a project of introducing electrical and hybridized automotive technology is underway; this project is likely to have a great significance in controlling car-generated pollutants.

7-d Egypt's Obligations towards the Protection of The Ozone Layer

Egypt has, on its part, ratified the Montreal Protocol, and the amendments made thereto, which is mainly concerned with preserving the Ozone layer though gradual reduction of producing and consuming Ozone-depleted chemicals.

Developed countries give support to developing countries to ultimately end using substances causing erosion of the Ozone layer.

The Egyptian Ozone Protection Program has been developed to include various industrial and commercial activities that dictate applying alternatives as well as the draft general rules and decisions for fulfillment of Egyptian obligations.

The Egyptian program includes several industrial and agricultural sectors: the foam industries, solvents, refrigerants. Training was given to develop the capacity of those working in maintenance of refrigeration units; a trainer manual for trainees and technicians was set.

Fulfilling its obligations towards the Montreal Protocol and preserving the ozone layer, Egypt had to orchestrate all efforts to realize this national goal.

Role of the State Ministry for Environmental Affairs

- Forming the National Ozone Committee with representatives from all bodies concerned with view to coordinating between the different sectors.
- Supervising implementation of projects of alternatives and activities funded by the ozone fund in Egypt. The Ozone Fund has given finances to several pro-

jects aiming at limiting the use of Ozone-depleting materials. In the area of air conditioning and refrigeration, the Fund has provided finances to the Egyptian CFCs Control Program used in conditioning and refrigeration, using instead Ozone-friendly, CFC-free alternatives: all refrigerators manufactured in Egypt are free from CFCs. The Fund has also assisted financially in building the halon bank, an Ozone-depleting material that is most destructive to the Ozone layer. The depleting capacity of the halons is ten folds the depleting capacity of CFC compounds. There are dozens other projects in the different areas of industry that aim at minimizing the use of Ozone-depleting materials that will receive financial support from the Fund in the next period. Funding had a significant effect on successfully developing the Egyptian strategy for controlling the use of Ozone-depleting substances and supporting the objectives and items of the Montreal Protocol, an example to be followed in international fora.

Role of the Ministry of Industry

- Adhering to the conditions contained in the Montreal Protocol and the applications thereof in cases of approving establishment of new industrial units.
- Contributing to application of control on imports and use of Ozone-depleting substances.

Role of the Ministry of Foreign Trade

- Foreign trade sector is responsible for applying law# 118 of 1975, and finding the legislative mechanism on export and import control and the necessary environmental conditions.
- Regulations of law no. 275 of 1991 ban importing sets or equipment that depend on any Ozone-depleting substance.

Role of the Ministry of Agriculture

- Results of lab research conducted in institutes of the Ministry were provided to find alternatives for the methyl bromide such as the Metam-sodium, Bezamite and Phosphine.
- The Ministry pays much attention to the environmental dimension in all research or executive plans, particularly those related to insecticide.

Role of the Ministry of Finance: Customs Authority

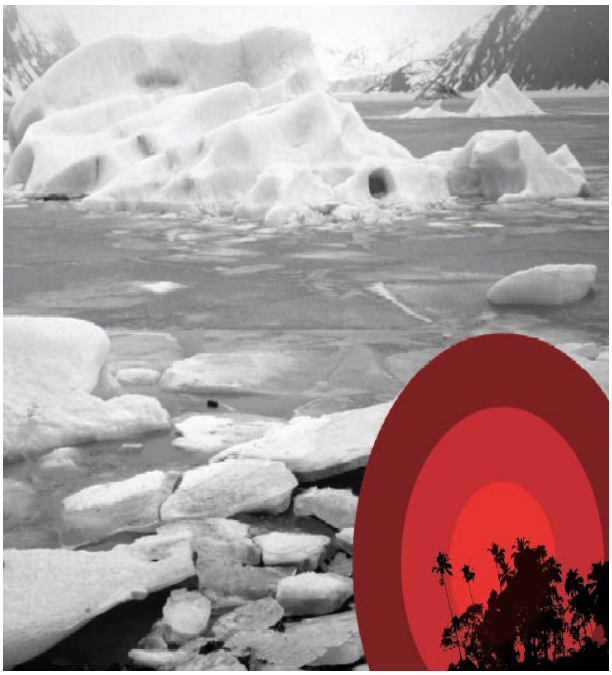
- The customs authority implements all decisions and instructions of the different state agencies in order to protect the national economy pursuant to the presidential decree no. 80 of 1994 containing amendments to the Montreal Protocol on Controlling Ozone-depleting materials.
- The customs authority has issued import manifestos of Ozone-depleting materials that are subject to control, for example: AC units, coolers, aerosols, fire extinguishers in accordance with the provisions and decisions of Montreal Protocol and the amendments thereto.
- As early as the instructions were given, the customs authority has totally banned releasing any shipments using Ozone-destructive materials except after they have been reviewed and approved by the EEAA.

7-e Future Vision

Within the Framework Convention on Climate Change, Egypt has been exerting con-

tinuous efforts to reduce emissions at all sectors, particularly limiting green-house gases emitting from national industries, as well as identifying economic viability, as a large amount of these industries could be implemented with a negative incremental cost.

It is also exerting sustained efforts to make use of renewable energies, such as wind and solar energy, in addition to recycling wastes and utilizing resulting emissions. The State Ministry for Environmental Affairs pays great attention to reducing emissions; it has also started auditing inventory in the different sectors, geared efforts toward utilizing tools of clean development, mechanism, forming cadres of regional model studies to specify the impacts at all sectors, and developing appropriate adaptation and addressing policies.



Observing its obligations under the Montreal Protocol and the amendments thereto regarding protection of the Ozone layer, EEAA has set the outline of the following phase:

- Tackling all illegal practices of conditioning and cooling equipment using Ozone-depleting materials.
- Proceeding with conversion training as well as programs on materials recycling and encouraging relevant units to employ modern technology through making use of technical assistance available in addition to specific awareness raising programs .
- Gradually shifting towards using alternative substances to ozone-depleting.
  Upgrading efficiency of AC users and raising awareness of farmers to use the Bromide Methyl alternatives in agriculture to conserve the environment.

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Chapter II

Urban Development and Population Activities

8 Urban Communities Environmental Development

8-a Introduction

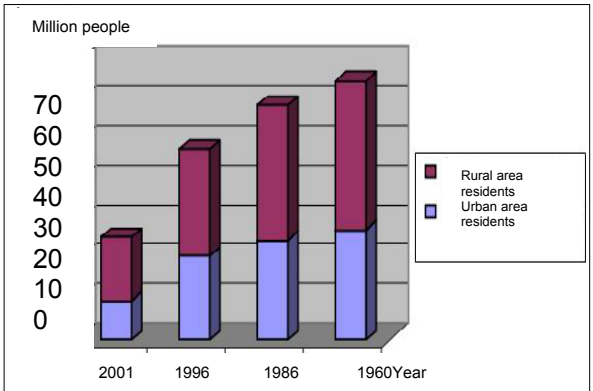
Urban areas play an important role in providing job opportunities, housing, and services, in addition to being centers of culture, education, and technical development as well as industrial centers for increasing income. Urban areas are the largest contributors to NDP development. However, the accelerating growth in cities and urban areas is accompanied by many side effects, such as the increase in unemployment rates, inefficiency of services, exhaustion of the infrastructure, and environmental deterioration. During the period from 1960 to 2004, Egypt's population doubled more than two and a half times, from approx. 26 million to 72 million respectively. The surge in population, coupled with internal rural-urban migration, resulted in the increase in population in rural and urban areas in varying rates. Urban population percentage has increased from 38.2% in 1960 to 43.9% in 1986. Then, the percentage dropped to 42.6% in 1996 to settle roughly at this level till 2002. Nonetheless, it is expected that urban population percentage will rise to 59.9% of the total population by 2030.

Since the nineties of the last century, the state's attention to environmental issues has increased. The state committed itself to environmental preservation and combating the side effects of economic development activities under economic and demographic trends in the Egyptian community. In the mid eighties, the state started, at a limited scope, to increase its focus on the environment. An institutional and organizational framework for the environment was established, represented in the Ministry of State for Environmental Affairs (MSEA) and the Egyptian Environmental Affairs Agency (EEAA), as well as the legal and legislative framework required for environment pro-

tection, represented in Law No. 4/1994 on Environment Protection. The state worked on activating the institutional framework and providing it with all capacities, to enable it to implement the legislative framework to ensure environmental protection and quality improvement.

8-b Urban Environment in Egypt and Major Pressures

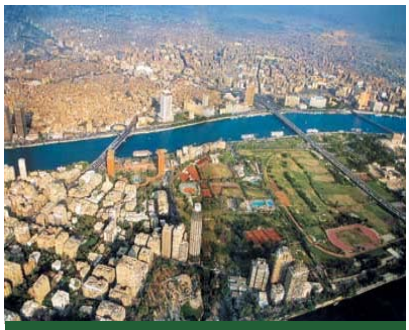
The environment and its natural resources in the Arab Republic of Egypt has experienced a number of pressures over the last fifty years, either due to the significant population increase or the vast expansion in economic activities. The following figure shows population increase in Egypt since 1960.



Population growth in Egypt and its distribution on rural and urban areas from 1960 till 2001

Source: UNDP, Egypt Human Resources Report, 2003

The surge in urban areas was concentrated in a number of large cities such as Cairo and Alexandria, where 40% of urban population lives. In Cairo alone one third of the urban population of Egypt is found. This was the reason behind persistent expectations indicating that Cairo's would continue to rank among the highest twenty cities in the world with respect to population during the coming twenty years. The increase in urban areas population was coupled with increased population density. Population density in Cairo, Alexandria and Giza, excluding desert areas, amounts to 12700, 2153, 4552 persons/km^2 respectively, compared to average population density in Egypt in general which stands at 1011 persons/km^2.



The City of Cairo

Population increase and extension in urban areas as well as their high population density has led to the emergence of many problems, such as environmental deterioration. The rapid growth of cities resulted in an increase in pressures on utilities and services, such as sanitation, water, roads, and transportation networks and waste management. Another problem is the spread of squatters with all its subsequent problems and negative impacts on the environment. Squatter populations in Egypt were estimated at 9 million in 2001, living in 1174 unplanned settlements, on a surface area of 418,138 km^2. Nearly 3.5 million live in squatter areas in Greater Cairo (184 settlements) that lack utilities and services. Noteworthy, urban areas growth is usually associated with an increase in pressures on existing natural resources in the adjacent areas, such as urban encroachment on agricultural land.

Environmental problems are also aggravated in residential areas adjacent to industrial zones and in areas characterized by

overlap in land uses. The concentration of industrial activities in cities and urban areas has adversely impacted on population health and environment quality in such areas. Though the industrial sector in Egypt is considered an influential sector on the national income and economic development, yet it is a main source for air, water and soil pollution. In Egypt today, there are about 26,000 industrial establishments, some of which are concentrated within cities, such as smelters, cement and fertilizers factories and tanneries. The majority of which are still using old techniques, causing emissions in the ambient environment, exposing residents in these areas to significant health hazards. Furthermore, investors' lack of environmental awareness in these areas exacerbates the problem, added to this lack of incompliance with environmental dimensions in projects that were launched before the issuance of Environment Law no. 4/1994 as a result of the absence of the requirement to conduct EIA studies.

In addition, the movement of vehicles on crowded roads intensifies the pressures on urban environment. It was estimated that more than 3 million vehicles trafficked Cairo streets in 2002, consuming 52 million tons of gasoline and 5500 tons diesel fuel annually, emitting their toxic gas exhausts into the ambient air, let alone the noise.

8-c Challenges Facing Urban Environment and Communities In Egypt

Major challenges facing the urban environment in Egypt may be summarized as follows:

- Air pollution prevention in urban areas resulting from emissions by industrial facilities and vehicles in crowded street.
- Environmental services provision for improving infrastructure and upgrading squatters within and around cities.
- Sanitation impacts on public health inside and outside residential areas, on buildings, due to increase in drainage levels, and on the land quality.
- Efficiency improvement, preservation and management of natural resources, particularly water resources and agricultural land.
- Reducing waste accumulation, and developing more effective systems in municipal solid and hazardous waste management.
- Increasing green areas, protecting local ecosystems and preventing noise and visual pollution.

8-d State Efforts for Developing Urban Areas

The state has focused on revitalizing and activating the role of civil society in Egypt. NGOs are significant civil society institutions that adopt environmental issues, due to their experience and awareness of environmental issues and voluntary work and their ability to mobilize people to participate in solving environmental problems. Accordingly, NGOs have witnesses a reactivation of their role during recent years where their numbers have increased and their activities have greatly diversified. The number of registered NGOs in Egypt in 1999 has reached 14,657, working in 16 social activity, 10,846 of which are active in the field of social welfare, while 3,811 are active in local development. Concerning geographical distribution, more than one quarter of these NGOs are found in Cairo, followed by Giza, Alexandria, Sharqia and Minia governorates, (7.6%, 6.4%, 5.9%, and 5.4% respectively).

Specific integrated programs were set to develop or extend existing residential areas, as well as developing environmental regulations governing the new residential areas through a group of activities:

- Coordination with the ministries, entities and all sectors to incorporate the environmental dimension in their activities.
- Coordination with the General Authority for Urban Planning to select the sites for new cities and urban conglomerates.
- Developing guidelines required for EIA of new residential areas expansions in older areas.
- Developing guidelines required for environmental impact assessment of new sanitation plant sites.
- Coordination with the Governorates to select controlled waste landfill sites.

MSEA and it executive arm, EEAA, through the Support for Environmental Assessment and Management (SEAM) program, have developed a Solid Wastes Management Strategy (SWMS) in 5 Governorates; Qena, Sohag, Daqahlia, Damietta, and South Sinai.
As for existing residential areas, a plan was developed for studying their environmental status and identify environmental development requirements, responsible organizations and their role, based on environmental indicators for studying and assessing the environmental status of residential areas and establishing a database for such areas, analyzing data, concluding information and detailed reports and determining the procedures required to overcome the environmental challenges and maximize positive aspects.

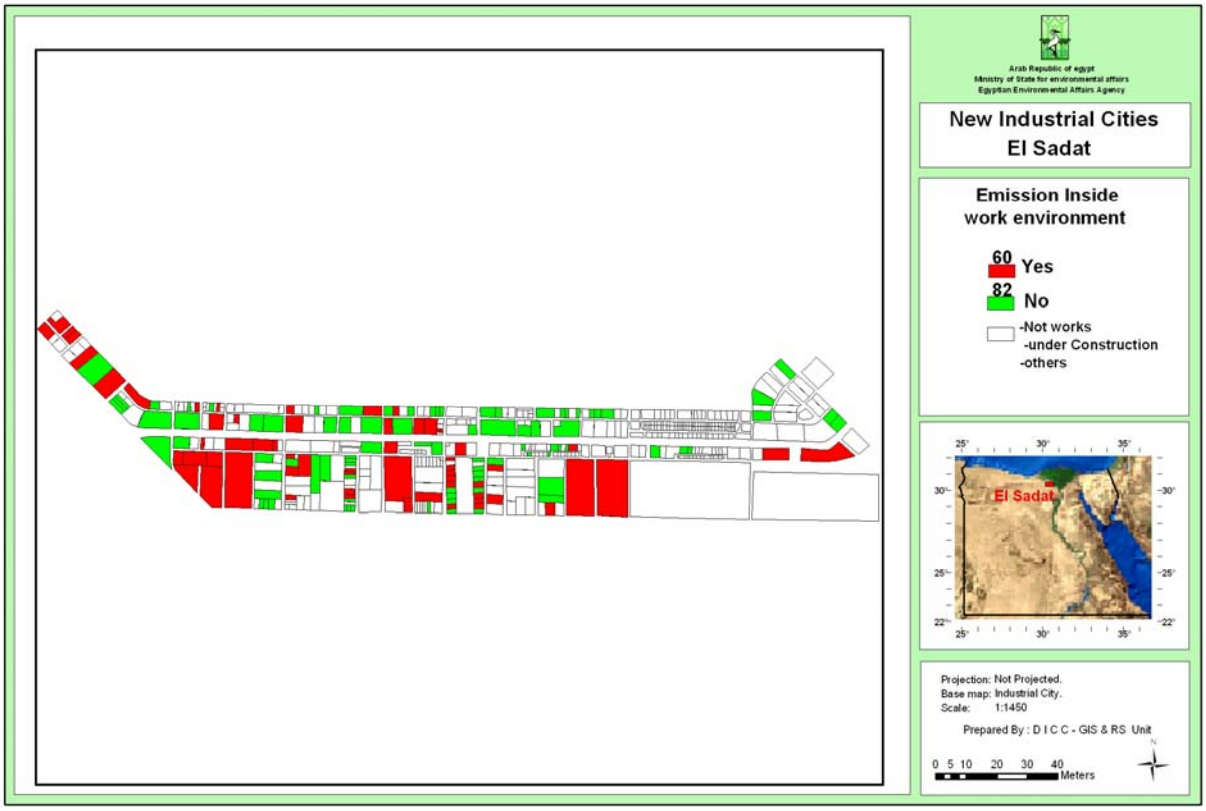
Through the UK DFID funded SEAM program and Danida funded EMG component, a number of demonstration projects were funded and implemented for environmental development and environmental management improvement in residential areas (cities and villages). The projects were implemented in many fields including solid waste management (12 projects), sanitation (4 projects), and 24 projects for achieving Cleaner Production (CP) in some facilities within residential areas. It was observed that these projects are low cost, replicable and sustainable.

Within the framework of supporting community participation in preserving the environment, 40 projects were launched in the fields of waste management, sanitation, tree planting, environmental training and awareness.

Within the efforts for developing informal settlements in Egypt and providing them with utilities and services, the state had upgraded 286 squatter settlements in 10 Egyptian Governorates till the year 2001, and is currently working on developing other 435 areas.

New Areas

Two modal environmental villages were established under Mubarak national project for young graduate villages. In these models agricultural, domestic and sanitation wastes sound management was implemented, in addition to raising environmental awareness was through the establishment of an environmental cultural cen-



New Industrial Cities – Sadat City (Emissions in the work environment)

ter, in addition to rodents and insects control programs, and observing the aesthetics by painting houses in a unified color and establishing gardens and parks. For ensuring sustainability of the activities
of this model, an environmental council was established with elected members from the residents, and a village environmental profile and work plan were developed.

A new activity was added for environmental improvement in residential areas and development and services sectors through establishing the GEAP department anchored within EEAA for developing environmental action plans that observe Governorate-specific environmental issues, linking to the NEAP, in cooperation with foreign consultancies such as the SEAM program, funded by the British Government, and EMG Component in Beni Suef and Aswan Governorates, funded by Danida, under environmental assistance offered to the Arab Republic of Egypt. GEAPs and Development plans were implemented for 7 Governorates, namely Aswan, Sohag, Beni Suef, Daqahlia, Damietta, South Sinai, in addition to the GEAP currently being developed for Luxor city.

8-e Environmental Development in Industrial Areas

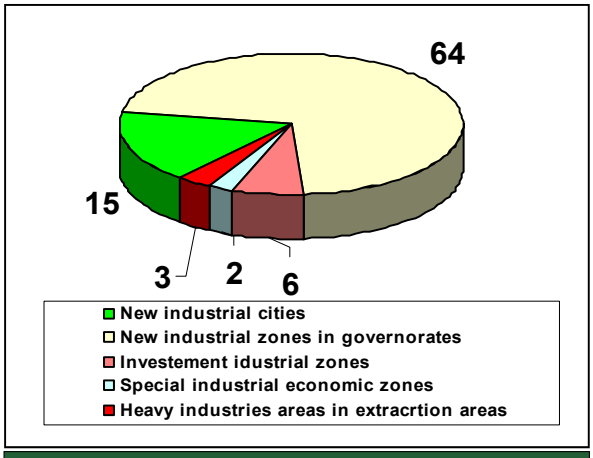
The industrial sector in Egypt is an effective sector on GDP and economic development. However, it is a major source of water, air and soil pollution and a main consumer of energy and natural resources.

The Industrial sector in Egypt is characterized by:

1. The continuous increase in industrial

facilities. Industrial facilities in Egypt have reached more than 26,000 large, medium or small enterprises.

2. The rising trend of encouraging the private sector, privatization, and Egyptian and foreign investments.
3. Extending the use of national technologies and rehabilitating old ones.
4. Reducing industrial conglomerates inside cities.
5. Allocating large areas for industrial activities in new independent areas and cities outside residential blocs.
6. The extension in selecting industrial areas qualified to conclude international agreements in order to boost exports and competition with foreign goods and industries (QIZ).
7. **90 new cities and industrial zones were allocated as follows:**
   a. 15 new industrial cities.
   b. 64 new industrial areas in Governorates.
   c. 6 investment industrial free zones in Governorates.
   d. 2 private economic industrial areas.
   e. 3 heavy industries areas in strategic locations, under the jurisdiction of Canal Governorates.



Industrial Activities in Egypt

f. in addition to the industrial and handicraft areas within approved plans inside cities.

Challenges Facing the Development of Industrial Areas And New Industrial Cities

a. Emphasizing industrial projects economic feasibility over environmental effectiveness.
b. Increased investments in polluting industrial activities due to increased demand (cement – ceramics – textile dying – carpets – metal foundry and smelting activities – coal production – fertilizers – petrochemicals …etc.).
c. Increased volume of industrial wastes in the absence of safe landfills for hazardous wastes.
d. High costs of relocating industrial conglomerates existing within residential cities boundaries.
e. The lack of compliance with enforced environmental regulations, laws, requirements and environmental standards.
f. High cost of control systems, treatment plants and eco-friendly raw material.

State Efforts In Developing Industrial Areas And New Industrial Cities

The state has focused significant attention for industrial areas and new industrial cities to address the negative impacts on Egypt's environment resulting from the persistent increase in number and size of industrial facilities, the use of old techniques and the spread of industrial facilities within city cordons. This attention, mainly through the Ministry of State for Environmental Affairs, is manifested in the following:

1. Passing Law 4/1994 on environment

protection, in which special clauses were dedicated to environmental assessment of new industrial facilities, and expansion of existing ones.
2. Coordinating with the relevant ministries and entities to incorporate the environmental dimension in planning, implementation and operation phases of industrial facilities and areas (the Ministry of Housing and Construction, Ministry of Industry, General Organization for Industrialization and Governorates concerned).
3. Developing monitoring plans for industrial areas and new cities, establishing integrated database, extracting and studying environmental indicators and developing suitable environmental solutions in cooperation with research centers and projects.
4. Issuing environmental standards and requirements for new industrial areas and expansion of existing ones.
5. Coordination and participation in selecting environmentally appropriate sites for new industrial zones, expansions, and relocation sites for polluting activities outside residential blocs.
6. Issuing environmental planning master plan for the distribution of activities within industrial zones.
7. Providing opinion on approving EIA studies in facilities located in industrial areas.
8. Developing EIA guidelines in industrial areas and sanitation treatment plants.
9. Developing environmental standards and requirements for infrastructure projects (such as roads – sanitation plants).
10. Implementing pilot projects for improving environmental conditions and reducing pollution loads in industries using old technologies, in cooperation with research centers and foreign projects.

8-f Future Vision

If accomplishments in existing environmental status in residential areas are of monumental importance, future planning through a comprehensive overall vision is a necessity whereby the general goal is achieved, as well as the protection of and saving in natural wealth and financial resources. Thus, the future vision for environmental work in urban areas in Egypt includes:

- Completing the study of environmental situation of all Egypt cities and villages, and completing, and later updating, the environmental database.
- Issuing reports on the state of the environment in all Governorates, and discussing them with competent authorities, while identifying required measures and potential funding sources.

Urban and Rural Areas

- Implementing more demonstration projects for improving environmental services, rationalizing wealth consumption, expanding participation base by assigning a bigger role to local administration, civil society, NGOs and the private sector in a bid to achieve decentralized environmental management under an integrated environmental management system, in addition to capacity building and environmental awareness programs in residential areas and opening new channels for coordination with

the relevant ministries, authorities and institutions to achieve better development.

- Studying developing and updating the various industries through incorporating the environmental dimension and applying CP rules in industrial facilities adversely impacting the environment, such as tanneries, smelters, and glue factories as well as publishing guidelines in cooperation with research centers and universities to achieve integrated environmental management in industrial zones.

New Cairo City

2002 1997

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9 Industry

9-a Introduction

Undoubtedly, industrial growth was the main feature in Egypt over the past 50 years as a result of the development and construction movement witnessed by the country during that period, in addition to the increasing attention to the role of industry in achieving national development goals. Industrial production added value in Egypt in 2003 reached about 34% of GDP. However, focusing on achieving record-breaking development rates during that period without environmental pre-planning resulted in the degradation of natural resources and increased raw material loss and consumption. It has also contributed significantly in the pollution of the ambient environment with its water, air and soil components. This called the state in the early 1980s to begin implementing an Industrial and urban sustainable development strategy through which industrial and technological development as well as social upgrading and economic prosperity is achieved for the people, without the loss in natural resources or jeopardizing the environment.

9-b Pressures Caused by The Industrial Sector in Egypt

Data from the General Organization for Industrialization (GOFI) of the Ministry of Industry and Technological Development (MoI) indicate that total number of industrial facilities in Egypt has reached about 450 large facilities, 4,500 medium facilities and 21,685 small facilities, most of them are concentrated in Cairo and Alexandria cites. The spinning, weaving, dying and preparation sector, the leather, metal, engineering, electrical, electronics and food industries are considered some of the largest industrial sectors in Egypt followed by wood industry and its products and chemi-

cal industries. Geographic concentration of industrial activities inside cities and the use of polluting conventional technologies have led to negative impacts on the state of environment in Egypt during the past decades. Most industrial facilities in Egypt was dependant on petroleum fuel, considered a main source to sulphur dioxide, Nitrogen dioxide, carbon monoxide and smoke emissions.

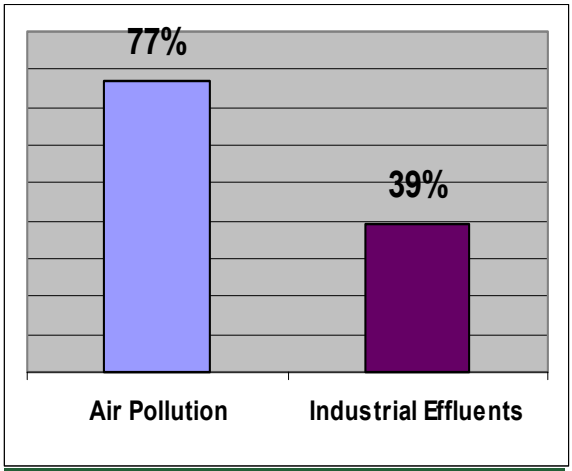
Statement of industrial development in Egypt registered until 21/12/2004		
	Sector	**Total no. of Factories**
1	Spinning, weaving, clothes and leather	5811
2	Food Products, beverages and tobacco	5203
3	Wood, wood products and upholstery	3574
4	Basic Chemicals and Chemical products	2616
5	Building material, pottery, china and theramics	1873
6	Paper, and paper products, printing and publishing	1572
7	Basic Metal Industries	2
8	Metal products, machines, transport equipment	5443
9	Other transformational industries	541
	Total	**26635**

* **Source:** General Organization for industrialization (GOFI)

9-c Industrial Environmental Impacts and Major Challenges

Industrial environmental impacts can be classified according to the affected surrounding environment into three groups: working environment inside a facility, a project surrounding environment, covering a circle of 1km or more in diameter, and the general environment that extends outside a facility's domain or outside a country's boarders regionally and internationally. Industrial pollution sources are classified according to type of pollutants into air, liquid or solid pollutants and hazardous wastes.

Data on the industrial sector in Egypt indicate that the most severe environmental problems caused by industry are air pollution (77%), followed by working environment pollution problems (65%), then industrial effluents pollution (39%), followed by solid and hazardous wastes issues.



Air and Industrial Effluents Pollution Rates

1- Air pollutants

They are the industrial gases and particulate emissions into air, such as carbon monoxide, Nitrogen and sulphur oxides, Ozone, dust and particulates containing compounds such as metals, minerals and organic substances.

The most important source of such pollutants is the burning of petrol fuel used in most industrial facilities in Egypt. These fuels range from mazot, which contains a high percentage of sulphur, thus it is a major source of sulphur dioxide emissions, in addition to industrial processes and raw material and final product storage operations as in the case with fertilizers and cement industries. Main and major sources of industrial air pollution are found in Greater Cairo and Alexandria due to concentrations of metal and chemical as well as cement

industries. 15% of factories use the moisture technique (not polluting), as no bypass is produced, whereas 85% use the dry method, producing the environmentally polluting bypass for which no remedy has yet been found. For instance, there are three cement factories in south Cairo, producing roughly 400 tons per day, i.e. they collectively produce 1200 tons of cement bypass daily. Bypass is one of the main reasons of air pollution when adverse wind blow from the south.

2- Liquid pollutants

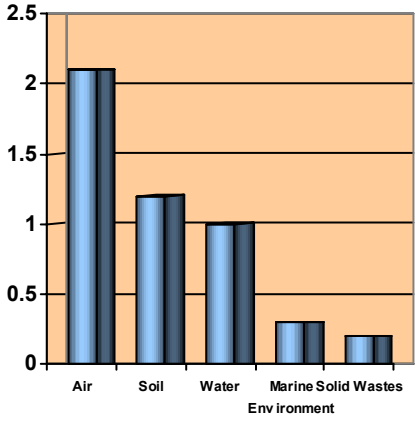
Industrial liquid pollutants include organic and inorganic compounds, metals and dissolved solid substances, which have harmful and dangerous effects on the quality of the environment, according to their type and concentration. This impact is manifest in many ways, ranging from the extinction of some living species to the direct hazard on man's health.

3- Solid and Hazardous Wastes

Industrial activities result in large quantities of solid waste, according to the type of the waste generating activity (3.5 million ton/year). Waste differs in terms of the harms it causes. Moreover, industry produces approximately 79,370 ton/year of hazardous waste (according to Mediterranean Environmental technical Assistance Program (METAP) Hazardous Wastes Report, 2002). Greater Cairo and Alexandria are the major source contribution to this amount. The term "hazardous waste" is used to refer to solid, liquid and gas wastes that can pose a substantial harm to human health or the environment, if it was not handled wisely. These wastes are classified based on one or more of the following characteristics: toxicity, reactivity, corrosiveness or flammability.

Cost of Industrial Environmental Deterioration

The Egyptian community has suffered from the effects of environmental pollution, starting from the increase in environmental deterioration costs, which devour about 4.8% of the GDP (according to World Bank Environmental Deterioration Cost Report, 2002). The community has also suffered from the effects on the health of workers of industrial facilities and nearby residents, such as the pollution of the work environment and the ambient environment by gaseous emissions, and the deterioration of natural resources quality (water and soil). This has consequently led to the emergence of industrial pollution-related diseases, according to an emissions survey study conducted in south Cairo by MSEA through statistics and estimates of health impacts and calculations of environmental deterioration costs. The study revealed that the most impacting pollutants in the study area were suspended particulates, lead, and ozone. Furthermore, the study pointed out that costs resulting from emissions impacts on health ranged between $ 10 – 20 million annually.



Percentage of Environmental Deterioration with respect to annual GDP

9-d State Efforts in Integrated Industrial Development in Egypt

Environmental Management and State Industrial Development Policies

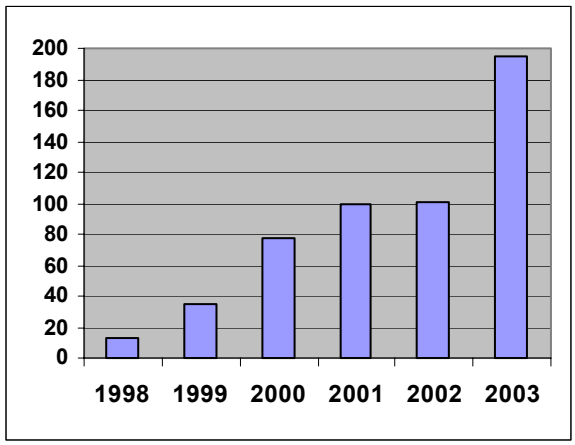
The state has set an environmental policy for serving the sustainable development process through establishing a common work system in which all agencies and organizations concerned would be involved. The main features of this environmental policy include issuing environmental legislations enforcing the observance of environmental dimensions in industry and achieve equilibrium between sustainable development requirements and natural and environmental resource protection. These legislations included the requirement to undertake environmental impact assessment studies (EIAs) for new projects before obtaining construction licenses, as well as the keeping an environmental registry within the facility to be regularly inspected by EEAA.

The environmental management system included the consideration of potential risks that a facility may be exposed to if it does not incorporate environmental considerations in its activities. The system also included financial assessment and economic benefit of implementing an environmental management system within industrial facilities and zones.

Law No. 4/1994 was issued on environment protection as well as its executive regulations in February 1995, which set forth the requirement of submitting an EIA study for any new project or any expansion of an existing project. EEAA has developed an EIA Guidelines as well as forms for project lists (A) and (B). For implementing decentralized environmental management, EEAA has mandated its regional branch offices (RBOs) with the responsibility of reviewing low environmental impact projects (list (A) projects) as of 2001.

Since the application of the EIA system in 1997, EIA studies have been significantly increasing annually. The number of studies submitted to EEAA during 2004 has reached about 6500, about 4000 of which are industrial projects, in addition to limited environmental impact studies (list A), which are reviewed by RBOs.

This was reflected in the increased number of ISO 14000 certified industrial facilities in Egypt, as shown in the following figure.



ISO 14001 Certified Companies

Cleaner Production Technology Strategy

Egyptian industry has shifted towards introducing Cleaner Production (CP) techniques in industrial facilities, within the framework of industrial facilities modernization programs, through improving production processes, controlling losses, and shifting to environmentally non-polluting raw material, while using economic meth-

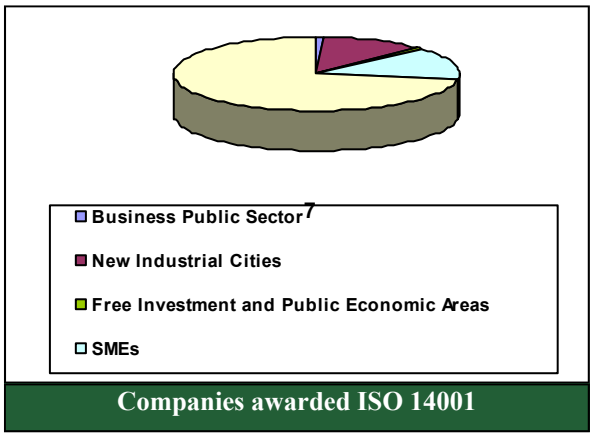
ods for reusing production wastes and emissions. A National CP Strategy and Action Plan have been developed for Egyptian industries aiming promoting and applying CP and its techniques. The action plan further aims at becoming a practical means to encourage decision makers create an effective role for the Egyptian government and the private sector towards CP, which would optimally achieve the desired CP objectives.

In this respect, a committee of 9 line ministries has been established, as well as a work group within each Ministry to review the National CP Strategy framework document and its application in Egypt. These ministries are the Ministries of Finance, Industry and Technological Development, Higher Education and the Ministry of state for Scientific Research Affairs, Electricity and Energy, Foreign Trade and Public Business Sector, Health and Population, Petroleum, and the Ministry of State for Environmental Affairs.

State Industrial Environmental Development Programs and Projects in Egypt

Industry in Egypt may be divided into five main programs: the Public Business Sector Program, new industrial cities program, free investment zones and special economic areas program, small and medium size enterprises program (SMEs) and Governorate-wide industries and approved industrial areas program.

- The Public Business Sector program includes 125 facilities that are environmentally compliant with total environmental compliance investments of L.E.1913.69 million till January 2004. Currently, there is a plan for the compliance of 57 facilities requiring investments.
- The free investment and private industrial economic zones program does not constitute a burden to the government, as the bulk of such facilities are new and investment-oriented. The major environmental problem facing these facilities is air pollution, however, this can be handled without the need for expensive investments, which can be afforded by the private sector.



Companies awarded ISO 14001

- With respect to New Industrial Cities Program, a funding of LE 1290 million was allocated until 2004 for environmental compliance of industries in these cities. A compliance plan for 331 companies is in place.
- The Governorates Industrial Activity Program, either within approved industrial areas, or in the industries located within the Governorates and residential areas, constitutes a major problem. The compliance plan requires complete data about the facilities and intensified inspection efforts. It also requires state participation in pollution prevention investments in these areas, though Government agencies or donors working in the field of pollution prevention.
- MSEA also has a plan for SMEs, comprising the relocation and upgrading plan for six polluting sectors. These are: brick factories, smelters, tanneries, coal

kilns, marble crushers and potteries for 3861 facilities. Currently a plan is being developed for compliance in these factories within five years as a first stage comprising five components, including relocation polluting smelters and small industries. LE 120 million have already been spent and measures have already been implemented to relocate these factories to Abu Zaabal in Qaluobia, and El Herafein area in Giza.

New Industrial Cities

The state, believing in the effectiveness of establishing of new industrial cities as a solution for the problem of polluting industries spread in old cities, has implemented the New Industrial Cities Program over the last two decades for several reasons, most important of which is to concentrate industries in specialized areas allocated for productive activities in new cities so as to restrict their unplanned growth within cities, to capitalize on the latent resources in Egyptian deserts and coasts and to attract the people to these areas. Efforts were exerted taking into consideration the potential of new cities on providing centralized environmental management services with more efficiency and lower investments.

Eco-friendly Industrial Cities Rehabilitation Program

The emergence of many environmental problems in the new cities, such as industrial effluents problems, air emissions, and work environment conditions, was a warning sign, signaling their movement towards a similar situation as in industrial areas in old cities. This necessitated rapid action to be taken by MSEA, to adopt the new cities rehabilitation program into eco-friendly cities.

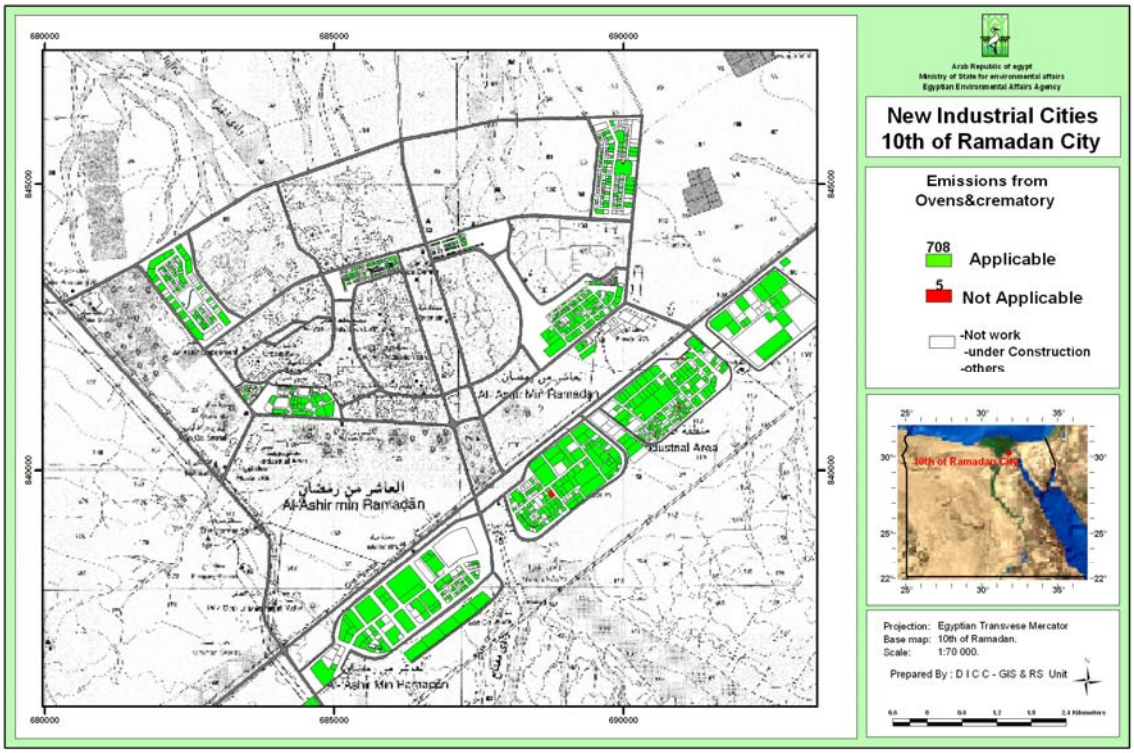
This program set forth environmental conditions and specifications permitting the establishment of communities with eco-friendly activities, in conformity with the provisions of the environment Law 4/1994, and industrial discharges laws, in a bid to create a suitable environment for industry in new industrial cities, and to limit polluting emissions. Emission standards were set and controls were implemented within the industrial facilities to reduce pollution.

The rehabilitation program implementation started in September 1998, in five cities: 10^{th} of Ramadan, 6^{th} of October, Sadat, Borg El Arab, and Obour. In July 2000, the project included two more cities: Badr and New Damietta. In May 2001, work started in four more cities: New Bani Soweif, Nobaria, Menia, and Salhia. Thus, the program expanded to encompass 11 new cities.

Environmental Compliance in New Industrial Cities and Areas

The state has raised public awareness of the importance of environment preservation. Consequently, there was an increased interest in legislations, and enhancing compliance with environmental legislation requirements, in cooperation with authorities and agencies concerned with enforcing these legislations (Ministries of Industry, Interior, Manpower, Health, EEAA and local agencies and bodies). These called for environmental compliance measures, ensuring their implementation and claiming indemnifications for environmental damages. They also included the provision of economic incentives to promote compliance efforts, institutional capacity support, the management of facilitated funding packages and establishing institutional systems.


برج العرب
Borg El-Arab
السادات
El-Sadat
السادس من أكتوبر
6th of October
العبور
El-Obour
العاشر من رمضان
10th of Ramadan
مواقع المدن الصناعية
Location for Industrial cities


680000
685000
690000
845000
840000
العاشر من رمضان
Al-Ashir min Ramadān
Industrial Area
Arab Republic of egypt
Ministry of State for environmental affairs
Egyptian Environmental Affairs Agency
New Industrial Cities
10th of Ramadan City
Emissions from
Ovens&crematory
708
Applicable
5
Not Applicable
-Not work
-under Construction
-others
10th of Ramadan City
Projection: Egyptian Transvese Mercator
Base map: 10th of Ramadan.
Scale: 1:70 000.
Prepared By : D I C C - GIS & RS Unit

Classification of Industrial Facilities According to Risk Levels			
Pollutant types	**A**	**B**	**C**
Wastewater with specifications and quality non-compliant with environmental laws and without treatment plants	More than 100 m^3/day	From 20 – 100 m^3/day	Less than 20 m^3/day
Air pollutants (From Furnaces and boilers with non-compliant specification or quality with environmental laws)	More than 50 workers, with furnaces not in conformity with its standards	Mazot or gasoline-fueled boilers, not in conformity with standards. Less than 50 workers, with furnaces not in conformity with standard	Gasoline-fueled boilers, in compliance with standards or natural gas- or electric powered boilers
Work environment	More than 30 workers, with emissions problems and not in compliance with standards.	More than thirty workers, with noise and thermal stress problems.	Less than 30 workers, with no problems
Hazardous wastes	More than 1000 kg/ year	300 – 1000 kg/year	Less than 300 kg / year
Solid wastes	More than 300 tons/ year	30 – 300 ton/year, with unsafe disposal	Any amount safely disposed

They further called for developing inspection and self-monitoring manuals, and have cadres trained on their use, develop cooperation protocols with the different bodies, hold seminars and workshops, organize advertising campaigns on industrial pollution and its impacts and to provide NGOs and media professionals with capacity development support for increasing environmental awareness and compliance.

Self-assessment of polluters within a facility is one of compliance requirements with environmental legislations, according to Law 4/1994, requiring each facility to maintain an environmental registry and update all data related to the different emissions, which cannot be implemented in the absence of a self-monitoring system. Worth noting in this respect that MSEA has issued sectoral self-monitoring manuals for paper, food, metal, engineering, and paints industries, as well as sectoral self-monitoring manuals for hazardous wastes management, energy generation units, and industrial effluents treatment plants.

Size Of Investment Implemented In New Industrial Areas And Cities For Environmental Compliance

Industrial Effluents

87 industrial effluents treatment plants have been established to enable industrial facilities achieve compliance with the law No. 93 / 1962 on discharges into networks, and its amendments by virtue of Decree No. 44/2000, or law 48/1982 for drainage to waterways. Total expenditure on industrial drainage projects amounted to LE 772.8 million.

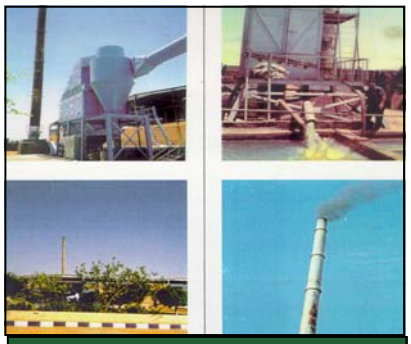
Work Environment

In order for the work environment (within and outside facilities in industrial cities and areas) to comply with requirements of environment law 4/1994, an amount of LE

289.3 million was invested to install air purifiers and filters.

1- Air Emissions

930 facility replaced mazot fuel used in industrial processes with natural gas to limit bypass emissions into the atmosphere. This necessitated a change in the ignition systems in these facilities, with a total cost of LE 228.4 million.



Removing Lead Dust From a

2- Cleaner Production

Many facilities in industrial cities and areas developed production methods and introduced suitable improvements on raw material, machinery, and storage and products transport methods, which reduced resulting pollutants and enabled facilities to be awarded the ISO 14001 certification. Total expenses reached LE 482.1 million.

Automatic Packing of Products

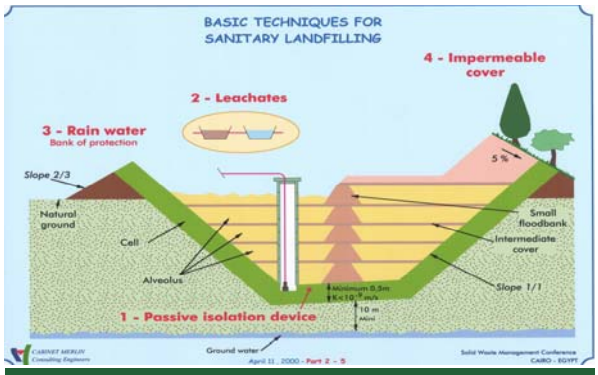
3- Green Areas

Many industrial facilities have implemented self-help efforts to extended green areas inside and outside their facilities. Total investments reached LE 58.4 million. This figure reflects the extent of dissemination of the environmental concept as well as creating a suitable climate for production.

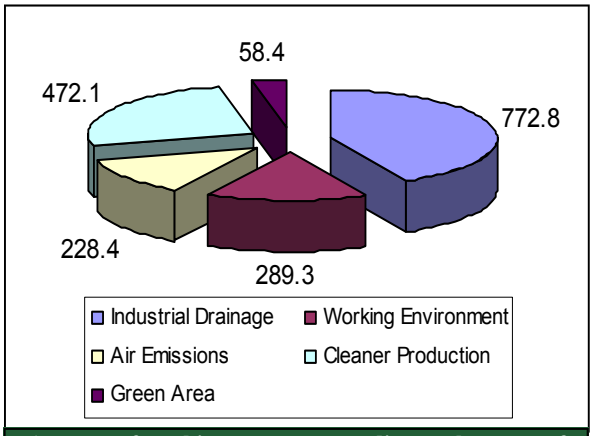
Green Areas

4- Industrial Solid Wastes

Plans for establishing sanitary landfills inside industrial cities and areas have been undertaken by MSEA through conducting technical and design studies to accommodate all generated industrial wastes.



Industrial Solid Wastes



Amount of total investment according to the types of projects implemented

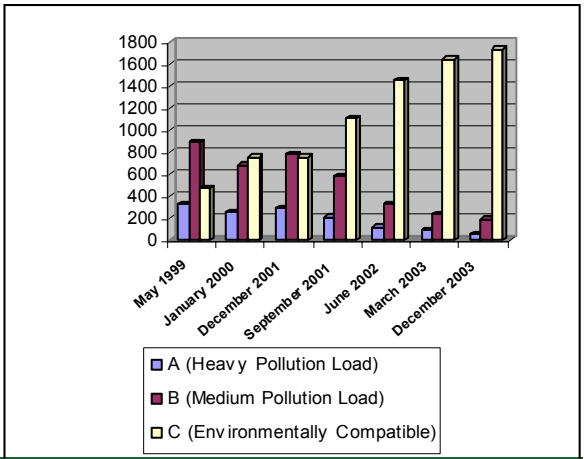
Eco-friendly Industrial Cities Rehabilitation Program Positive Environmental Impacts

The Eco-friendly Industrial Cities Rehabilitation Program had remarkable positive impacts on the environment, and human health and safety compared to the past situation. Concentrating industries in areas allocated for productive activities has led to economic savings in infrastructure investments and a reduction in operating costs as well as environment protection expenditures. The following table and graph show compliance progress in industrial facilities in new industrial cities since 1998 to 2003 classified according to hazards degree of listed facilities. The figure indicates percentages of compliance in these cities that reached a maximum of 99% in 10th of Ramadan City.

Industrial Facilities Compliance Progress

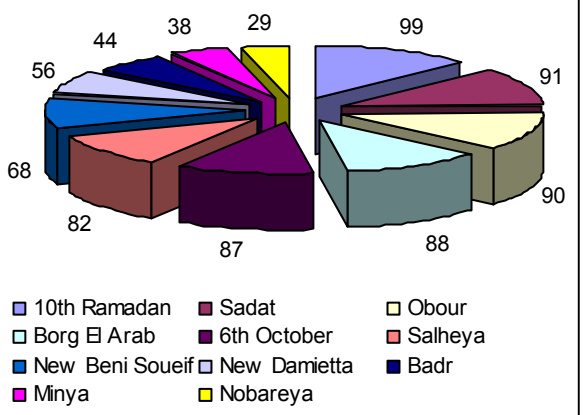
Industrial Facilities Compliance Progress in New Industrial Cities

Period	A	B	C	Total
From September 1998 to May 1999	326	894	475	1695
From June 1999 to January 2000	255	683	757	1695
From February 2000 to December 2000	293	783	757	1833
From January 2001 to September 2001	205	575	1108	1888
From October 2001 to June 2002	115	329	1457	1901
From July 2002 to March 2003	87	235	1652	1974
From April 2003 to December 2003	47	187	1740	1974

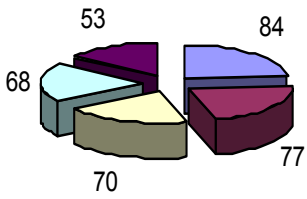


Development of facility environmental compatibility in New industrial cities

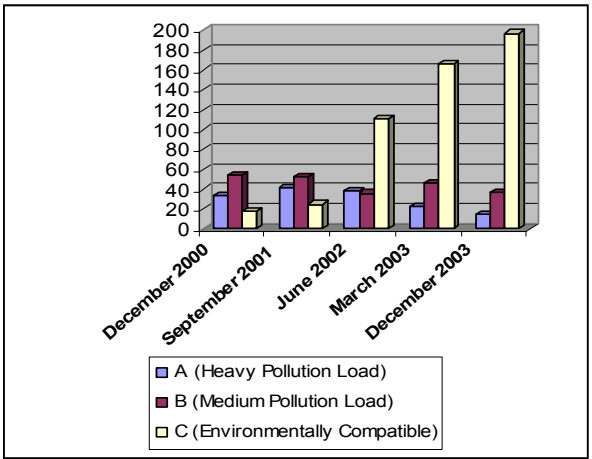
Industrial facilities interest in compliance was not confined to the new industrial cities, but extended to other areas. The following table and graph show the development in environmental compliance for facilities in Abu Rawash, Fayoum, Mubarak, El Kawther, and Isamilia from 2000 to 2003, classified according to degree of hazard. The figure, further, shows percentages of environmental compliance in these industrial areas, ranging between 53% in Mubarak to 84% in Ismailia.



Percentage of Environmental Compatibility in New Industrial Cities



development of facility environmental status compatibility in industrial zones in Abu Rawash, Fayoum, Mubarak, Kawthar and Ismailia



Development of facility environmental compatibility in new industrial cities

Development of Facilities Environmental Compliance in Abu Rawash, Fayoum, Mubarak, EL Kawther, and Ismilia Industrial Areas.

Period	A	B	C	Total
From July 2000 to December 2000	34	54	18	106
From January 1999 to September 2000	42	52	25	119
From October 2001 to June 2002	38	36	111	185
From July 2002 to March 2003	23	47	166	236
From April 2003 to December 2003	15	38	197	249

Compliance in many facilities had clear impact on the air quality in the eco-friendly industrial cities.

Example of Some Factories that Complied with Economic Benefit

Farm Frites Plant

The factory installed a treatment unit for discharged fresh water resulting from the potatoes washing process with very high levels of starch. This water was discharged into sanitation networks, in violation of the Sanitary Drainage Law no.93/1962, prohibiting such discharge rates.

Farm Frites Factory

Although the treatment unit cost reached a million Egyptian pounds, it enabled the recovery of large quantities of starch and to store it as a byproduct, currently sold to

petroleum companies for LE 100 thousand per month – reflecting the environmental perspective corresponding to economic profit.

Discharged Water Sample Analysis Before and After Treatment			
Type of Analysis	**Before the treatment plant**	**After the treatment Plant**	**Limits permitted**
Ph Value	7.91	7.6	From 6 – 10
Total dissolved minerals	330.00	160.00	2000 mg/ liter
Suspended solids	645.00	350.00	500 mg/ liter
Consumed BOD	842.00	90.00	400 mg/ liter
Consumed COD	1276	160.00	700 mg/ liter

Environmental Management Center in 10th of Ramadan City

Within the framework of environmental management support activities in the 10th of Ramadan City, a Clearing-House center was established with the aim of finding a common ground for crystallizing the cooperation in integrated environmental management systems applications among the environmental management systems components, known as "Control and Compliance" system and the economic incentives system. This targets the reduction of the diverse industrial pollutants (air – water – hazardous wastes), as such cooperation aims at increasing cost-effective environmental protection.

In this respect, a Memorandum of Understanding was signed between the EEAA and 10th of Ramadan Board of Trustees, whereby EEAA would provide technical and financial support to support the Environmental Management Center, with an amount of LE 300,000 as a first installment. It is intended to replicate this experience in all new industrial cities.

9-e Industrial Pollution Prevention Project

Within MSEA concern with industrial environmental compliance, three financial packages were offered to assist major industrial facilities in implementing pollution prevention projects, such as final treatment or production process modification.

The World Bank offers US$ 35 million as soft loans to support industrial pollution prevention projects, of which $30.376 million have already been allocated until December 2003, benefiting sixteen(16) major polluting industrial facilities. The closing date for companies to benefit from these financial packages was March 2005.
The European Investment Bank has also allocated € 5.33 million in the form of soft loans for two industrial facilities. The benefit period from these financial packages ended in 2002.

The German Bank for Reconstruction (KfW) has provided a DM 50 million (€ 25.65 million) grant for environmental pollution prevention projects targeting public business sector industrial facilities. 20 companies benefited from this offer (closing date was July 2004).

Technical and Institutional Support

With respect to technical and institutional support, the Finnish government, via the EEAA pollution prevention project, has provided € 6.065 million. This support targets the institutional development of EEAA offices in four Governorates and

three EEAA RBOs, promoting NGOs role and the media to participate in industrial pollution prevention efforts and provide the necessary technical support for investing in industrial pollution prevention. Environmental inspection guidelines were also developed for 18 industrial sectors addressing Governorates inspectors, in addition to the development of self-monitoring guidelines for 15 industrial sectors addressing environmental management within industrial facilities. A study on the emissions stock in southern Cairo was conducted, including pollution maps and the calculation of environmental degradation costs. A further study was also conducted on CP strategy in Egyptian industry and the action plan for activating and expanding CP concept in Egyptian Industry.

Industrial Pollution Prevention

Egyptian Plastic & Electricity Company

The Egyptian Plastic & Electricity Company benefited from the funding packages offered by the Industrial Pollution Prevention Project funded by the World Bank, for reducing the concentrations of Sulfuric Acid vapors in the work environment by 88%, to achieve the limits stipulated by Law No. 4/1994. Sulfuric acid concentrations in the work environment before and after the project were 3 mg/m^3 and 0.35 mg/m^3 respectively. The pollution load decreased by 95% after installing a sulfuric acid vapors collection and treatment system using caustic soda. The project comprises a sophisticated control system using early warning devices to avoid hydrogen accumulation, and a self-monitoring system with mobile equipment. The project total cost reached $ 0.995 million, funded by the World Bank on soft loan basis (20% donation, 80% loan).

Before the Project

After the Project

Alexandria Sodium Carbonate Company

Alexandria Sodium Carbonate Company benefited from the funding packages offered by the Industrial Pollution Prevention Project funded by the World Bank, minimizing bypass emissions and CO_2 produced by conventional kilns to comply with the requirements of environment law No. 4/1994.

Alexandria Sodium Carbonate Company

Two worn-out conventional Roman kilns were replaced by one 200-ton/day kiln for

producing reactive lime used in sodium carbonate production. The total project cost reached $ 4.2 million, where World Bank contribution was $3.95 million in the form of soft loan (20% donation, 80% loan). The company self-financed the part related to civil works.

SEAM Program Contributions to Industry

Cleaner Production (CP)

The SEAM program (UK DFID funded Support for Environmental Assessment and Management) implemented CP initiatives in the weaving, food, edible oil, and soap sectors. An industrial audit was conducted in 32 factories, and 21 demonstration projects implemented with a total cost £ 6.1 million. SEAM assistance included: water rationalization and energy efficiency, granting Eco labels to weaving products, particularly those designed for export, sulphur black dyeing, alkaline bleaching, oil and grease recovery, implementation of HACCAP system, and whey recovery.

The program is currently preparing to conduct another 100 industrial audit studies and 20 demonstration projects to promote low-cost CP in SMEs in priority sectors, including smelters, furniture workshops, food and weaving industries, brick factories, and car repair workshops.

Environmental Compliance in Cement Factories

After Installing Filters

Before Installing Filters

Cement Bypass Recycling Techniques

A recycling cement bypass company was established by the MSEA, Ministry of Housing, Housing and Building Research Center (HBRC), Cement companies in Southern Cairo, the Arab Contractors Company, Roads and Bridges Authority, and Esenpro Company to manufacture:

1. Colored interlocked pavement tiles.
2. Paving Egyptian villages' streets with cement mixture.
3. Manufacturing street pavement curbs and glass containers and sheets.

Production of Glass Containers

10 Solid Waste Management (SWM)

10-a Introduction

With the increase in Egypt's population by more than a double and a half over the last forty years, the increase in population density in urban areas, especially in metropolitan cities, and the change in the consumption patterns in urban and rural areas alike, many pressures on the environment and public health have exacerbated, including the solid waste problem, whose harmful symptoms became clearly evident throughout the country. Existing conventional waste management methods have become incapable of meeting society needs with its different groups, in terms of maintaining a reasonable level of cleanliness, controlling health hazards and adverse environmental impact and providing a generally civilized appearance for the country. Total waste quantities collected never exceeded in the best scenarios 77% of the wastes generated. Large amounts of wastes piled up in streets and vacant areas between buildings, in addition to the spread of informal dumpsites in a number of central areas. Open burning as a means of waste disposal has become one of the main sources of air pollution in Egypt. The government had, therefore, to take action to find a suitable solution for this aggravating problem and to implement the integrated waste management initiated in 2001.

10-b Pressures on The Municipal Solid Waste Management in Egypt

The major pressures on solid waste management in Egypt are exemplified in the increase in waste quantities generated due to the escalating population, on the one hand, and the change in consumption patterns in towns and villages alike, on the other hand, in addition to the lack of awareness and the wrong handling of solid wastes in general. Various studies con-

ducted during the last two decades in a number of Egyptian Governorates and cities point out to a significant decrease in municipal solid waste collection efficiency totally lacking in some rural areas. Consequently, large amounts of waste accumulations appeared in streets, vacant land between buildings and different areas in cities and populated areas throughout the past years. Such areas have become focal points of environmental pollution and represent significant pressures on human health as well as on the environment.

Municipal Solid Waste Estimated Quantities (%) Based on Actually Collected Wastes in 1999

Governorate	Service efficiency
Cairo	62%
Giza	64%
Qaliubeya	50%
Gharbeya	50%
Alexandria	77%
Aswan	41%
Luxor	45%
Red Sea	52.5%
North Sinai	33.3%

Estimates of municipal solid waste collection services efficiency in some Governorates

Wastes decay and cause the spread of bad odors, insects and rodents that cause diseases and visual pollution, particularly in the neighboring residential areas. In addition wastes are liable to self-burning and deliberate open burning which cause the emission of suspended dust as well as toxic gases and smoke.

Waste Accumulating In Some Governorates According to January 2004 Estimates

Serial	Governorates	Waste accumulations m^3
1	Cairo	2,235,000
2	Alexandria	344,830
3	Giza	432,000
4	Beheira	600,000
5	Qualiubeya	403,284
6	Sharqeya	510,000
7	Marsa Matrouh	---------
8	Port Said	359,040
9	Ismailia	350,000
10	Fayoum	192,500
11	Minia	951,000
12	Suhag	281,845
13	Luxor	107,025
14	Monoufeya	280,000
15	Kafr El Sheikh	427,000
16	Damietta	236,000
17	Gharbeya	1,350,000
18	Daqahleya	900,000
19	North Sinai	————
20	South Sinai	712,000
21	Suez	1,168,550
22	Red Sea	11,885,000
23	Beni Suef	350,000
24	Assiut	250,000
25	Qena	458,480
26	Aswan	395,660
Total accumulations		**25,169,220**

Source: EEAA

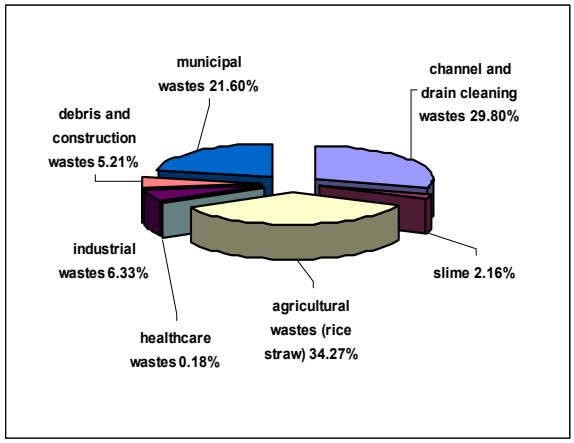
Moreover, wastes handling methods are inefficient with respect to collection, transfer, recycling or treatment. These methods are hazardous to workers, citizens and the environment in general. Final disposal of wastes is, in most cases, done in open dumpsites or in areas that are not equipped for this purpose. Attitudes of Individuals and institutions and their lack of awareness concerning the environment and health all contribute to the aggravation of the problem.

10-c Solid Wastes in Egypt

Waste Generation Rates

The total quantity of solid wastes generated in Egypt is 63 – 69 million tons/year, according to 2000 estimates, including municipal solid waste (garbage), industrial waste, agricultural waste, sludge resulting from sanitation treatment, hospital wastes, construction and demolition debris and wastes from the cleaning of canals and drains. Municipal solid wastes (garbage) include remains of households (about 60 %), shops and commercial markets, service institutions such as schools and educational institutes, utilities, hospitals, administrative buildings, streets, gardens, markets, hotels, and recreation areas, in addition to small factories and camps.

The ratio of municipal solid waste generation differs in quantity and quality from one area to another, according to the each community characteristics and conditions, to the different consumption patterns and attitudes and to the variations in the standard of living. In law income areas, solid waste generation is less than 0.3 Kg/capita /day, with high proportions of organic matter in the generated waste.



Solid Waste Percentages

In high income areas where the standard of living is relatively high, solid waste generation surges to more than 1Kg/capita/day, while organic waste decreases at the cost of recoverable material such as paper, plastic, glass, metals and the like.

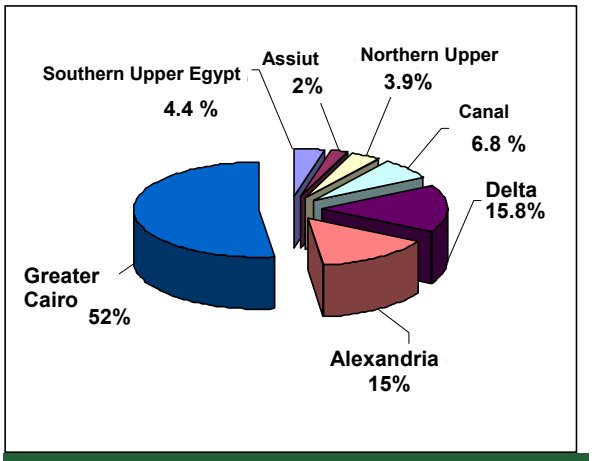
Different Quantities of Waste Types According to the Report on "Solid Waste System in Egypt", issued by EEAA in 2001

Quantities of Solid Wastes in Egypt by type in 2001	
Waste type	**Annual Estimated Quantity**
Municipal (garbage)	14 – 15 million tons
Industrial	4 – 4.5 million tons
Agricultural	23 million tons
Sludge	1.5 – 2 million tons
Waste from cleaning of canals and drains	20 million tons
Hospitals	0.1 – 0.12 million ton
Construction and demolition debris	3 – 4 million tons

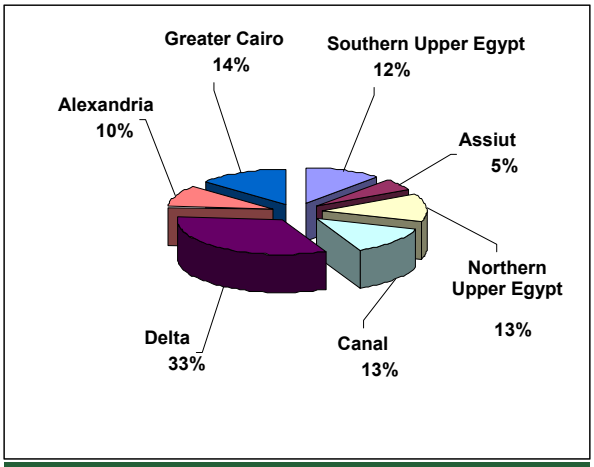
Source: Solid Waste System in Egypt, 2001–EEAA

Municipal Solid Waste Components in Egypt (%) According to 2000 Estimates	
Components	**%**
Organic material	50 – 60 %
Paper	10 – 25 %
Plastic	3 – 12 %
Glass	1 – 5 %
Metals	1.5 – 7 %
Rags	1.2 – 7 %
Other	11 – 30 %
Source: Solid Waste System in Egypt, 2001 -EEAA	

The following figures demonstrate percentages of municipal solid wastes quantities generated in urban and rural areas in Egypt that ranged between about 30 thousand tons/day in urban areas and 10 thousand tons /day in rural and semi-urban areas in 2000:



Regional Distribution of Municipal Solid Wastes in Urban Areas



Regional Distribution of Municipal Solid Wastes in Rural Areas

Major Municipal Solid Waste Management Systems (SWMS) in Egypt

Major Conventional Solid Waste Systems are:

1. Governmental system: municipalities or cleaning authorities (Cairo and Giza) collect and transfer wastes from the streets, bins, public containers, and supervises public dumpsites and the operation of composting plants either directly or through the private sector.
2. Traditional "Zabalin" (garbage collectors) system: in this system, which date back to the early twentieth century, collectors collect garbage from household units and some commercial establishments, and transfer it to their communities (zabalin villages) for sorting and recycling. Although working conditions and methods used, that are of minimal costs and do not comply with the requirements of health and the environment, yet they are considered by clients as a considerably good service. Further, this system achieves the highest recovery degree possible, sometimes reach 80% of the garbage collected by za-

balin, which is estimated by 3000 tons per day in Cairo (about 30% of the total amount generated daily).

3. Local private companies: these collect and transfer garbage in a number of Egyptian cities. They represent a developed model of the garbage collectors' system, working in limited areas under the supervision and control of municipalities or cleaning authorities. The final disposal of wastes takes place either at the garbage collectors communities or in public dumpsites.

Integrated Municipal Solid Waste Management System (ISWMS)

Since 2000, the Government focused on enhancing private sector participation in the cleaning process and the integrated solid waste management in Egypt, as set forth in the National Solid Waste Management Strategy in Egypt, 2000. The new system is based on the privatization of waste management and restricting the role of government agencies to monitoring while implementing the philosophy of involving citizen in paying the costs of cleaning services through adding a small percentage to the electricity bill. Accordingly, some Governorates have contracted with international and regional companies with experience in this field to provide the facilities, modern technical methods needed in all stages of the waste management system, i.e. collection, transfer, recycling and final disposal in sanitary or controlled landfills as of 2001. Annex (3) provides a list of companies contracted with in some Egyptian Governorates.

Waste Recycling And Composting Plants

Aerobic composting in windrows with recyclables recovery is one of the appropriate technologies for the Egyptian situation, types of wastes and their organic content. Thus it was recommended in the 1992 Environmental Action Plan. Consequently, according to a plan developed with the Ministry of State for Local Development and the Ministry of Military Production represented by the military factories, wastes and garbage recycling production lines were produced to offer organic compost that improve the soil, and also to recover the components of other waste material such as plastic, glass and paper…etc. Thus, A number of composting plants were locally developed and produced (53 units till 2003) with a total design capacity of approximately 8,520 ton/day, i.e. accommodating approximately 21% of the total municipal solid wastes generated per day.

However, the condition of recycling and composting plants is similar to that of composting factories in many other countries. They face many problems and constraints in management, operation, or marketing, due to some difficulties in the waste sorting process and the low operation efficiency and, therefore, the low quality of the produced organic compost. Annex (4) presents a list of waste recycling and composting plants.

10-d Most Significant Challenges Facing Solid Waste Management In Egypt

In the attempt to implement at-source segregation of wastes to be ready for recycling, many challenges face solid waste management, most significant of which are:

- Removing old accumulations in the various cities and villages in Egypt and their disposal in environmentally and health safe locations.

- Eliminating informal and open dumpsites.
- Eliminating the practice of burning the wastes, particularly agricultural wastes.
- Implementing an overall, integrated and sustainable methodology for solid waste management, keeping the harmony between its phases and components and ensuring smoothness of flow and implementation.
- Tightening the monitoring and control of private waste contractors to achieve waste management in the various Governorates.

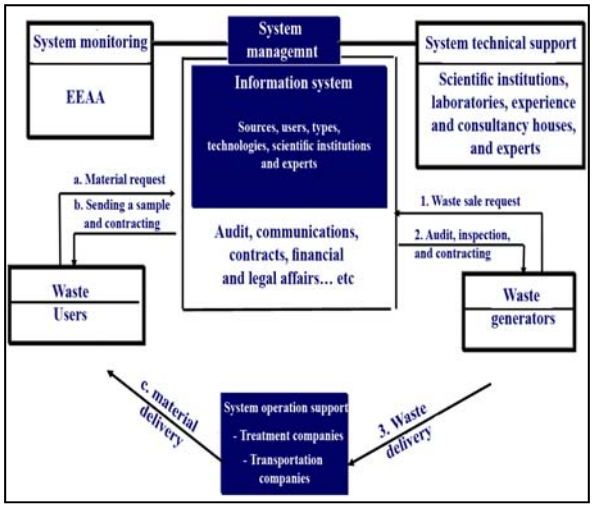
  Increasing public environmental awareness and overcoming wrong wastes handling practices.

10-e Efforts of Ministry of State for Environmental Affairs in Facing Solid Waste Management Challenges

The Solid Waste Management National Strategy For Egypt For The Year 2000

The Ministry of State for Environmental Affairs has completed the development of the Solid Waste Management National Strategy for Egypt in the year 2000, with the purpose of establishing an effective national system for the Integrated Solid Waste Management. The strategy aims at introducing the necessary improvements in the current national system and is based on two main elements: first, the sound removal of accumulations, remediation of waste dumpsites and providing suitable sites for the final disposal of wastes. Second, establishing the required system based on integrated measures, including at-source reduction, storage, collection, transfer, recovery and safe disposal of wastes for all rural and urban areas in Egypt.

Municipal Solid Waste System Guidelines was developed, including the for solid waste management legislative framework, the provisions of laws, legislations, crimes and penalties; special instructions for handling some stages of the municipal solid waste system; in addition to definitions related to municipal solid waste system and its components.



Information and Waste Management System

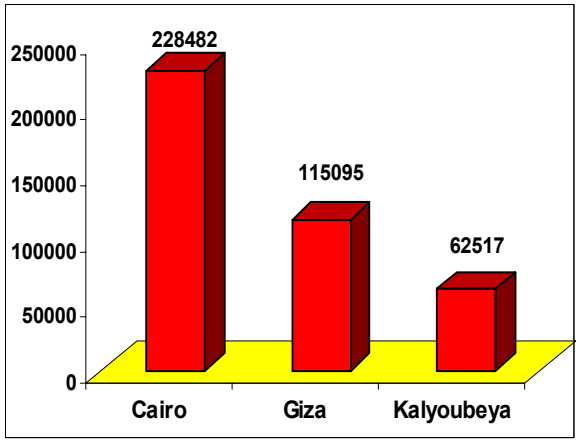
The strategy is based on the following policies:

- Public participation in paying service costs, while observing the social dimension.
- Enhancing the principle of the private and public sectors and community participation in the different SWMS stages in a cost-effective manner, paving the way for attracting investments in that field.
- Providing appropriate sites in all Governorates for the final disposal of wastes.
- Developing long-term strategies to improve the current pattern in the packaging and packing material to contribute to reducing the amount of wastes and promote the use of recyclable material.

- Increasing public awareness of the different dimensions of this issue through education, training and information.
- Encouraging recycling industries and developing markets for recycled products.
- Concerted efforts for the implementation of existing laws regulating waste handling.
- Deep rooting the decentralization concept in handling this issue with specific clearly defined roles for all relevant parties.
- Shifting the role of local administration to become the main implementer in waste handling.

For the effective implementation of public participation in incurring service costs, Governorates were granted freedom to select the suitable method for collecting collection fees or adopt any adequate system to oblige people to pay for the service, upon the Council of Ministers' approval. A number of Governorates implemented a system whereby fees were collected as a percentage of the electricity bill.

The strategy, further, comprised a solution for the composting plants problem using wastes during a period of 5 – 10 years. During this period, the main focus was directed to raising public environmental awareness and changing generated waste handling attitudes, and regarding it as valuable material that may be recycled. In this manner, sorting wastes into organic and solid material is guaranteed at source, leading to more efficient sorting at recycling and composting plants, thus, to the production of higher quality organic compost. Many efforts need the concerted work of all relevant entities, with raising the public environmental awareness at the forefront to face this problem.



Removing Accumulations in Greater Cairo

Removing Historical Accumulations

The Government, represented by the Ministry of State for Environmental Affairs, is currently exerting efforts to develop a solid wastes database. A plan was developed for the inspection of public and secondary dumpsites, to determine the status of accumulations and the budget needed for their removal. Sites in need of urgent environmental action were identified in the following Governorates: Zaqaziq dumpsite, Sharqeya Governorate; Tanta and El Mahla El Kobra dumpsites, Gharbeya; El Mansoura and Mit Ghamr dumpsites, Daqahleya; Kafr El Sheikh and Fuh dumpsites, Kafr El Sheikh; and Shebin El Kom and Menouf dumpsites, Menoufeya. In this respect, the Ministry supported Sharqeya Governorate to remove historical accumulations in Minia El Qamh city dumpsite.

The Ministry, in cooperation with Military Forces National Service Agency, has developed a plan to remove accumulations from public dumpsites in Greater Cairo and on both sides of the ring road, and to transfer them to government landfills for disposal. An amount of 406,094 m^3 was removed and transferred to public landfills

under the jurisdiction of the Governorates. El Roubiki dumpsite (55,000m^2) in 10th of Ramadan City was also leveled.

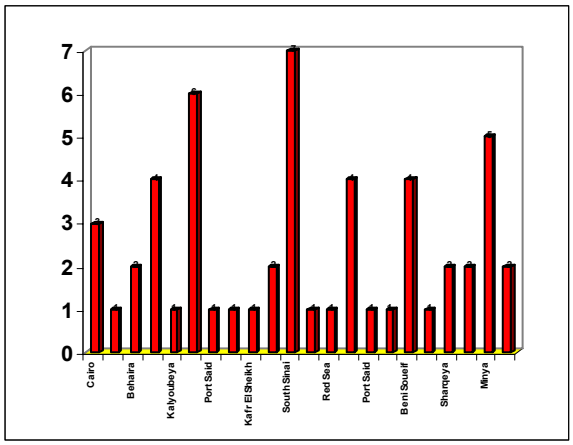
Mediation of Public Dumpsite

The Ministry of State for Environmental Affairs contributed LE 500,000 to the remediation of Zaqaziq dumpsite, Sharqeya; and LE 500,000 to the remediation of Delgamon dumpsite, Gharbeya. An accumulation of 150,000 m^3 was removed from the dumpsite in Minia El Kamh city. Within the framework of the Ministry's plan to increase the efficiency of collection and transfer processes in the Governorates of Egypt, a plan was made for the Governorates of Qaliybeya, Sharqeya, Giza, Gharbeya and Daqahleya in the fiscal year 2004/2005 to provide two 20-ton hauling trucks to work as transfer station.

Through the European project "LIFE - Third Countries Programme", 53 sites were identified and selected as sanitary landfills for closed land filling of wastes countrywide, which is in line with the state plan for the complete elimination of public and secondary dumpsites in the different Governorates during the coming ten years as shown in the figure presenting the elimination of public and secondary dumpsites.

Currently, practical and technical studies are being conducted on these sites, in preparation for conducting environmental impact assessment studies in the Governorates of Cairo, Port Said and Suez.

The first sanitary landfill was established in Alexandria and started to receive wastes in 2001, management by a private company under the supervision of Alexandria Governorate. In 2003, the Governorate, in cooperation with FINNIDA (Finnish International Development Agency) has also established the first stage of the landfill of inorganic and nonvolatile Industrial wastes.



Proposed Sanitary Land filling Sites

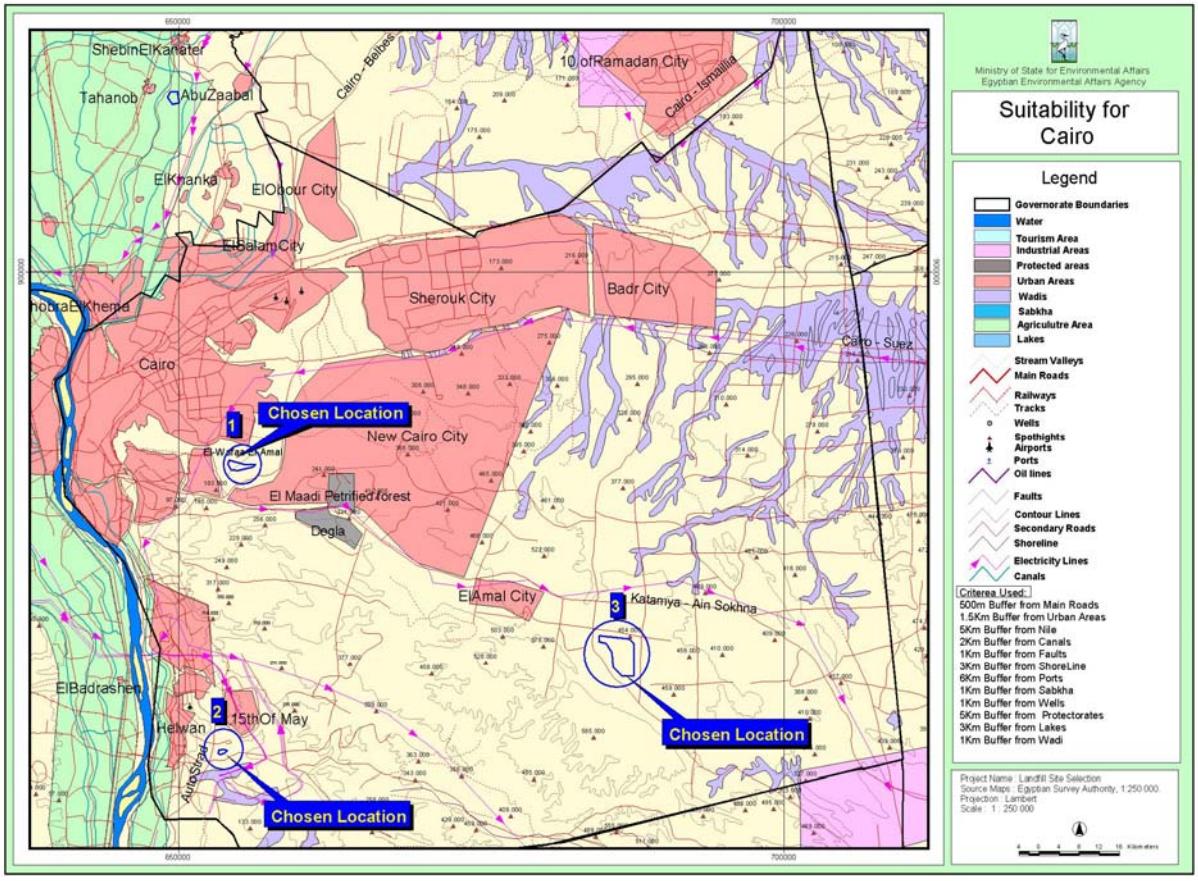
The second stage is currently underway and will include other industrial wastes that need treatment prior to final disposal.

Government Efforts in Agricultural Waste Recycling

Within the framework of MSEA concern with the disposal of municipal solid waste accumulations, the Ministry cooperated with a specialized company in conducting an experiment for the disposal of historical accumulations in Minia El Qamh city public dumpsite, which included sorting, pressing and packing of wastes.

Following the success of this experience, it is planned to use the same method to solve the problem of agricultural wastes. Wastes are pressed separately or mixed, such as rice-straw, corn waste (corn charcoal), or trees wastes to be used as animal feed and save large funds spent on nutrition.

Since 2001, the state has exerted great efforts for recycling agricultural wastes (rice straw) and their safe disposal, as shown in the table below.



Map Showing Selected Sites in Cairo that Comply With Standards

The table shows that, although farmers exceed agricultural area targeted by the Ministry of Agriculture's plan for rice cultivation, yet recycling rates are significantly increasing.

Achievements During The Last Three Years

Year	Quantity of Straw Produced	Quantity of Straw Recycled
2001/ 2002	2.48 million tons	1.5 million tons
2002/ 2003	2.86 million tons	1.7 million tons
2003/ 2004	3.00 million tons	2.00 million tons

The Ministry of State for Environmental Affairs concluded an agreement with Sichuan Institute for Research and Agricultural Machinery Design in Chengdu city, People's Republic of China, to supply 2 units for converting rice straw into gas used as fuel for farmers domestic use in houses, with the aim of implementing integrated utilization of rice straw.

Converting Rice Straw into Fuel

This is being undertaken in the framework of the efforts to introduce modern tech-

nologies to benefit from agricultural wastes and eliminate one of the reasons behind the "Black cloud" in Egypt. Among the advantages of this project are:

1. Disposal of rice straw wastes by converting it into gas for domestic uses.
2. Limiting the phenomenon of rice straw burning by farmers.
3. Introducing the technology for utilizing solid wastes, which is considered one of the major environmental and health problems facing the Egyptian society and converting it into clean energy.

Converting Rice Straw

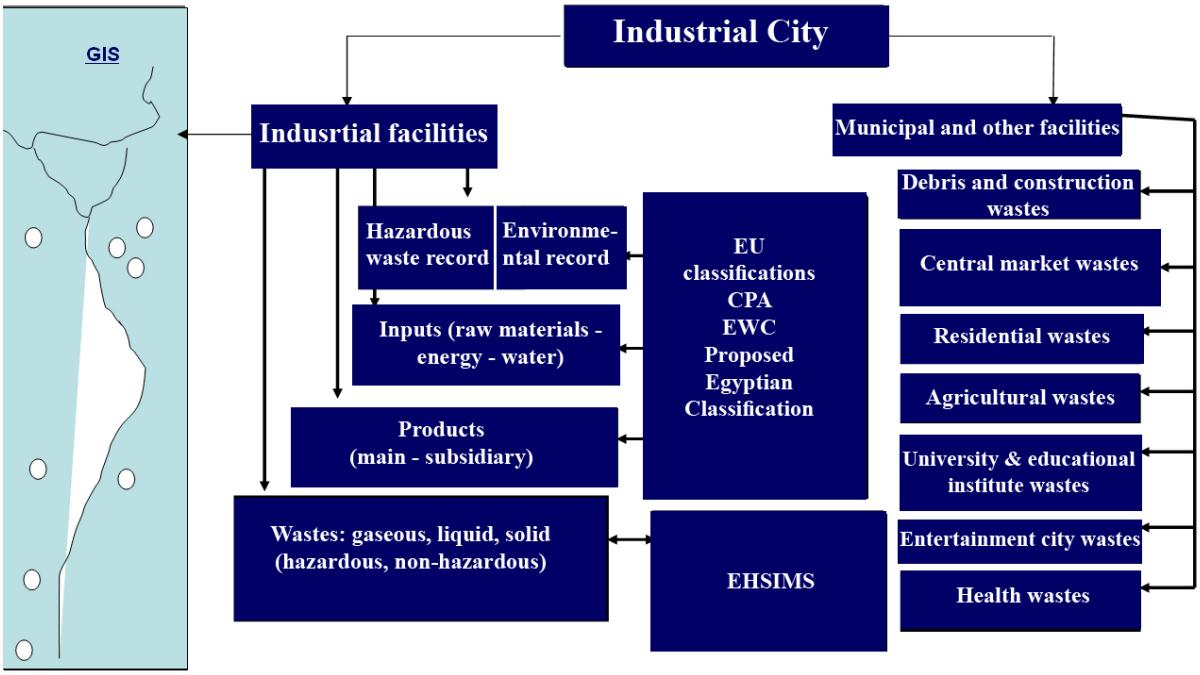
10-f Future Vision

The future vision includes the establishment of an effective national system for integrated municipal solid waste management in Egypt, based on the upgrading and developing the main elements such as policies, legislation, financing, institutional organizations, human resources, technological infrastructure and enlightened public participation. Progress towards this goal has actually been implemented; the municipal solid waste management national strategy for the year 2001 provided a strategic action master plan till 2010.

Among the most significant outputs of this plan is the development of an upgraded legislative framework and new effective governmental organizations, associated with the establishment of capacitated private sector institutions and activating non-governmental organizations to work in the field.

The plan also comprises raising public awareness of the problems and solutions of solid waste management, in addition to developing human resources and building equipped qualified centers for education, researching, development and training, to form the main base of experts and professional labors.

Further, the master plan aims at developing the processes of planning, implementation, and infrastructure (equipment), among the most important of which are: developing implementation master plans for Governorates, establishing an information base for monitoring and information, removing all historical accumulations and remediation of their sites. In addition, it targets establishing separate systems for the management of hazardous wastes related to building new and safe waste disposal sites and integrating and developing existing formal and informal systems (garbage collectors (zabalin), sorters, and recycling units).



A Simple Plan of an Integrated Industrial and Municipal Wastes Management Information System Basic Structure For An Industrial City.

10-g References

- National Strategy for the Integrated Municipal Solid Waste Management, 2000.
- Egypt's Solid Waste System Guidelines, 2001.

11 Hazardous substances and Wastes Management

11-a Introduction

Hazardous Substances and Waste Management (HWM) is one of the major and most dangerous environmental problems related to economic, social, and legislative aspects. Law 4/1994 for the protection of the environment and its executive regulation has set up a general definition for hazardous substances and wastes, and pointed out main principles for handling such wastes in a comprehensive and integrated approach.

The law identified provisions and rules of classification, Identification, storage, transfer, and treatment systems of hazardous substances, and disposing of their generated wastes in appropriate areas completely isolated from the rest of the environmental system components.

Furthermore, the law identified relevant organizations to deal with such wastes, and pointed out the roles of each organization and required each of them to issue lists of hazardous wastes prohibited from handling without special licenses due to their chemical and biological nature highly harmful to human health and the environment if not appropriately handled.

HWM Organizations are diverse in Egypt owing to the diversity of hazardous wastes generation sources. Six ministries are involved; these are the Ministries of Industry, Health, Petroleum, Interior, Electricity, and Agriculture. However, the Egyptian Environmental Affairs Agency (EEAA) is the organization legally mandated with coordinating between these organizations for regulating hazardous wastes handling technical support provision.

EEAA organizational structure includes a general department for Hazardous substances and wastes, with two sub-

departments for Hazardous Substances and Hazardous Wastes, each including a number of relevant sections for managing solid, liquid, and gaseous hazardous substances and wastes. Moreover, the organizational structures of the relevant organizations include a department for environment affairs and protection, include among their tasks HWM in coordination with EEAA.

11-b The Most Significant HWM Challenges

Many challenges face the sound HWM in Egypt. However, it progresses steadily towards integrated management. The most significant of such challenges is their incomplete inventory, and insufficient data on their quantities, characteristics, and generation rates; besides, their classification lists are not yet completed. Furthermore, other problems include lack of trained and qualified cadres at all levels for identifying hazardous wastes and enforcing laws and controls regulating their management, in addition to lack of awareness of their safe handling techniques, lack of HMWM systems, utilities, infrastructure, and financial resources for hazardous wastes treatment or environmentally sound disposal or recycling.

Furthermore, there are inadequate laboratories required to conduct specialized and accredited examinations and identify health and environmental risks that may result from handling such wastes, in addition to mixing such wastes with other types of waste and the absence of independent systems for each type in most cases. Other problems relate to the illegal entry of some wastes from abroad, and the unwillingness of the private and investment sectors to become involved in the Integrated Hazardous Waste Management (IHWM) system due to unclear economic feasibility.

Exposure to hazardous wastes leads to several adverse impacts on human health according to the manner of exposure (respiration, skin, oral), conditions, duration, health status, age, and gender. Some impacts are transient, such as dizziness, headaches, and nausea, while others are persistent, such as cancer, partial and complete disability, as well as chronic skin and respiratory tract diseases.

Hazardous wastes also impact the different environmental media. Hazardous waste emissions resulting from their burning lead to air pollution, while their unsafe disposal results in the pollution of surface and ground water, soil, and marine life and fisheries, in addition to the negative effects on properties resulting from fires and explosions that may occur due to the unsafe handling and disposal of such wastes.

11-c State Efforts in Facing HWM Challenges in Egypt

Hazardous substances are substances with chemical and biological nature harmful to human health and the environment unless properly handled. Such fact is reflected clearly in the Environment Law 4/1994 and its Executive Regulation. EEAA, convinced that environment and development form two sides of the same coin, standards and requirements to be implemented when handling hazardous material were developed in accordance with provisions of articles 29-33, Section 2, Chapter I of the Law, and articles 25-32 of its Executive Regulation.

Thus, the Law and its Executive Regulation have become the means for achieving the desired target, i.e. Integrated Hazardous Wastes Management (IHWM) to ensure environment and human health protection against impact of handling hazardous mate-

rial and wastes, and to achieve the long-term target in securing the sustainable economic development that satisfies the needs of present and future generations. Moreover, the Law specified the provisions and rules of classification, definition, storage, transfer, treatment, and disposal of such substances and their generated wastes.

Causing Forces

- Continuous increase of chemical material use for meeting the needs of progress and development in industrial, agricultural, and health fields …etc. such substances are handled through Ministries of Agriculture and Land Reclamation, Industry and Technological Development, Health and Population, Petroleum, Electricity and Energy, and Interior, in addition to the Ministries unstated in the Law including Water Resources and Irrigation, Foreign Trade (General Authority for Exports and Imports Control), Manpower and Emigration, Housing and Utilities, Scientific Research, and the General Investment Authority.
- Lack of awareness of safe ways to handle hazardous chemical material, and insufficiency of data available for hazardous material users.
- Illegal trade in hazardous chemical material.
- Lack of qualified laboratories.
- Lack of trained cadres on safe handling of hazardous material.
- Difficulty in using hazardous material alternatives for economic reasons.
- Absence of sufficient coordination among hazardous material handling relevant organizations.

Resulting Pressures

- Occurrence of many accidents due to unsafe handling of some hazardous chemical material.
- Air, water, and soil pollution.

Current Status of Handling Hazardous Material

- The presence of many organizations responsible for handling hazardous substances in Egypt. Besides the 6 organizations mentioned in Article 25 of Law 4/1994 Executive Regulation, there are other unlisted ones, such as the General Investment Authority, Ministry of Foreign Trade, National Research Center, Ministry of Water Resources and Irrigation, and other organizations.
- The presence of many organizations responsible for customs release of hazardous substances.
- Many importers disregard attaching Material Safety Data Sheets (MSDS) of imported substances as part of their consignments' documents.
- The absence of a central network to serve such organizations; however, there are independent information systems in every organization.

Effects of Such Pressures On The Environment

Unsafe handling of hazardous substances led to many accidents with significant adverse impacts on man and the ambient environment, and resulted in huge economic losses due to impacts on buildings and equipment.

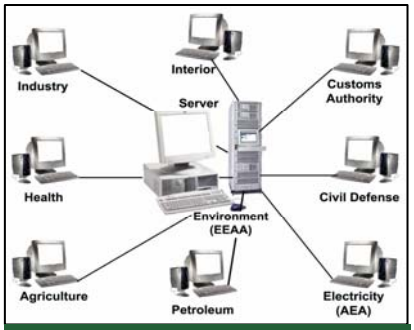
Actions taken:

- Issuing Law 4/1994 for the Protection of the Environment and its Executive Regulation.
- Signing the Stockholm Convention on

Persistent Organic Pollutants (POPs).

- Following up Rotterdam Agreement to establish an international legally binding Bond to implement Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade (PIC).
- Participating in developing the Strategic Approach to International Chemicals Management (SAICM).
- Participating in the Intergovernmental Forum on Chemical Safety (IFCS).
- Developing the Cleaner Production National Strategy.
- Participating in the Global Mercury Assessment (GMA).
- Issuing Emergency Response Sheets (ERSs) for substances, which provide all information necessary for handling substances in emergencies.

  Establishing the following committees anchored in the Ministry of State for Environmental Affairs (MSEA):
  - The National Committee for International Agreements on Hazardous Substances and Wastes (Basel, PIC, and POPs) with the participation of all relevant ministries and organizations.
  - The Committee for studying the disposal of expired pesticides by burning in cement furnaces with the participation of the Ministry of Agriculture and Land Reclamation and other relevant organizations.
  - The Steering Committee for the project of preparing the National Implementation Plan of Stockholm Convention on Persistent Organic Pollutants (POPs).
- Hazardous Substances Department Participation in:
  - The Arab Team on following up environmental agreements on HMW – the Arab League.
  - Follow-Up Committee for Integration and Coordination Works of Petrochemicals area, Ameriyya, Alexandria.
  - Safety and Occupational Health Decisions Project Committee – Ministry of Manpower.
  - Committee on Safety Standard Specifications in Industrial Facilities.
  - Hazardous Substances and Wastes Committee – Ministry of Health and Population.
  - Committee on the development of Hazardous Waste Lists – the General Authority of Investment and Free Zones.
- EEAA Hazardous Substances Department studies and reviews customs release requests of hazardous substances supplied by their importers, and coordinate with relevant authorities for the release of these substances; thus, helping in preventing the entry of any prohibited substances into the country.
- EEAA has developed an Integrated Hazardous Material Management Plan for Egypt to achieve Law 4/1994 objectives.
- The EEAA Hazardous Substances Department holds training courses on Integrated Management of Hazardous Substances for relevant organizations in



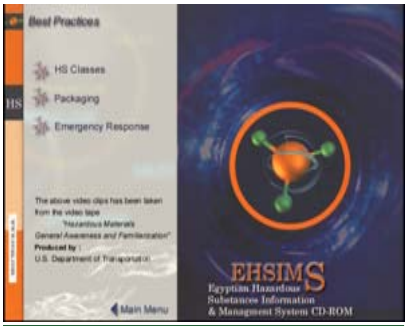
Hazardous Material Information and Management Network

Egypt (Civil Defense Authority, Chlorine Gas Water Treatment Stations, EEAA Regional Branch Offices (RBOs), factories and companies using hazardous substances, …etc.).

- Egyptian Hazardous Material Department Information System has been operating since 1999 for the safe handling of hazardous material with support from the Swiss Government. The operation was implemented in collaboration with 6 line ministries (Agriculture, Electricity, Health, Industry, Interior, and Petroleum) according to the provisions of Law 4/1994, in addition to the Customs Department and Civil Defense Authority.
- The principal objective for establishing the Information System and the Hazardous Material Department was the development of an information network among the abovementioned ministries and authorities on the one hand, and EEAA on the other, to provide information necessary for the management of hazardous substances including lists of imported or locally produced substances.
- Approved lists of hazardous substances were issued by the Ministries of Industry, Interior, Health, Petroleum, and Electricity and Energy. Coordination is ongoing for issuing of the Ministerial Decree on the List of Hazardous Substances for the Ministry of Agriculture and the other ministries not stated in the Law. Such lists include:
  - List A: Banned substances.
  - List B: Substances imported with license.
  - List C: Substances imported without a license.
- Information network includes also an automatic licensing system for issuing licenses from all relevant organizations, in addition to a database on 5,400 chemical substances with their natural and chemical characteristics, ERSs, safe handling guidelines in cases of accidents, safety instructions for packaging, identification, storage, and transport. The most significant project outputs in phase I are:
- Hazardous substance ERS, which contains all necessary handling information in emergencies. For disseminating the benefits, information can be accessed at the following Website: *www.ehsims.org*

EHSIMS Website

- A Unified Licensing Form for handling a material.
- A CD containing data of Hazardous Substances Information and Management System.



Compact Disk

- System Usage and Operation Manual for specialists in participating organizations.

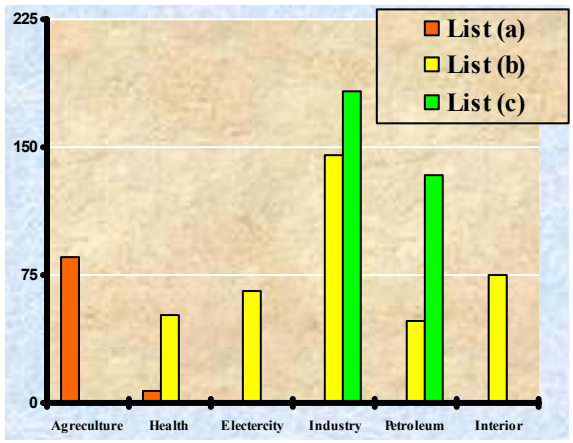
Hazardous Substances Lists Issued by Relevant Ministries				
Ministry	**List (A)**	**List (B)**	**List (C)**	**Notes**
Health	7	52	-	In addition to list (B): All cleaners and detergents of high concentrations. Pesticides used in public health aspects. Pharmacological compounds.
Electricity & Power	-	66	-	Annexed to the list is a paragraph on natural substances.
Industry	-	145	183	
Petroleum	-	48	134	
Interior	-	75	-	
Agriculture	123	690	-	List B is under updating

- Importers database.
- Data card of hazardous material containers.
- Hazardous substances were classified

UN Classification

based on UN classification including 9 categories: explosives, gaseous, liquid flammable, Oxidizing Agents, solid Substances, toxic, radioactive, corrosive, and other hazardous substances.

European Classification



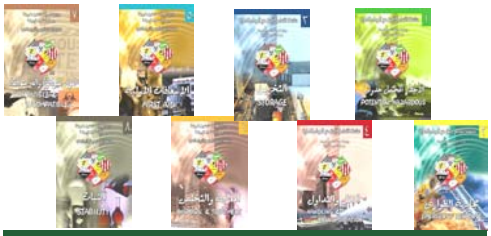
Hazardous Substances Lists of Relevant Ministries

- Moreover, such substances were classified according to the European classification that includes 5 categories: oxidizing agents, toxic substances, harmful substances, and explosives.

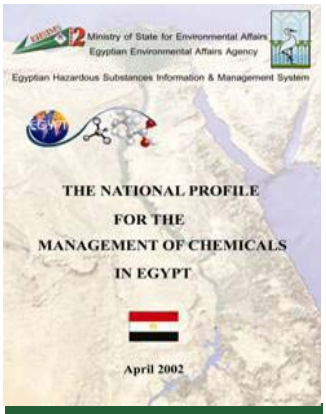
Based on the successful implementation of phase I of the system, phase II was implemented during 2001-2003, including building an importers databases and hazardous chemical material warehouses database and using the GIS system to identify hazardous substances transport routes, which would allow full tracking of such substances from importation till final disposal, such as

ports; thus ensuring taking all measures that safeguard their transport. Moreover, this stage also includes risk assessment of hazardous material handling facilities, preparation of on-site emergency handling plans, and preparation of the national strategy for the safe handling of chemicals.

In light of the Egyptian Hazardous Material Information System and Management, EEAA has developed an integrated Hazardous Substances Management Plan for Egypt in order to achieve the objectives stipulated by Law 4/1994. Additionally, the Hazardous Material Department was able, through the Hazardous Material Information and Management System, to prepare the National Chemical Profile and guidelines for the safe use and storage of hazardous material, besides awareness programs and information on the hazards of such substances and their safe handling.



Awareness Booklets



National Chemical Profile

Guideline were issued composed of a series of booklets on the awareness of potential risks, stability, compatible and incompatible substances, transportation, safe handling, storage, first aid, emergency response, treatment, and safe disposal.

Technological and economic development led to change in production means, raw substances used in industry, and pesticides employed in agriculture, so that new types of chemicals appeared and others disappeared. In the framework of Stockholm Convention on Persistent Organic Pollutants (POPs), and in light of Egypt's concern with the protection of public health and environment, the importation and utilization of all substances listed in the Agreement since 1999 were prohibited, thus leading to the signing of the convention by Egypt on 17/5/2002 and its adoption on 13/1/2003.

Awareness Booklet

In the framework of collaboration with the UN Organization for Industrial Development (UNIDO), a project is currently being implemented for the development of the National Plan of Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs). The 2-year Project activities include: identification of coordination and work organization

mechanisms, setting up POPs inventory lists, assessment of basic structures and national capacity, setting priorities and identification determination of objectives, formulating the national implementation plan and the development and endorsement of the POPs action plan. The first three phases were implemented, which was concluded by developing initial priorities.

POPs

Hazardous Wastes Management

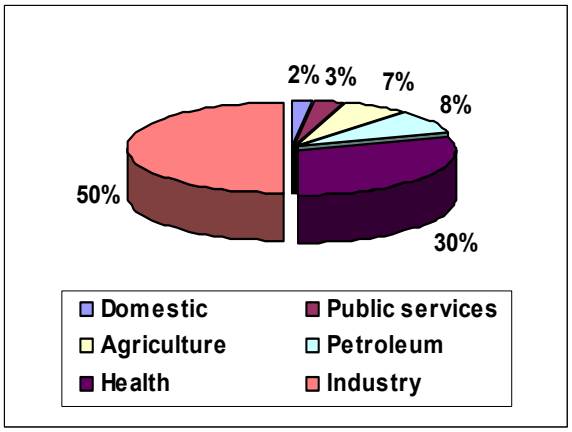
Many efforts were have been implemented, and many others are ongoing, to promote the legal, institutional and technical frameworks for the Integrated Hazardous Waste Management System, most important of which are the development of a draft document for the Integrated Hazardous Waste Management National Strategy for Egypt. A review of the document is currently being undertaken with all the relevant organizations, as a step towards its publication. The IHWM legal framework has already been set, in addition to the legal framework for the Integrated Health Care Wastes Management (IHCWM).

Hazardous wastes management in Egypt is also subject to the national law (Law 4/1994). International agreements concluded by Egypt and entering into force are also considered part of the legislative framework. Among the most important of these agreements are the Basel Convention on Transboundary Movement of Hazardous Wastes and their Disposal, the Regional Bamako Convention on the Prohibition of Hazardous Wastes Importion into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.

11-d Hazardous Wastes Generation Sources and Major Pressures

With the increase of human activities in all domains over the last fifty years in Egypt, hazardous wastes generation also increased form the different activities and their safe disposal constituted significant pressures on the environment. Hazardous wastes in Egypt are generated by a number of sources. These are:

- Industrial activities, such as chemicals and petrochemicals, spinning, weaving, dying and preparation, fertilizers and pesticides, iron and steel, leather tanning, paper and paints, metals melting and foundry and electronics and asbestos industry.
- Agricultural activities, such as fertilizers, pesticides and their empty containers.
- Therapeutic, research and laboratorial activities, such as wastes generated by health care institutions, laboratories and research centers activities.
- Service activities, represented in the sludge resulting from treatment plants of wastewater mixed with industrial effluents.
- Domestic activities, such as dry batteries, domestic pesticides containers, syringes and expired drugs or their remains.
- Byproducts of oil extraction and refining, and military operations such as land and sea mines and expired ammunition.



Different Hazardous Wastes Generation Estimated Quantities

11-e State Efforts in Hazardous Wastes Management

A ministerial working group was formed form the six ministries concerned with hazardous wastes and referred to in the Environment law, to review the survey of hazardous wastes types generated from all activities related to these ministries. To date, ministerial decrees on the lists of hazardous wastes generated by the ministries of Industry, Health, Interior, and Agriculture have been issued, as shown in the following figure.

Estimated Quantities of Total and Hazardous Medical Wastes From Hospitals and Medical Units in Egypt issued by the Ministry of Health

Source	Total wastes Quantities (x 1000 tons)	Hazardous Wastes Quantities (x 1000 tons)
Hospitals	330.3	82.6
Basic health care units	17.4	5.2
Clinics	23.3	11.7
Veterinaries	20	10

Ministerial decrees for the hazardous wastes lists for the Ministries of Petroleum and Electricity are currently in the pipeline.

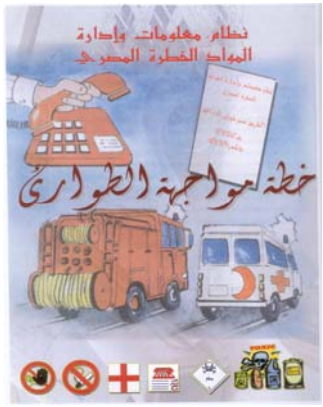
A Comprehensive Information and Hazardous Wastes Management National System is being developed, supported by all technical information and guidelines for their safe handling. Moreover, the EEAA Hazardous Waste Department is participates in the work of the ministerial committee formed to set a National Cleaner Production Strategy for and in the work of the ministerial committee formed to study the proposed amendments to the Environment Law Executive Regulations, as well as the participation in issuing the first Egyptian Standard Specification for Health Care Hazardous Wastes Incinerators in coordination with Egyptian Organization for Standardization (EOS).

Ministerial Decrees On Hazardous Wastes Lists of Relevant Ministries

Ministries	Year of issuing the decree
Agriculture	2003
Industry	2002
Health	2001
Interior	1999
Petroleum	Ongoing
Electricity	Ongoing

In addition, the Ministry of State for Environmental Affairs has issued the guidelines for hazardous wastes temporary storage and the chemical compliance for these wastes, guidelines for the licenses for all integrated management components and the guidelines for hazardous wastes classification and identification from any source. Manuals on the design, implementation and operation of hazardous wastes safe disposal sites are currently being developed. There

are no landfills for the final safe disposal of hazardous wastes, except the site established by Alexandria Governorate, funded by the Finnish government, and the landfill of the Egypt Chemicals Company in Alexandria for the disposal of mercury. However, this landfill is currently closed and monitored for any emissions.



Emergency Response Plan

The Ministry of State for Environmental Affairs has initiated the implementation of a program for supporting the Governorates by providing them with medical hazardous wastes incinerators, and implementing a needs assessment survey for each Governorate. Contracts were concluded with Military Factory 45 for the initial production of 15 incinerators. The Ministry will participate in developing and producing these incinerators locally through reviewing their technical specifications and conducting the necessary measurements to ensure their compliance. The Ministry is also developing and implementing a number of training courses on the safe management of medical hazardous wastes. The state is implementing a number of integrated hazardous wastes management projects, including:

Integrated Industrial Hazardous Wastes Management Project in Alexandria Governorate in Cooperation With the Finnish Government

The second stage of Integrated Industrial Hazardous Wastes Management Project in Alexandria Governorate is currently being completed through funding by the Finnish government as a model for developing the Industrial Hazardous Wastes Management System in Egypt. The project has surveyed the industrial hazardous wastes generating facilities in Alexandria. A site was selected for the landfilling of these wastes after treatment through establishing a chemo-physical treatment unit for treating industrial non-organic wastes, while conducting EIA studies to avoid the negative impacts of the project. This project helped in creating national staff cadres qualified in this field, and the employment of young technical cadres that were trained domestically and abroad.

The Egyptian Environmental Policy Program (EEPP) Funded by USAID

Through the Egyptian Environmental Policy Program (EEPP) Funded by USAID, technical support was provided to assist in activating Integrated hazardous waste management systems, as follows:

- Reviewing the Draft Hazardous Medical Wastes Management Strategy.
- Assisting in issuing hazardous wastes lists for the ministries indicated in the Environment Law.
- Issuing guiding documents in hazardous wastes classification and identification, and setting forth a system for licensing their circulation.
- Setting guidelines for transport wastes

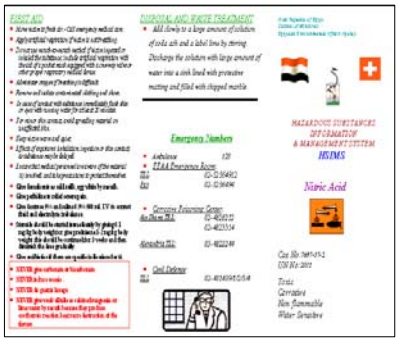
processes and methods.

- Setting guidelines for best practices in hazardous wastes recycling and final disposal technologies.
- Promoting and developing the capacities and cadres for Integrated Hazardous Wastes Management System through implementing training courses for the relevant staff at the various ministries and organizations, as well as the staff of the different industrial sectors, in coordination with Industrial Pollution Prevention Project.
- EEAA, in cooperation with this program, has organized the first National Conference on Hazardous Wastes.

Regional and International Role Played by Egypt in Hazardous Wastes Management

Given its regional and strategic location, Egypt was selected by the International Basel Convention Secretariat to be the host country for the Basel Convention Regional Center in the Arab region, undertaking training and transferring hazardous wastes safe management technologies at the Arab regional level. This center is one of 12 worldwide centers distributed in accordance with the UN geographical distribution. A framework agreement was concluded among the Convention Secretariat, the Government of Egypt and the Regional Center, to give it the legal shape needed to enable it perform its vital role in the framework of the Convention. In this respect the following actions were taken:

- Participation in preparing the Center's Work Plan and negotiating with donor countries through the Basel Convention Secretariat to provide the required funding for this plan. Approval was given by FINNIDA on funding the first three years of the Action Plan.



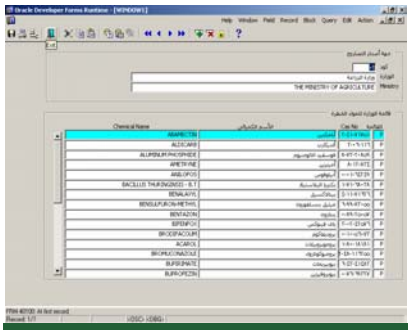
Emergency Response Sheet

- Negotiation with the Basel Convention Secretariat on the implementation of a regional pilot project to select, design, and run a safe landfill site for hazardous wastes, implemented by Basel Regional Center for The Arab Region. Negotiations were concluded by the approval on supporting the project and the project documents were submitted to the Convention Secretariat.
- Supervising the regional training program on The Control and Monitoring of Illegal Trade In Hazardous Wastes, held in Port Said Port in September 2003, with participation of 17 Arab countries.
- Negotiations are ongoing with Basel Convention Secretariat on launching a training program at the Arab region level, on responsibility and compensation for accidents resulting from the transboundary transport of hazardous wastes, with participation of relevant international organizations and international insurance companies.

Customs Release Form

The Ministry of State for Environmental Affairs takes part in the meetings held by the Arab team on International Conventions on Hazardous Substances and Wastes in the Arab League. The Ministry, further, was part of the Arab deliberations held in the Arab League on Liberating Trade in Environmental Services, within the framework of the Trade Liberalization agreements.

- In 1993, Egypt ratified the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal. This convention primarily aims at preventing the generation of hazardous wastes and their disposal at source, to limit their transboundary movement. The EEAA Hazardous Wastes Department as a national liaison point for coordinating between the relevant organizations at the national level with respect to the implementation of the Convention. Moreover, a national committee from all hazardous wastes relevant organizations to consider the decisions made by the Convention Secretariat and to coordinate between them for the effective implementation of the Convention at the national level.



Importers and Warehouses Database

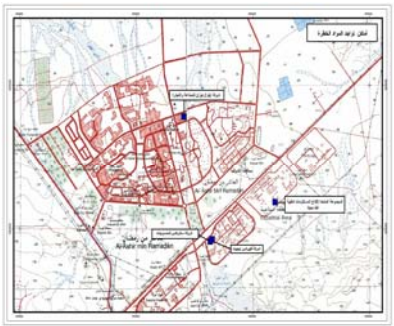
The Ministry of State for Environmental Affairs takes part in the meetings held by the Basel Convention open-membership team, that discusses the technical and legal issues pertinent to implementing the Convention's strategic plan. Further, the Ministry participates in the Basel Convention extended office meetings, during the 6th conference of the Parties, which discusses the effective implementation of the Basel Convention strategic plan and issues pertinent to Basel Protocol on Liability and Compensation for Damage resulting from Transboundary Movement of Hazardous Wastes and their Disposal, as well as the financial issues related to the budgets of the Convention Trust Fund and the Technical Cooperation Fund.

Furthermore, the Ministry participates in a small work group within the framework of the Convention concerned with the development of the technical guidelines for POPs safe disposal management as wastes as well as ships dismantling operations.

- In December 2003, Egypt ratified the ban Decision 3/1 issued by the 3rd Conference of the Parties conference, on banning exporting hazardous wastes from industrial to developing countries.

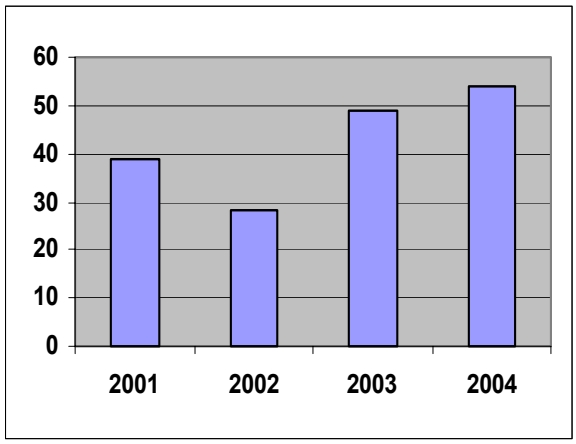
Navigation Traffic of Hazardous Wastes Carrying Vessels in the Suez Canal

- Free navigation is permitted for ships carrying hazardous wastes through Suez Canal for the purpose of recycling, reuse or final disposal according to the provisions of the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Final Disposal, other relevant international conventions, and the bi- and multi-lateral agreements concluded between exporting and importing states.



Hazardous Wastes Storage Sites

- In Coordination with the Suez Canal Authority, national terms and conditions were developed as addendum to those set forth in international conventions on the navigation movement of hazardous wastes carrying vessels, including:
  - Compliance with all requirements of the Basel Convention on Transboundary Movement of Hazardous Wastes.
  - Compliance with all the Suez Canal Authority regulations and requirements for the passage of ships.
  - Obtaining the Suez Canal Authority approval.
  - Sending the traffic document in advance to EEAA and the Suez Canal Authority.
  - Identifying the shipping agency in charge of shipment and all its data, and issuing the P&I certificate.
  - Pre-notifying the Suez Canal Authority of the ship's name, and the shipping date at the exporting country.
  - A ship carrying hazardous wastes containers shall leave the Egyptian ports immediately after passage.
  - Ships carrying hazardous wastes are prohibited to load and unload during their passage within Egypt's territorial waters or economic zone.



Number of Hazardous Wastes-Carrying Vessels that Passed through the Suez Canal during 2001 - 2004

Also, the Basel Protocol on Liability and Compensation for Damage resulting from Transboundary Movements of Hazardous Wastes and their Disposal is currently being ratified.

Egypt has also signed the Regional Bamako Convention on the Ban of Export of Hazardous Wastes to African Union Member States (the former African Nations Organization), which was ratified in May 2004.

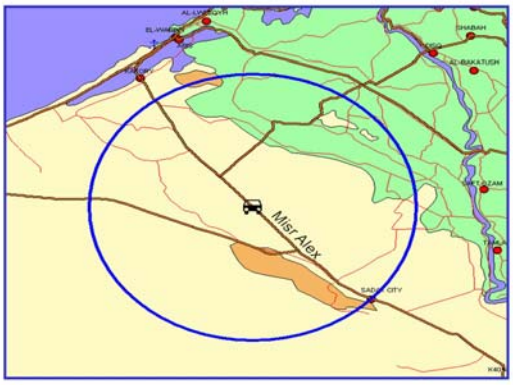
11-f Future Vision

The future vision for the safe management of hazardous material and wastes is determined through the identification of a clear and measurable objective, namely, establishing an Integrated Hazardous Material and Wastes Management System in a period not exceeding 5 years, including all management stages: hazardous material life cycle, generation of hazardous wastes, their collection from their sources, storage until their handling, transfer to treatment facilities, their treatment, recycling and recovery, until their ultimate disposal stage, systematically and according to priorities. These processes require building all the

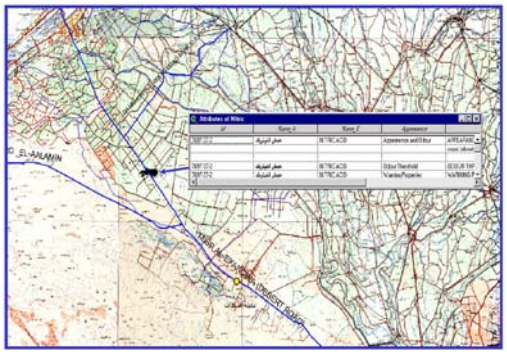
technical, legislative, institutional, financial, and human resources development aspects of the "System" within a strategic framework comprising all limitations and problems facing the Integrated Hazardous Materials and Wastes Management in Egypt, and within the existing national legislative framework, active structures, technical aspects, and technical infrastructure, as well as social aspects, awareness and knowledge levels, economic aspects, and cost transfer and recovery systems. The system also ensures the following sub-objectives:

- Creating independent integrated systems for each of the IHWMS stages.
- Taking into consideration hazardous cradle-to-grave life cycle.
- Hazardous materials and wastes risks management and assessment.
- Providing suitable facilities for the treatment and safe disposal of all types of hazardous material and wastes.
- Eliminating pollution and remediation of the degraded sites due to accumulation of hazardous wastes.
- Increasing awareness and knowledge at all levels.
- Developing the existing database and information system for hazardous material and waste.

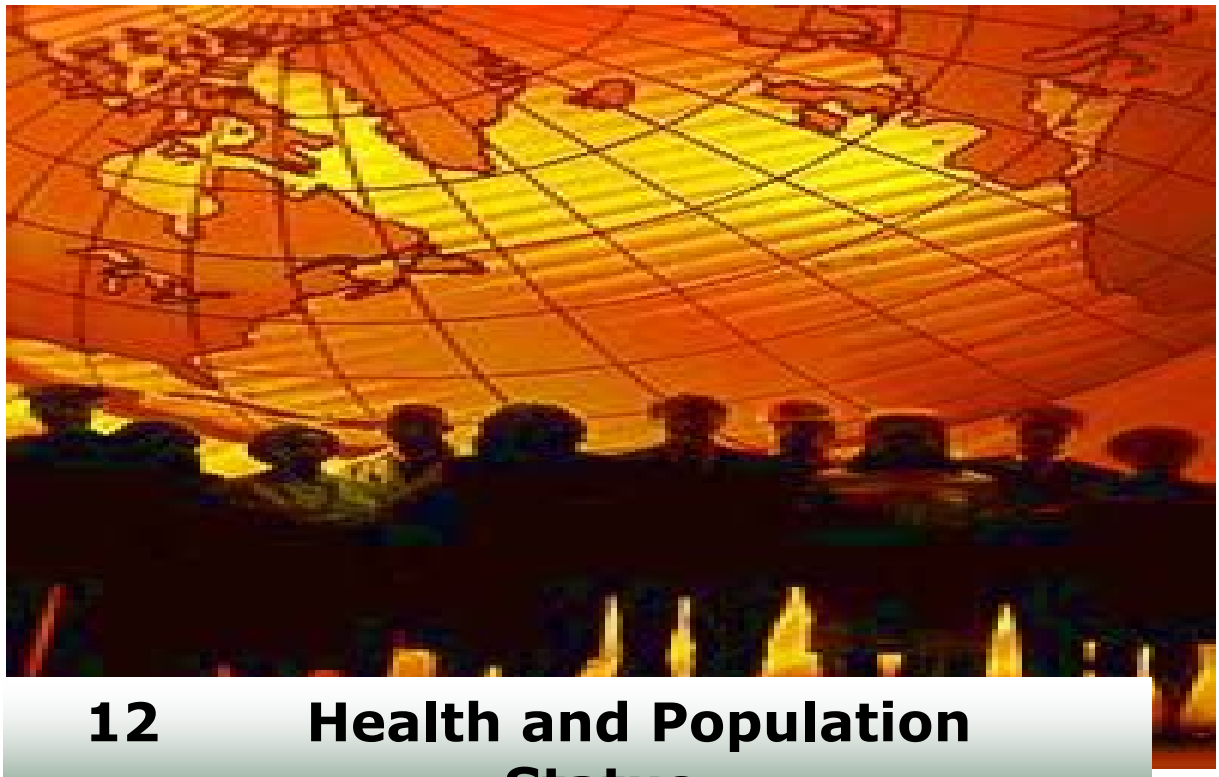
The Specification of the Nearest Assisting Services



The Hazardous Substances Database Related with the Accident



The Specification of the Nearest Sites a Service and the Alternative Ways



12 Health and Population Status

12-a Introduction

Health and population are among the main interests of development efforts and environmental protection and improvement programs in the Arab Republic of Egypt during its modern history in general and over the last two decades in particular. Focusing on the environment came response to the impact degenerated environmental conditions could have on declined population health level, and consequently on the economic well-being, which represents significant challenge against achieving sustainable development. In this context, overpopulation and public health level constitute a major challenge facing Egypt's efforts not only with respect to economic development, but to environmental quality preservation as well.

12-b Pressures

The relationship between environment and population is twofold. First, the state of environment is among the main factors affecting population health status in general. According to WHO report, 1997, 23% of disease load can be directly attributable to environmental degradation. Therefore, the WHO Constitution sets forth that in order to achieve the Organization objectives, represented in "the attainment by all people of the highest possible level of health"; the WHO main task shall be enhancing the various environmental reform aspects. Improvement of environmental and health conditions is also a regarded as a key factor of sustainable development. Consequently, the health and population sector has been one of the most closely related sectors to the environment and its protection.

Secondly, the relationship between population and the environment is that many of the population issues are the latent reasons behind the emergence of many environmental problems. The majority of developing countries undergoing a rapid growth in population, usually face, besides many economic and social problems, an aggravated deterioration in the environmental state .

All the above entails the necessity of taking population issues into consideration when addressing the various environmental issues. Within this framework, recommendations of the Cairo Conference on Population and Development, held in 1994, have recognized that addressing some population issues, such as gender equality and reducing natural population increase rates may assist in the environmental protection.

Egypt's population has increased from 26 million in 1960 to about 69 million in 2003. According to estimates, around 37% of the total population of Egypt live in informal areas in deteriorated living and housing conditions. The prevailing declining environmental conditions in these areas exert many social pressures on their population. Expectedly, such degenerated environmental conditions in informal settlements and their generated social pressures would have adverse impacts on residents of such areas, as the deterioration in environmental quality is usually associated with the spread of many diseases. This would adversely health impact on public health level and productivity, and consequently on the sustainability of development.

The significant increase in population would also lead to more pressures on the environment and natural resources in Egypt, either due to the increase in production, provision of employment opportunities or the provision of population basic needs. Increased investment in industrial and service sectors, along with land reclamation, may, if not properly planned, result in more pressures on the environment, due to increased air, water and soil pollutants and damage to natural resources.

12-c Challenges

Raising Life and Environment Standard

Raising individuals' standard of living, particularly in view of the successive increases in population, requires increasing production, and the provision of job opportunities and population basic needs. The major challenge in this respect is the attempt to reach some kind of equilibrium between the expansion in the diverse productive activities either industrial or agricultural, required to raise the individual standard of living and the preservation of environmental quality, through the limitation of air, water and soil pollutants.

Increase in industrial activities is usually coupled with an increase in pollution levels, either affecting the population living in proximity of an industrial facility or its workers. This relation may adversely impact the environment and consequently harm population health and available natural resources. This requires directing due attention to environmental considerations when developing and implementing industrial development projects and programs.

The challenge in the agricultural sector is manifested in increasing production without overuse of pesticides and herbicides. The accumulation of leftovers from the majority of such pesticides and herbicides may have serious toxic impacts on soil, water, plants, and growing crops on which

humans and animals depend for nutrition, as toxins are transmitted to animal products such as milk, meat and other agro-industrial products. Further more, many of the results of the reaction of such pesticides in the soil may continue and persist for long periods, sometimes reaching many years. The accumulation of reaction results in the soil over successive seasons lead to an increase in harmful impacts on human and animal health, and may reach the tiny living organisms in the soil, which perform vital environmental functions.

Food Security and the Environment

Food security is among the main issues closely related to the population health condition, due to its effective role in determining population health levels. Egypt is considered among the countries that have low malnutrition rates, which range between 2.5 and 4%. However, the problem mainly lies in the great reliance on imports to provide population nutrition needs; i.e. it is likely that providing such food products may be affected by external factors, or price fluctuations of such food products, which poses a threat to population food security.

Moreover, attempts to provide the increasing food needs are faced by conflicting approaches. On the one hand, there is the necessity to provide safe food for human use, and the production of high-quality fodder to protect human and animal products safety and preventing the pollution of the food chain within the ecosystem. On the other hand, achieving remarkable surge in agricultural production through extensive use of chemical fertilizers and pesticides leads to the chemical pollution of soil and the resulting agricultural and food products, as well as to the pollution of environmental components in general.

Many studies conducted in this respect indicate that agricultural products – used as human food – contain high concentrations of nitrates, due to the excessive use of nitrogenous fertilizers, which disturbs hemoglobin compounds functions in blood, especially in children. This causes unbalance in their growth rates and results in many diseases. The presence of concentrated amounts of heavy elements such as lead, zinc, cobalt, nickel and the like in nutrients, in higher rates than approved limits (WHO), results in the disorder in some vital reactions and in many diseases.

Women and the Environment

Though women play a vital role in environment protection, due to their potential significant effects on society, either at household or workplace levels, however, many constraints prevent women from playing such role. Among the main constraints are the high illiteracy rates among women and their limited participation in the development process due to social restrictions. Reports indicate that illiteracy among women is higher than in men, amounting to 45.8%.

12-d State Efforts

Despite these pressures, the state has succeeded in achieving an improvement in the environment quality in Egypt in recent years. For instance, monitoring stations results indicate a relative improvement in Nile water quality and air quality. EEAA has also cooperated with the Ministry of Agriculture to limit the excessive use of all types of pesticides, and the prohibition of the use of persistent organic pesticides (POPs). The situation has indeed improved; different types of pesticides used in agriculture were reduced from 15,830 tons in

1988 to 616 tons in 1995. The state has also implemented a number of procedures that contribute to decreasing air pollution levels, consequently, preserving Egyptian population health. These procedures included promoting the use of compressed natural gas (CNG) as fuel for cars, shifting to lead-free gasoline and introducing improvements to exhaust pipes (catalytic converters).

Population Conditions

Concerning population pressures, the government was able to achieve a relative improvement in population and health conditions, with respect to limiting population growth and improving social aspects. The annual population growth rate average has declined from 2.4% during 1960 – 1996 to 2.1% during 1996 – 2001. This is attributable to the government family planning efforts. Fertility rates have declined from 6.5 child/woman in 1976 to 3.5 child/woman in 2002. Though population increase rate was 2.8 % in 1986, it has reached 1.9 % in 2002. Further, relative birth rate has also dropped from 43/1000 in 1960 to 26.3/1000 in 2002.

Thus, health status indicators include the average expected age, death-at-birth rates, children deaths (less than 5 years old), and vaccinated children percentages. Death-at-birth rates fell from 108/1000 in 1960 to 30/1000 in 2001. This fall can be attributed to the increase in children vaccination, reaching 97.9 % in 2001. Death-at-birth rates have remarkably plunged from 37/1000 in 2000 to 30/1000 in 2001. This improvement had an impact on the expected age of Egyptians. The average expected age for women has increased from 63.5 in 1986 to 70 in 2002. Likewise, average expected age for men has increased from 60.5 in 1986 to 66.8 in 2002.

Social Conditions

The social aspects are mainly related to education, health and women status in society. In education, usually enrollment rates in primary and secondary education as well as illiteracy rates among adults (more than 15 years old) are the main indicators. Concerning the first indicator, enrollment in primary and secondary schools has increased from 42% in 1960 to 86% in 2001 – a figure that can be attributable to increased awareness of the importance of education and to the establishment of large numbers of schools by the government. On the other hand, illiteracy rates among adults have dropped from 74.2% in 1960 to 34.4% in 2001.

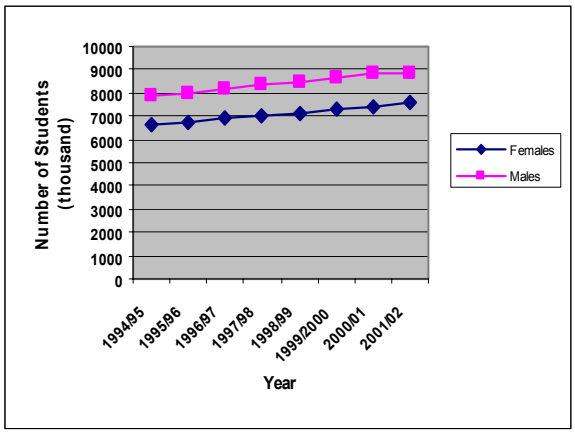
As for the population health status, the Government has exerted relentless efforts to achieve an improvement in the provision of health services. Health care units have increased by 26.1% in 2002 compared to 1995. Hospitals and Chest diseases clinics have also gone up from 176 units in 1994 to 201 units in 2002, leading to a remarkable improvement in Egyptians health. This improvement can be attributed, even partially, to the improvement witnessed in the quality of the environment in Egypt over recent years.

Women's Role in Environment Protection

Women constitute about half the total population, and their average age expected at birth is more than men. Despite the improvement in illiteracy, employment and unemployment indicators for women compared to previous periods, however, such rates are still less than those in men.

Worth noting, enrolment rates in primary and secondary education surged with re-

spect to women compared to men – a fact that can be attributed to the fact that males drop out of school at an early age to join the informal labor sector.



Development of Students' Numbers According to Gender (1994/95 - 2001/2002)

12-e Future Vision

In view of the state efforts in recent years in the fields of providing health care and improving environmental quality, it is expected that population health conditions in Egypt would improve, contributing to improvements in their productivity, and consequently, accelerating economic growth rates and the achievement of comprehensive development.

With the continuous improvement in educational levels of men and women, and the increase in women's participation in the labor market in all fields, it is expected that population natural increase rates will retreat as a result of raising awareness of development issues and their impact by the population problem.

It is necessary in this respect to disseminate environmental education among citizens, in order to activate their role in preserving ecosystems equilibrium, as well as factors that might threaten such balance.

Given the deceleration in population increase, it is expected that pressures on the environment and its resources would decline contributing indirectly and on the long term to environment quality improvement in Egypt, particularly in highly populated urban areas.

Furthermore, it is necessary to pay more attention in EIA studies to the process of identifying and assessing health impacts, including secondary and indirect health impacts.

12-f References

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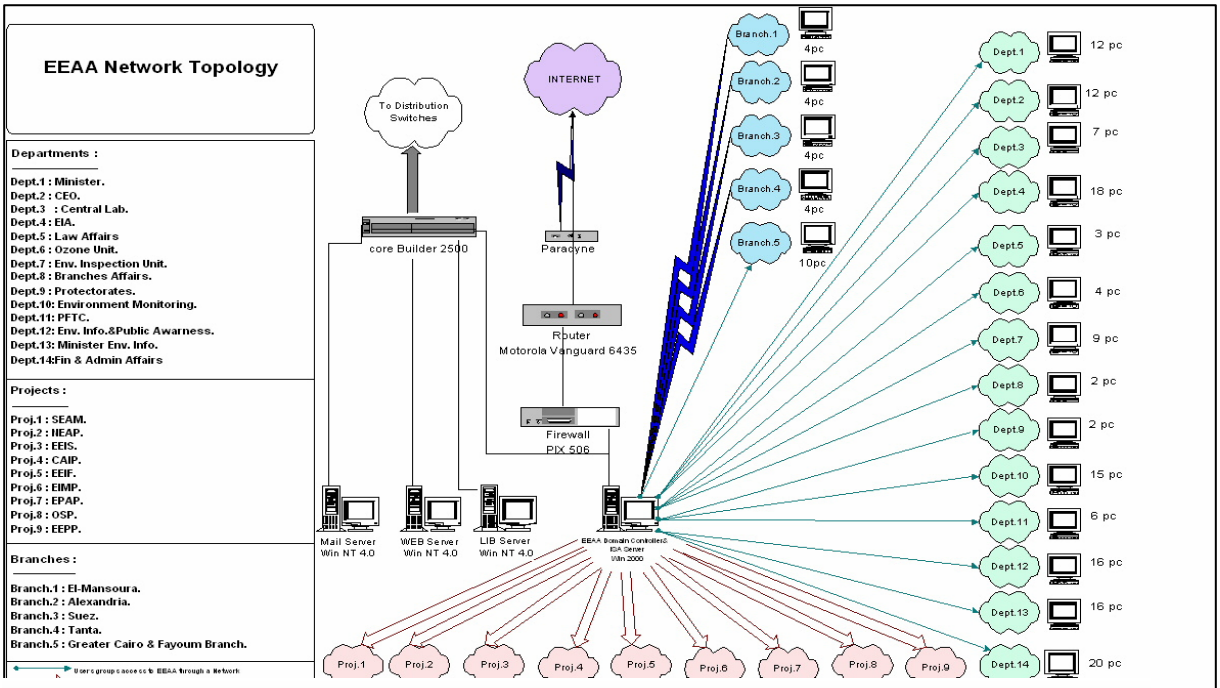
Chapter III

Environmental Management and Policy Analysis



13-A Environmental Information Systems (EIS)

Introduction

Taking the right decisions at the right time is an essential task of national institutions. Consequently, the extent of their success depends primarily on the extent of accuracy and updated available information. The environmental field relies significantly on precise and updated environmental information for taking present and future pollution prevention decisions.

Success of managing the State's natural resources depends on the capacity of control and continuous monitoring of the state of these important strategic resources. Such highly dynamic environmental information needs high-quality and highly flexible specialized information systems in order to be able to monitor and control the status of environmental resources and to be ready for prompt reporting of any emergency such as air or water pollution. In this framework, MSEA philosophy can be divided into three main axis: Providing access to environmental information to all citizens, particularly investors; providing EIS systems to all MSEA and EEAA staff and decision makers; and finally, managing ecosystems through a wide network of automated systems. Furthermore, preparing technical cadres capable of handling such advanced information systems is considered one of the Ministry's priorities.

In order to achieve such targets and objectives, MSEA has established an Information Center equipped with state-of-the-art ICT equipment and computers, in addition to an integrated network for environmental information and data exchange among MSEA, its executive agency (EEAA) and the five RBOs (Cairo, Alexandria, Mansoura, Suez and Tanta) via integrated environmental systems and applications.
This information and data are submitted to

decision makers and environmental experts in order to provide suitable solutions for environmental problems and amending environmental laws, legislations and regulations to be in line with State priorities.

As ICT specialized technical cadres are one of the significant factors affecting the sustainability and success of such systems, if not the most significant, MSEA has qualified more than 40 specialists in the establishment and management of information systems and networks at a high technical level since 1997.

MSEA Information and Computer Center has received an "excellent" grade and won second position for the third year in a row in the annual competition held for information centers at the ministries and governmental organizations levels by the Cabinet's Information and Decision Support Center.

In order to facilitate citizens' access to information, MSEA has established a distinguished website (www.eeaa.gov.eg) which present MSEA and EEAA information and data.

MSEA and EEAA Website

It also provides information on MSEA tasks and responsibilities, instructions and general guidelines, namely on natural resources, achievements, environmental laws and regulations, environmental action, news and projects undertaken by MSEA as well as cooperation protocols between Egypt and foreign governments and international organizations. Moreover, the website provides MSEA services to organizations, institutions, investors and businessmen such as:

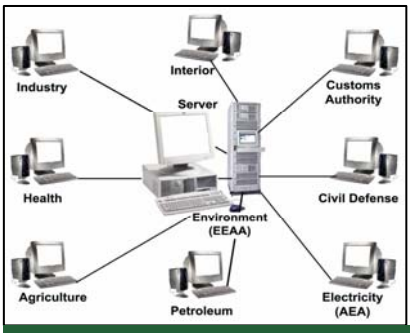
- Submitting an Environmental Impact Assessment (EIA) application for an establishment or a project.
- Submitting an application to the Public Sector Industries for the participation in the Environment Protection Fund (EPF).
- Submitting a request for assistance from EPF.
- Financing projects by the World Bank.

MSEA gives the maximum care to citizens' complaints. It has established a center for receiving such complaints depending on an information system, which follows up complaints until they are solved. In order to expand the service, a special web page for receiving citizens' complaints has been designed on MSEA website on the Internet.

Services Provided by MSEA

MSEA also provides access to a specialized library for researchers containing electronic indices for documents metadata, such as the author's name, title, publisher, reference words and year of publication. These lists currently include around 6,500 documents (1500 documents in Arabic and 5000 in English) available for environmental library visitors or through the library website.

With respect to specialized EIS systems, an information system has been established in order to evaluate and follow up EIA studies and hazardous substances management in Egypt in collaboration with line ministries (Agriculture, Industry, Health, Petroleum, Electricity and Energy, and Interior), in addition to Customs Department and Civil Defense Authority via an information network linked to MSEA in order to provide an integrated database including lists of existing hazardous substances .



Hazardous Substances Information and Management Network

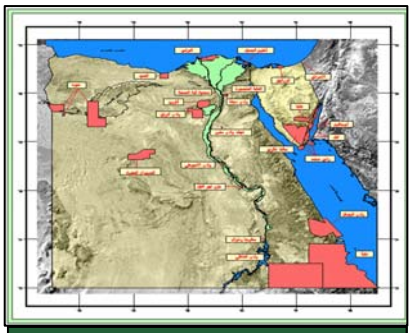
As for environmental pollution, systems for environmental information management of new industrial cities and their generated industrial pollution, continuous follow-up and inspection have been established, besides existing industries and industrial zones, in addition to cities and urban communities system.

Hazardous Material Information and Management System Outputs

Concerning nature protection, a database for biodiversity has been created including a survey of all existing flora and fauna in Egypt and all their relevant details (habitat, location in Egypt, economic value and the importance of scientific classification for each species). This database helps decision makers when undertaking any activity or project (industrial, commercial or tourist) in any area. It also helps in identifying the degree of protection provided for such species and whether or not they are endangered due to human interference.

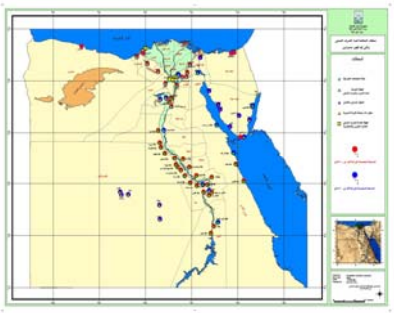
Locations of Industrial Cities

With respect to pollution monitoring, a 42-station integrated monitoring network has been established to monitor air pollutants. The network monitors and analyzes air quality data in Greater Cairo. Currently, in cooperation with the Meteorological Authority, air pollution status can be predicted three days in advance, which allows prompt response to overcome high pollution rates and crisis management according to projections concluded by the system.



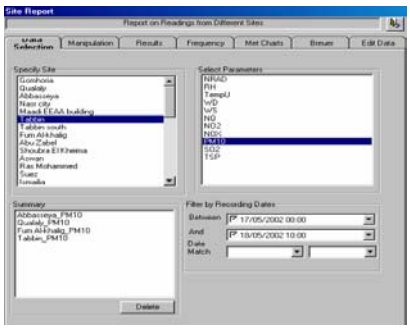
Egypt Natural Protectorates

Additionally, cement factories are monitored round the clock and chimney emissions compared to permissible rates stipulated by the environment law.



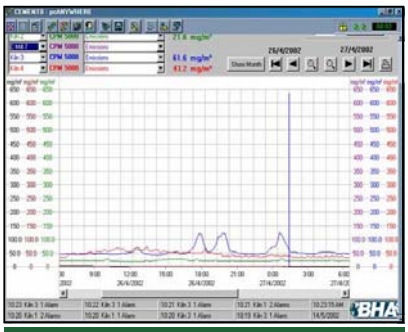
Map of Air Pollution Monitoring Stations

Moreover, water pollution is monitored through the network along the Mediterranean and Red Sea Coasts, in addition to the pollution of ships crossing the Suez Canal.



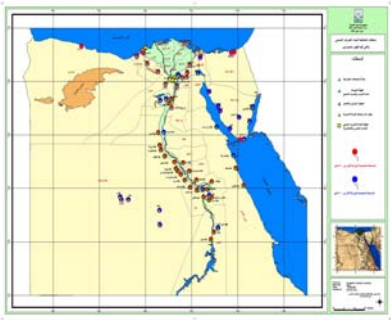
Air Pollution Emission Rates

In addition to the previous network, there is a database of ISO-14000 certified companies and factories, and a database of environmental NGOs, as well as a database of agreements and cooperation protocols in environment and existing environmental projects in Egypt.



Cement Factory Emission

Geographic Information Systems (GIS) is a basic tool for the preparation of environmental applications for obtaining data supported by photos and digital maps for analysis and study purposes. Among the most important applications implemented are a solid waste management system (agricultural and municipal wastes) and selecting the best safe land filling sites for solid wastes, in addition to the special system of the national program for the safe usage of treated wastewater in planting tree forests.



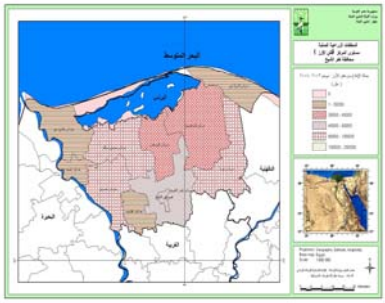
Sanitary Drainage Plants Map (Tree Forests)

The MSEA being keen on keeping up with the great development in GIS systems, has established a remote sensing unit for developing some environmental applications such as identifying green areas in some residential districts in Cairo, monitoring and following up of the following: the development of some new urban communi-

ties; urban encroachment on agricultural lands in Greater Cairo region; oil pollution in the Gulf of Suez; the Red Sea coast mangrove trees and corals, the pollution resulting from industrial emissions in Greater Cairo (Shoubra El Kheima and South Helwan).

Green Areas in Nasr City District

To promote the concept of e-government, MSEA has automated personnel affairs department including the payment of employees payrolls and dues, electronic recording of employees' data, in addition to the introduction of latest technologies such as the use of electronic fingerprints in recording employees attendance, and developing an electronic archiving system for circulating and filing documents in the different MSEA sectors and departments. Currently, full automation of the Financial Affairs Department (warehouses, procurement, budget, audit, write-off and settlements) is underway.



Map of Rice Cultivated Areas in Kafr El Sheikh Governorate

Despite significant development in EIS systems implementation and use, challenges still exist in this sector including difficult access to, and exchange of data, particularly among governmental bodies, as such data exists in several sectors outside MSEA, and obtaining them in a high quality and precision form would require spending huge amounts of money.

Addressing this issue requires prompt and decisive intervention by the Cabinet of Ministers Information and Decision Support Center through the conclusion of cooperation protocols regulating access to data and information needed by any governmental body within a data exchange integrated system among governmental organizations.

The second challenge lies in the process by which this tremendous ICT development can be coped with. MSEA is relentlessly updating available ICT systems, which requires large funds to upgrade equipment, computers, networks, telecommunications, systems and programs, besides renewal of their usage licenses and continuous training of ICT specialists to keep up with such rapid development.

Thus, large funds should be allocated in the State Budget for this purpose.

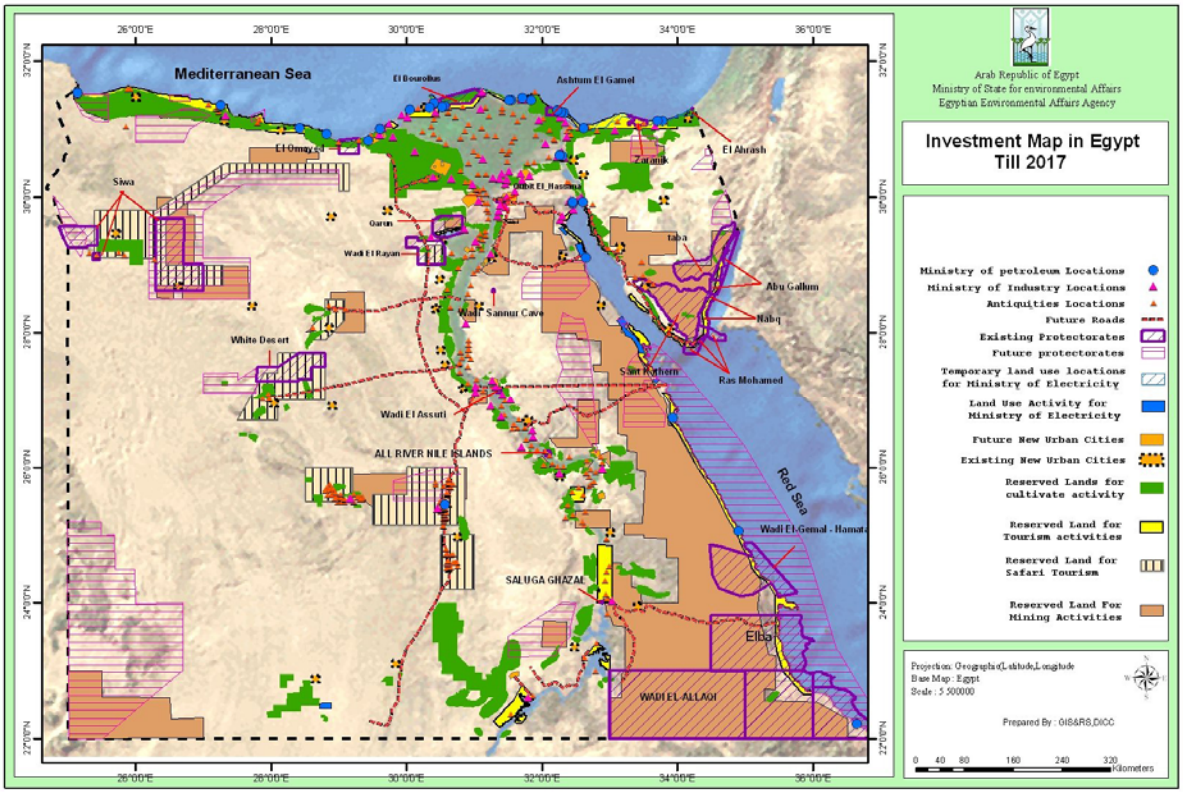
Future Vision

In this ICT age, and the interaction of economic, social and environmental factors, we have become one global village where information and data are transferred momentarily, unrestricted and in complete transparency. In order to protect natural resources for achieving sustainable development, the following should be implemented:

- Establishing an integrated EIS network

among line ministries and relevant governmental authorities to be a nucleus for integrating all non-governmental organizations, associations and companies in order to exchange environmental information according to authorizations and security levels to be identified through cooperation protocols.

- Building ICT staff by increasing existing staff efficiency and capacity through continuous training to transfer state-of-the-art ICT technologies, while retaining such employees and mobilizing new distinguished and trained technical staff by increasing incentives and salaries.



13-B Environmental Crises and Disasters Management

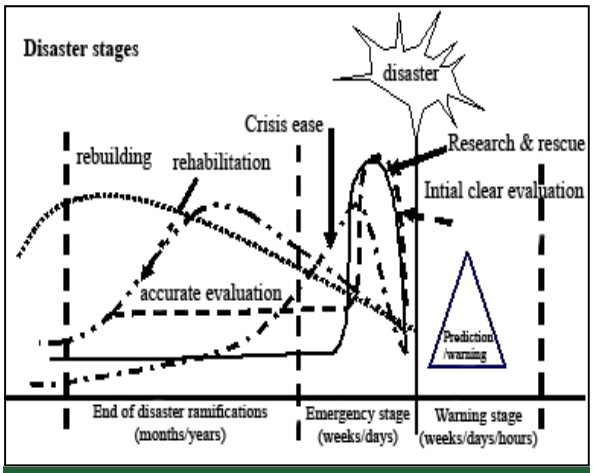
Introduction

Article 5, Law 4/1994 (on environment protection) stipulates that the Egyptian Environmental Affair Agency (EEAA) "shall set the general policy, prepare plans necessary for maintaining and developing the environment, and follow up their implementation in coordination with the competent administrative agencies." To achieve its objectives, EEAA has prepared an environmental emergency plan as demonstrated in Article 25 of the same Law and has coordinated with stakeholders for the preparation of environmental disaster confrontation programs.

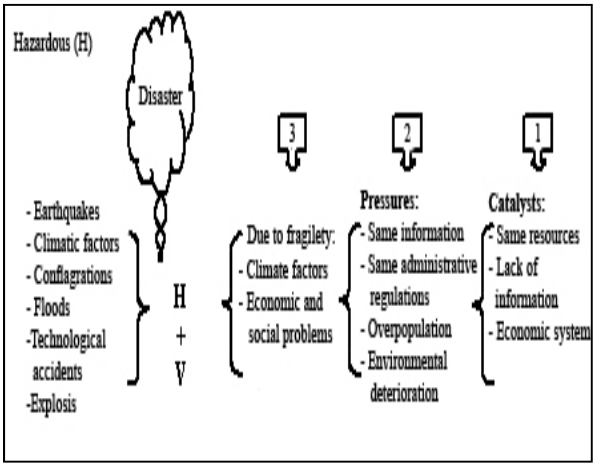
Egypt's surface area is approximately one million km^2 inhabited by more than 70 million people most of whom occupy a small area (about 6%) lying in the Nile Valley and Delta. Thus, these two areas have become the most disasters prone, whether natural or man-made, entailing a great harm on the surrounding environment.

Egypt's coastal area at the Mediterranean and Red Sea extends for a distance of more than 3,000 km, thus, increasing risk potentials, which may result from different marine activities (marine transport, marine tourism, marine oil and natural gas extraction, fisheries, etc…).

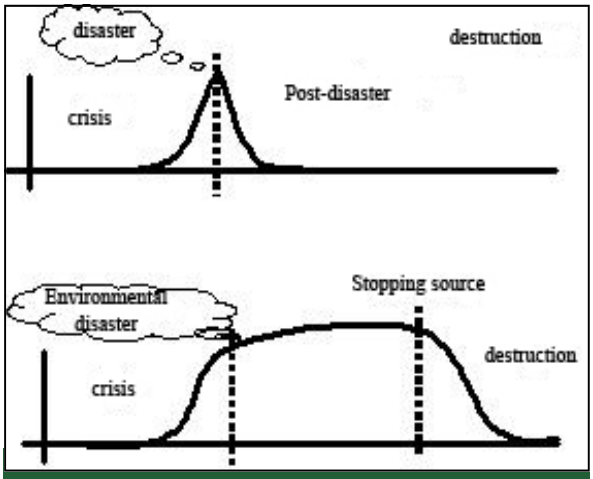
Potential risks in Egypt include all environmental disaster-causing risks, which could be limited to sudden emissions of chemical, radioactive, biological and genetic substances, conflagrations and explosions that may lead to hazardous emissions causing sudden destruction of sensitive ecosystems.



Disaster Curve



Factors initiating and triggering disasters



Finding differences between a disaster and an environmental disaster

Activities with Potential Risk in Egypt:

1. Industry: such as factories whose activities include using, handling or producing hazardous materials or wastes in large quantities.
2. Transport: land, marine and air transport.
3. Warehouses: huge warehousing facilities for storing chemicals, fuel and other hazardous materials, particularly in airports, ports and urban suburbs.
4. Facilities with radioactive materials: such as nuclear reactors, hospitals and research centers.
5. Waste Dumpsites: waste disposal sites around cities as well as sludge disposal sites.
6. Potable water, wastewater and industrial waste water facilities in large cities.
7. Facilities handling biological and genetic materials such as hospitals and scientific research laboratories.
8. Hazardous wastes generated by industry and other activities.

Additional potential-risk activities include risks of oil pollution resulting from research activities, raw oil exploration, extraction, refining, storing and transporting via a pipeline network in marine areas of Suez Golf, in addition to the Egyptian pipeline network/ SOMED Company.

Environmental Impact

Environmental impacts of accidents and announced risks include the following:

- Severe live damage.
- Severe damage to the rest of the living organisms (fauna, flora, etc.).
- Severe damage in property.
- Stopping of different activities.

- Change in the characteristics of environmental elements (water, air and soil) rendering them unusable.

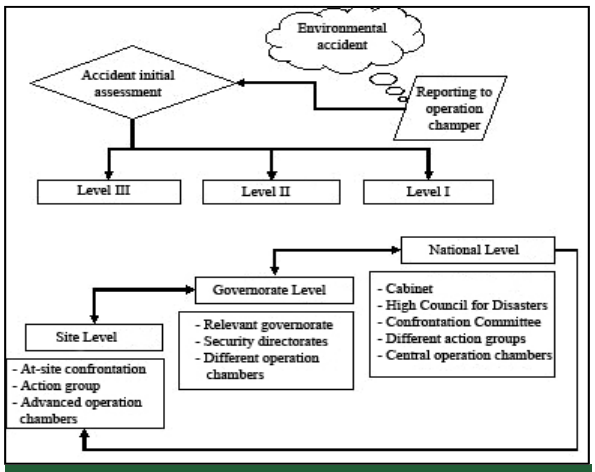
Thus, planning to confront emergency accidents that may harm the environment was necessary. In this respect Law 4/1994 has mandated EEAA with the responsibility of developing an Environmental Emergencies Plan (Article 25).

EEAA Environmental Crises and Disasters Confrontation Efforts:

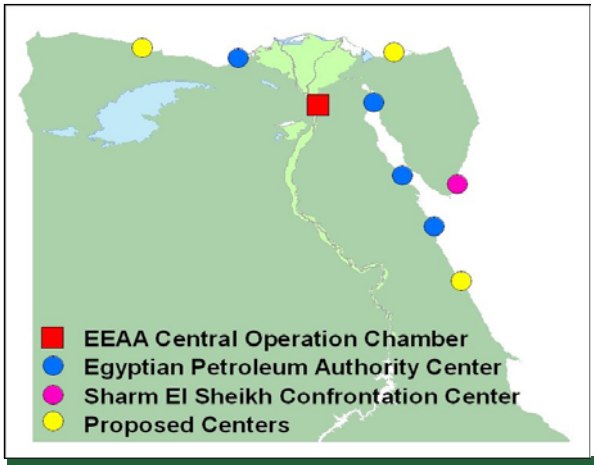
1. A national plan was developed to confront marine pollution resulting from petroleum oil in 1986.
2. The oil plan was updated during 1996-1998.
3. A Central Operations room was established in 1998, anchored in EEAA, for receiving marine pollution accident reports as well as reports on accidents affecting the environment, and to manage oil pollution combat processes in coordination with the Petroleum and Sea Ports Sector combat centers.
4. A general framework for a national emergency plan to confront environmental disasters was finalized in March 2002.

EEAA Efforts in 2004:

1. The Sharm El Sheikh Marine Anti-Pollution Center management and operation have been assigned to a specialized private sector company in order to protect marine environment and fragile ecosystems along the South Sinai coasts in the area from Nabq in the north till Ras Mohamed in the south of Gulf of Aqaba, and from Ras Mohamed in the South till Ras Gara in the North of Gulf of Suez. The Center has been supplied with marine anti-pollution combating equipment, a combat ship and 3 fast boats. Such equipment suffices to combat 300 tons of spilt oil.



The General Framework



Oil Anti-Pollution Centers

The importance of establishing this Center lies also in protecting different forms of tourism investments (including environmental tourism) from oil pollution resulting from intense marine transport to and from the Gulf of Aqaba.

2. Total Reports Received by EEAA Central Operations Room in 2004 (78 reports):

Number of Marine Pollution Accidents - 2004													
Type of Accident	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Oil Pollution	**3**	**3**	**4**	**3**	**6**	**7**	**3**	**5**	**1**	**3**	**3**	**6**	**47**
Ships	**1**	**1**	**3**	**2**		**1**		**4**	**2**		**1**	**2**	**17**
Severe Air Pollution	**1**	**1**			**1**			**1**			**1**		**5**
Misc.	**1**	**3**			**1**	**1**			**1**			**2**	**9**
Total													**78**

- Number of oil pollution reports = 47 reports
- Ship foundering accidents reports = 17 reports
- Severe air pollution reports = 5 reports
- Miscellaneous reports = 9 reports

3. Completing the development of the National Plan for Confronting Environmental disasters, it became imperative to activate it through a specialized administration responsible for the implementation of the requirements of article 25 of law 4/1994. Consequently, measures were taken for filling in available posts in the organizational structure of the General Department of the Office of Special Missions and for managing environmental disasters during 2004. The General Department is responsible for:
   - Collecting available information locally and internationally on how to confront environmental disasters and mitigate resulting damages; Surveying available potentials on the local, national and international levels and identifying methods to use such potentials to ensure prompt confrontation of disasters; following-up and constant updating of the central operation room and databanks in order to mobilize necessary all potentials for confronting disasters; forming specialized workgroups to follow up on environmental disasters confrontation efforts.
   - Analyzing environmental monitoring systems data for coastal areas, the Nile River, and air monitoring stations located at different parts countrywide; examining analysis to identify early warning signs requiring prompt confrontation by competent authorities to avoid their transformation into environmental crises or exacerbate to the level of environmental disasters.
   - Analyzing reports produced by the Central Operations Room, examining the situation and recommending relevant measures to be taken.

13-C Environmental Impact Assessment (EIA)

Challenges facing the State such as the implementation of unplanned development projects, disregarding environmental impact when planning for these projects, absence of an environmental management for such projects during establishment and operation stages, in addition to the continuous increase in population resulting in unplanned status of buildings, basic utilities and outputs of human activities (i.e. solid and liquid wastes), as well as lack of adequate experience of administrative authorities to handle all such challenges in a way that curbs their negative impacts – all these have led to the appearance of pollution problems, apparently in the increased rates of harmful gaseous emissions such as sulfur, lead and nitrogen oxides, and carbon mono-/dioxide, which have placed increasing pressures on the atmosphere. The leakage of untreated industrial and sanitary drainage in watercourses has led to water resource pollution (fresh water, ground water and marine environment). Similarly, the accumulation of solid wastes has also had negative impacts on hygiene and tourism.

In order to confront these challenges, Law 4/1994 on the Environment Protection and its Executive Regulation has stipulated on the necessity of environmental assessment of developmental activities before their implementation, which would minimize adverse impacts, while maximizing the positive impacts of such activities on the environment. EIA is a strategic tool essential for ensuring environment protection, as it is applied to assess the impacts of developmental projects or activities. The Environment Law has mandated EEAA with the responsibility of setting up an integrated institutional system comprising principles and criteria to conduct, review and decide upon EIA studies, ensuring the observance of work environment health and the maximum limits of gaseous emissions and

drainage output levels as stipulated in Law 4/1994 Executive Regulation.

Environmental Impact Assessment (EIA) is defined as a technical study undertaken by the investor or his representative where information and data on the project, its location and potential environmental impacts resulting from the project establishing on the ambient environment are collected. Through the study, different impacts of the project are analyzed and measures and alternatives for the different elements of the project are proposed, leading eventually to the elimination or mitigation of these impacts to the lowest extent possible. This study is taken into consideration by relevant administrative authorities when deciding whether to grant or reject a license to a project. EIA process comprises a number of procedures determined by Law 4/1994 on Environment Protection and its Executive Regulation, as well as EIA Principles and Procedures Guideline issued by MSEA EEAA, ensuring environmentally sound and sustainable development choices, besides the ability to identify any environmental consequences in the first stages of the planning process.

Furthermore, EEAA has issued detailed guideline manuals on some important activities such as land reclamation projects, port and marinas development projects, industrial zones development, urban development projects, wastewater treatment, cement production plants and gas and petroleum sector. Such manuals have been distributed on EEAA RBOs, EMUs and all stakeholders so as to allow them for investors and consultancies. Moreover, guideline manuals on new and renewable energy projects are currently being developed for release and distribution.

EIA Objectives:

- Providing sound basis for the decision-making process of project component design.
- Ensuring project implementation with full awareness of environmental factors;
- Increasing public awareness of the timing and forms of any potential environmental impacts.
- Facilitating public participation in the decision-making process.

Facilities subject to EIA conditions are identified according to 4 criterias:

1. Type of activity.
2. Natural resources used.
3. Facility location.
4. Type of energy used.

Projects have been classified into 3 categories according to their environmental impact as follows:

1. List (A) projects with low environmental impacts;
2. List (B) projects with significant environmental impacts; and
3. List (C) projects with hazardous environmental impacts

Additionally, environmental classification forms of (A) and (B) lists projects have been developed in a printed forms in order to facilitate investors' filling in of basic and technical information, potential environmental impacts of such projects, and measures to mitigate such impacts, to enable EEAA to review these forms and give its opinion. Most of the studies submitted are reviewed by a qualified team of researchers. Also, the assistance of a number of EEAA accredited consultants is sought in projects with special nature that might

have potentially significant impacts on the ambient environment. After reviewing and assessing such studies, Reply is forwarded to competent licensing authorities as follows:

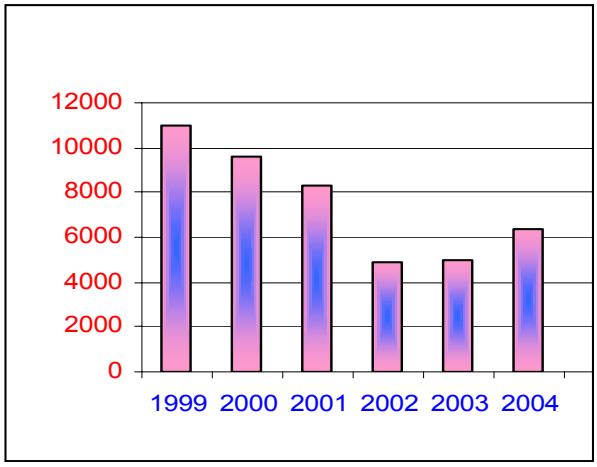
- Giving approval to the relevant competent administrative authorities to issue permanent licenses to projects established in industrial zones while adhering to the requirements of Law 4/1994 on environmental protection and its Executive Regulation.
- Giving approval to relevant competent administrative authorities to issue temporary licenses to projects established in industrial zones while adhering to Environment Law requirements pending the establishment of industrial zones.
- Rejecting the establishment of projects that do not fulfill Environment Law criteria and requirements.

In 2004, the number of EIA forms and studies submitted to EEAA was 15,529 of which 6,979 forms and studies have been received by the Central Department for Environmental Impact Assessment (CDEIA) distributed according to the following table:

For implementing Decentralized Environmental Management, EEAA RBOs Ls have been mandated to review Screening forms of (A) List projects located in their geographical jurisdiction. The number of (A) forms received and reviewed by the officially established 5 RBOs 8550 forms. The following figure represents the total projects reviewed at the Central Department for Environmental Impact Assessment during the period from 1999 till 2004.

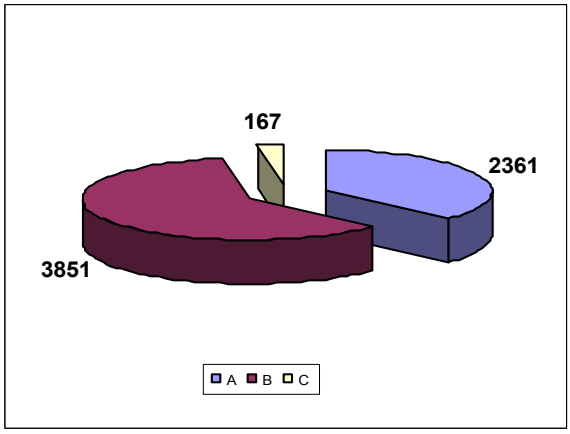
Classifying projects according to different sectors, which were received by CDEIA in 2004

Projects	Number	(%)
Agricultural Projects	200	3.1%
Industrial Projects	3993	62.6%
Tourism Projects	107	1.7%
Electric Energy Projects	5	0.1%
Oil Projects	145	2.3%
Service Projects	1718	26.9%
Health Projects	28	0.4%
Infrastructure Projects – Roads	43	0.7%
Infrastructure Projects – Water	98	1.5%
Housing Projects	9	0.14%
Ports	1	0.02%
Airports	1	0.0%
Telecommunications	31	0.5%
Total	**6979**	**100%**



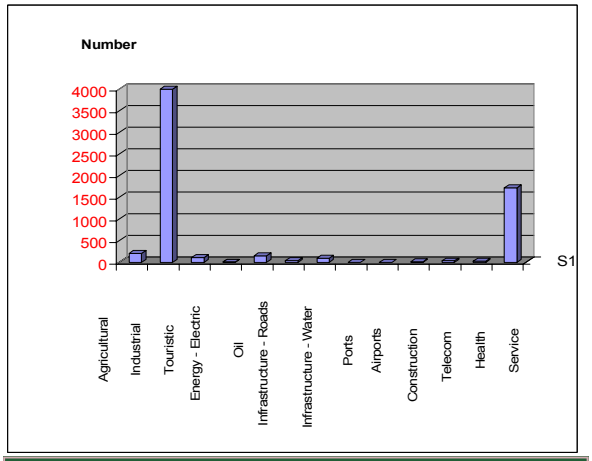
Total Number of EIA forms and studies received by the EIA Central Department during 1999 - 2004

The following figure represents the number of EIA forms and studies received by the EIA Central Department in 2004 according to their classification.



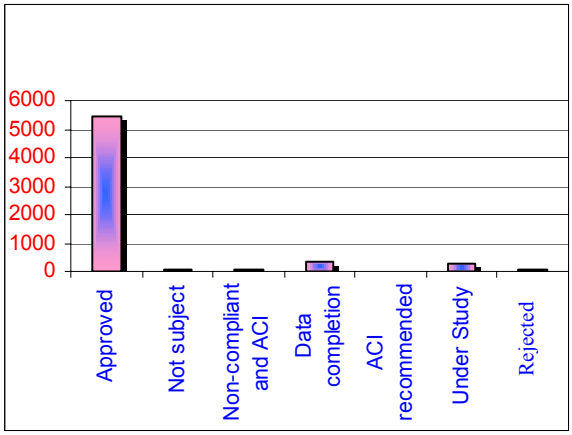
Number of EIA studies according to their classification received during 2004

The following figure shows the distribution of projects received by the EIA Central Department during 2004 according to Sectors (type of activity)



During 2004

The following figure shows the status of projects received by the Central Department during 2004, which demonstrates a low number of projects (1.6%) were rejected due to their negative impact on the ambient environment and their unsuitability for their selected sites.



Number of studies from 1/1/2004 till 31/12/2004 according to their status

The following table shows the total number of environmental Screening (A) Forms reviewed by RBOs during 2004.

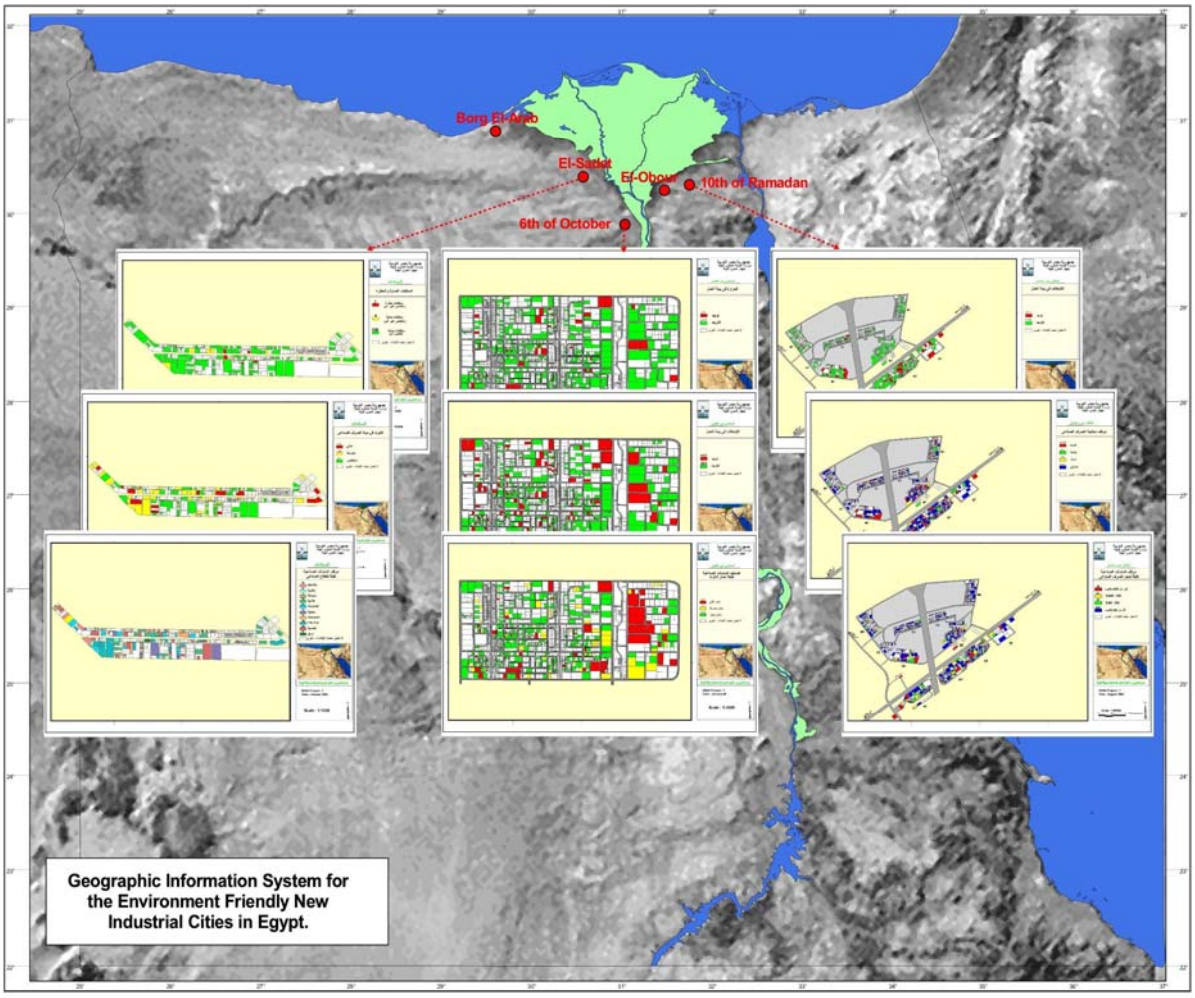
Total Number of List (A) Project Environmental Screening Forms

Sr.	RBO	Number of (A) List Projects
1	Greater Cairo and Fayoum	1738
2	West Delta	999
3	Middle Delta	2713
4	East Delta	2918
5	Suez Canal and Sinai	182
	Total	**8550**

Future Vision

1. Activation the monitoring system for projects compliance with environmental requirements during construction and operation stages through EEAA RBOs and the General Department for Inspection.
2. Reviewing environmental screening lists and environmental requirements and removing some of the activities that do not require environmental assessment so as to be approved by EMUs based on requirements determined by EEAA.
3. Incorporating necessary amendments to the executive regulation to oblige owners of significant environmental impact projects to hold hearing sessions for projects to be attended by governmental public authorities and relevant organizations.

   Taking necessary measures to collect service charges for reviewing EIA studies and forms in order to cover consultancy firms expenses.



13-D Environmental Inspection

Introduction

Environmental inspection aims at reinforcing and enhancing both environmental state and public health. Pollution resulting from industrial facilities has adverse impacts not only on environment but also on human health.

Environmental inspection includes several linked aspects including planning, implementation measures and information management.

In 2004, a progressive and a development upturn have taken place in environmental inspection tasks and activities in Egypt including the following:

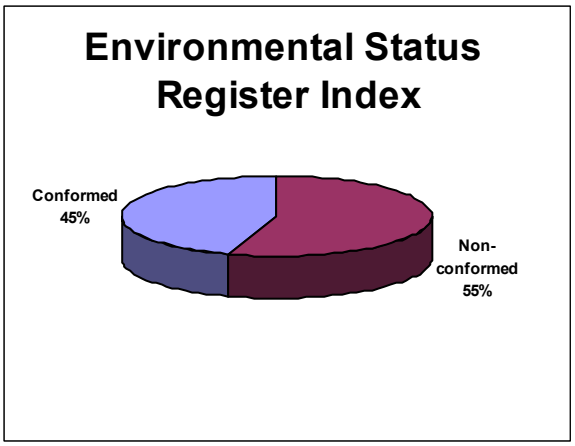
- Enforcing all types of facilities to apply law 4/1994 articles and provisions by filing lawsuits to apply legal penalties; (violations, misdemeanors, criminal acts) on violating facilities;
- Supporting industrial facilities environmental performance development by providing them with guidance to use EEAA technical and financial support mechanisms in order to provide them with assistance in many fields including waste control and treatment, efficient treatment operations, application of self-monitoring systems, and at-source waste minimization programs.
- Encouraging different industrial facilities to submit environmental compliance plans to the Ministry and EEAA with time schedules, and the evaluation and following-up of the implementation of such plans through the General Department for Inspection. About 15 large industrial facilities have submitted environmental compliance action plans (CAPs) until the end of 2004**.**
- Coordinating with EEAA Air Quality Sector to monitor cement factories

emissions all over the republic, undertaking regular environmental inspection and taking legal pursuit measures against violators.
- Participating in the development of sectoral environmental inspection guidelines in cooperation with the Environmental Pollution Abatement Project (EPAP);
- Cooperating with the Egyptian Environmental Policies Program (EEPP) for issuing the policy, guidelines and procedures for environmental inspection;
- Participating in the elaboration of proposals for environmental compliance executive regulation to be realistic and in line with environmental laws;
- Developing a proposal for upgrading the role of the General Department for Environmental Inspection during the coming phase to maximize the tangible outcomes of environmental inspection activities; The proposal should include the Department's role in developing EEEAA financial resources through claiming reasonable compensations from the different facilities for remediating environmental impacts resulting from their violations.
- Participating in conferences, seminars and international fora by presenting different working papers and research; The Department has actively participated in the African-Arab Forum, International Conference on "Engineering and the Environment" held at the Military Technical College, in addition to its permanent participation in the World Conference on Environment held in Cairo, as well as the National and World Environment Day.
- Coordinating and cooperating with the EEEAA Training Department in training environmental EMU staff at governorate level. To date, nearly 200 employees were trained. Training included the development of scientific material, giving lectures in the different industrial sectors and on important environmental matters. Training was also implemented in different industrial facilities for the heads of production lines and environmental staff at large industrial facilities.
- Undertaking specialized EIA studies as part of the Arab League/EEAA cooperation programs.
- Entering data of about 2,150 facilities in the Environmental Inspection database (IPIS) and offering access to information to all EEAA different sectors and department.

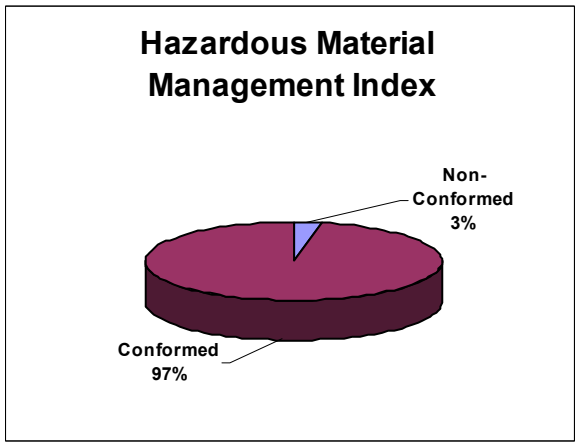
Environmental Compliance Basic Indicators:
- Environmental Status Register.
- Hazardous substances management.
- Hazardous waste management.
- Hazardous waste registry.
- Solid waste management.
- Gaseous emissions.
- Work environment pollutants.
- Wastewater .

Environmental Legal Compliance Indicator

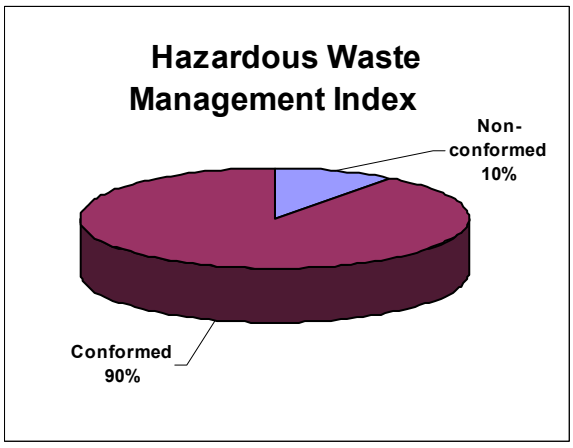
Results of these indicators based on inspections undertaken during 2004 can be briefed in the following graphs:



About 45 % of the facilities are not in violation as such facilities are in the process of developing their environmental registers, which are submitted to EEAA. A high percentage of these facilities have been previously inspected and their environmental registers developed accordingly.

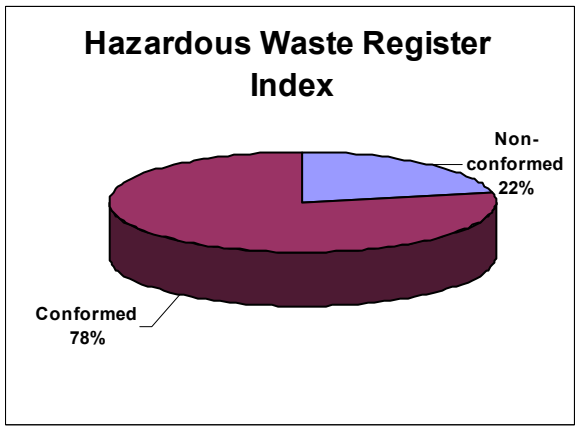


It is clear that 3% are in violation due to the absence of permits to handle hazardous substances from competent authorities.

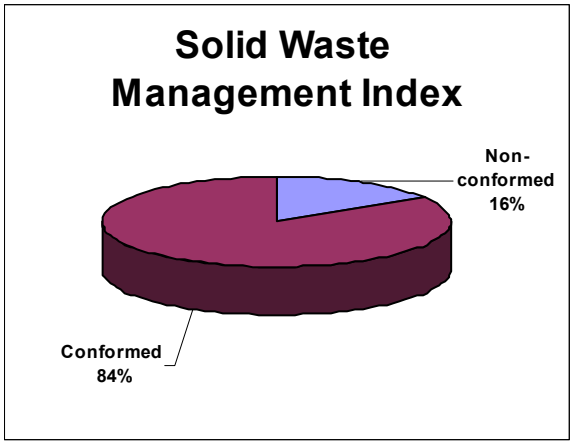


It is noticeable that 90% are not in violation due to waste disposal through:

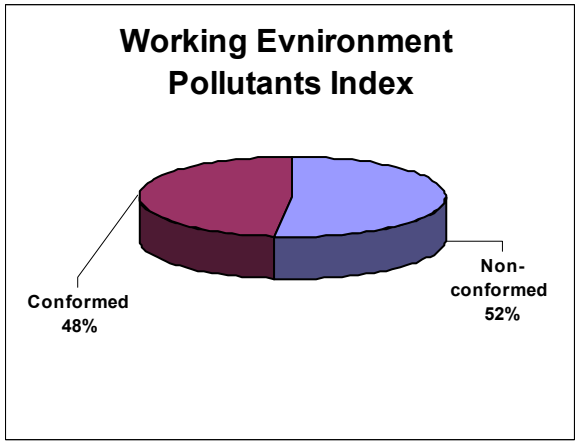
1. Sanitary landfill in Nasereya (Alexandria)
2. Disposal in cement kilns (Alkaline)
3. Temporary storage
4. Minimization from the source
5. Recycling



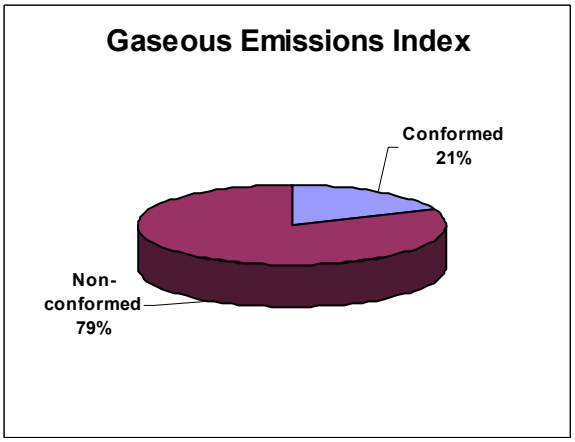
It is clear that 78 % are not in violation as a large number of facilities have no hazardous wastes and other fertilizers has also been previously inspected, and consequently have developed hazardous wastes registers to avoid severe penalties; some facilities have also submitted their hazardous wastes registers after inspection and before forwarding their violation reports to the public prosecutor.



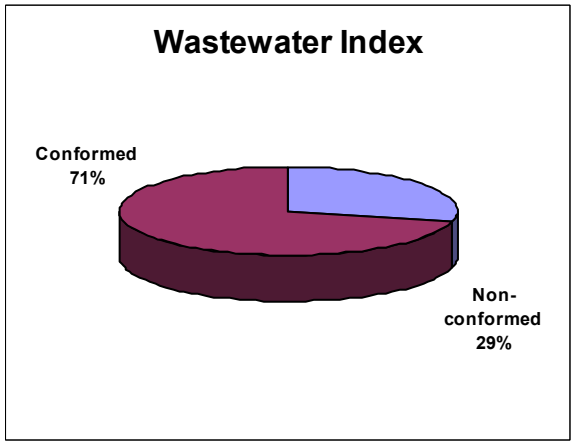
It is clear that a percentage of 84% is compliant due to contracts made between facilities and EMUs or any competent authorities to remove wastes, as the system of removing and transporting wastes from governorates exists since a long time.



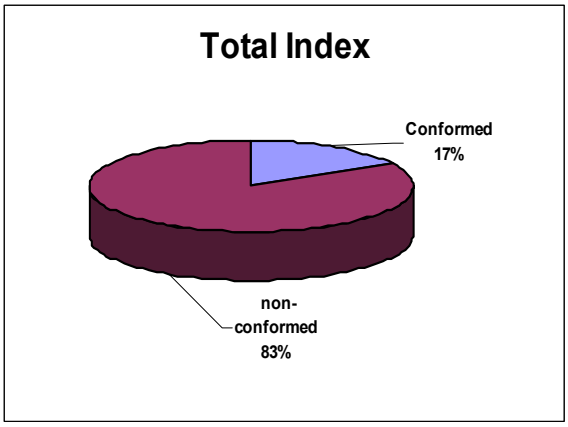
It is clear that a percentage of 48% is compliant due to the fact that a high percentage of facilities are non-compliant as regards working environment pollutants which effect on workers' health (noise, respirable particulate matter, humidity and temperature) and absence of commitment with PPE (Personal Protection Equipment).



79% is compliant as some facilities generating gaseous emissions are compliant with legal standards due to the use of filters for washing gases. Other factories use liquid or gaseous fuel as an energy source but use generated power from electric supply.



It is clear that a percentage of 71% is conformed because a large number of facilities drain through the main network, others do not have industrial drainage, while for those who drains int. the Nile or any of its branches, their drainage pollutants are with the legal limits.

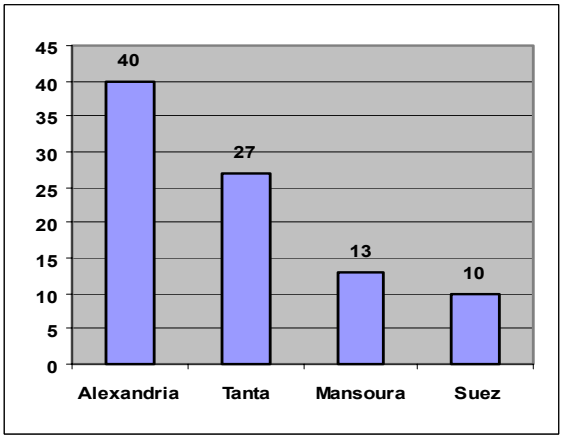


It is clear that a percentage of 17% has been approved for the following reasons:

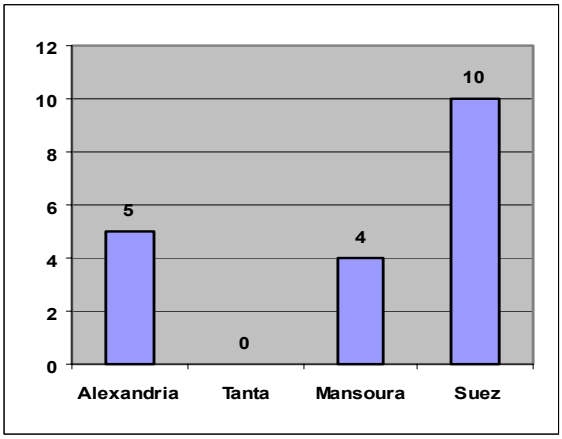
1. **The absence of any non-conformance; according to the Environment Law 4/1994.**
2. **Conciliation regarding non-conformance.**
3. **A decree by HE the Minister or EEAA CEO upon a petition by the facility.**
4. **The full termination of the facility or its temporal termination during inspection.**

In 2004, Environmental Inspection General Department has inspected about 950 facilities in addition to more than 500 other facilities in participation with Citizen Service Department distributed on the different sectors. (Industrial, tourism, services and health sectors).

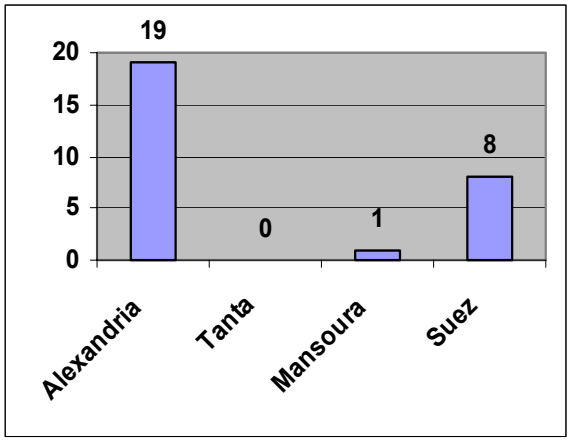
Inspection by Central Department for Branches Affairs (CDBA)



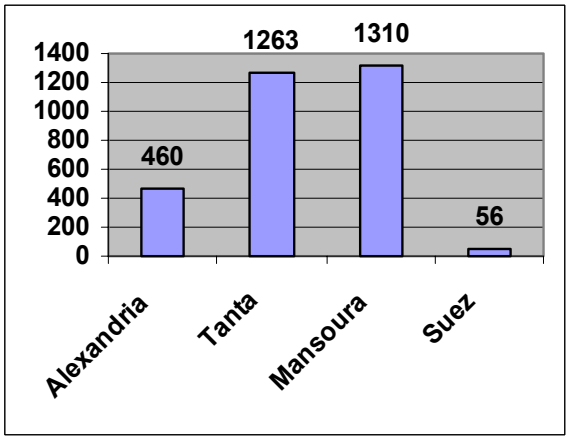
Inspecting industrial facilities
From 1/7/2004 till 31/12/2004



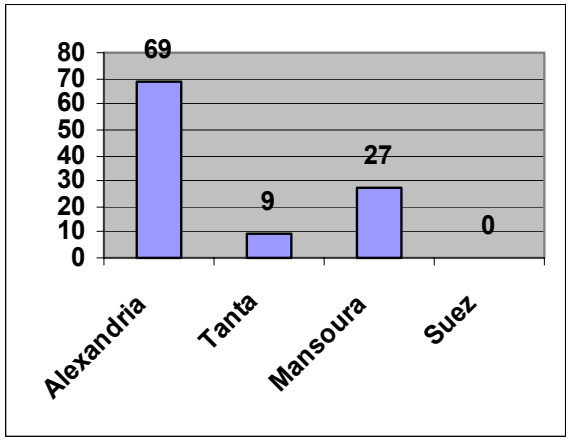
Inspecting service sites
From 1/7/2004 till 31/12/2004



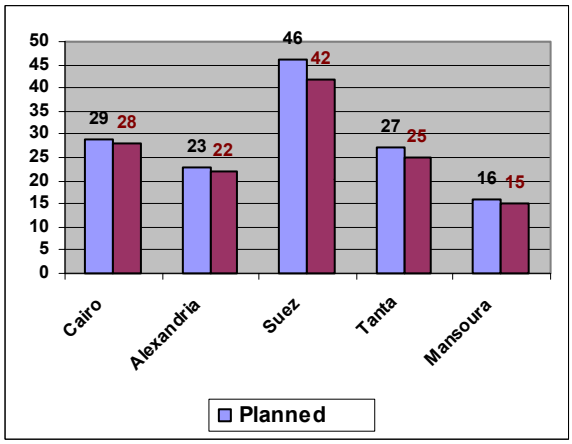
Inspecting tourist, entertainment and resort facilities From 1/7/2004 till 31/12/2004



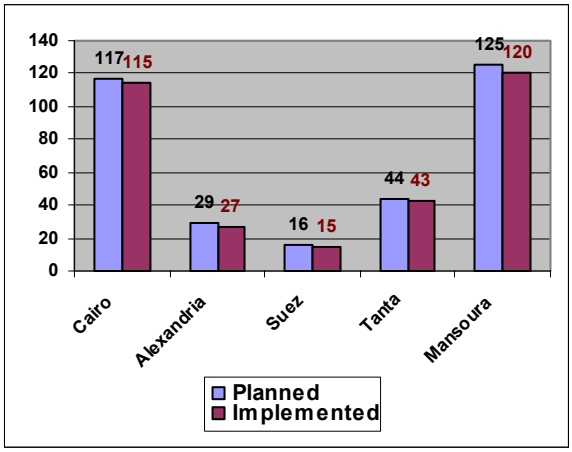
**EIA Review (Form A)
From 1/7/2004 till 31/12/2004**



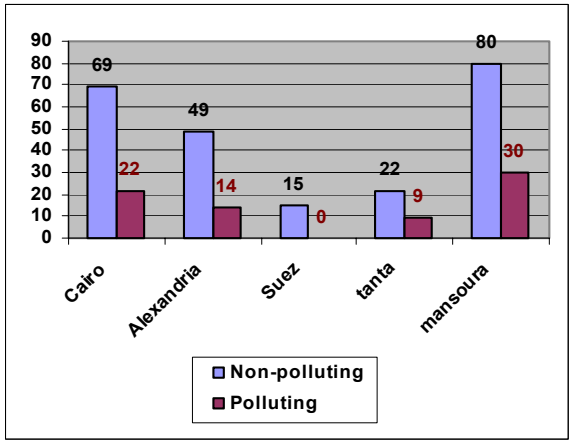
**Inspecting workshops and small enterprises
From 1/7/2004 till 31/12/2004**



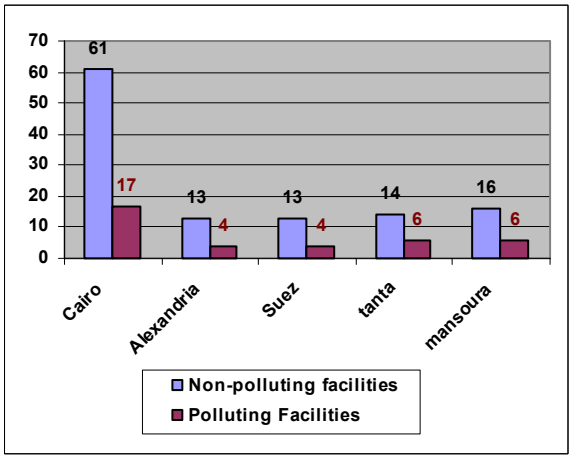
**The amount of achievement with respect to plan relevant to water quality
From 1/7/2004 till 31/12/2004**



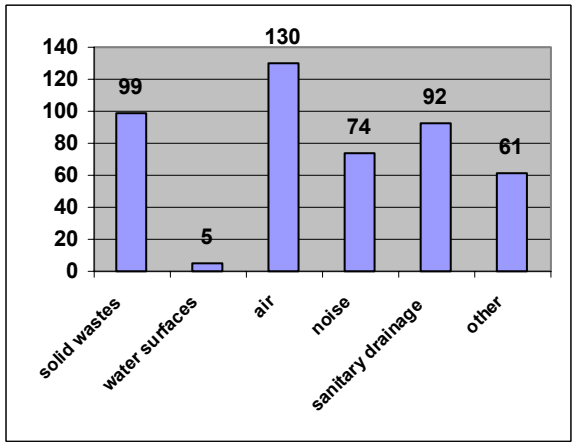
The amount of achievement with respect to plan relevant to air quality
From 1/7/2004 till 31/12/2004



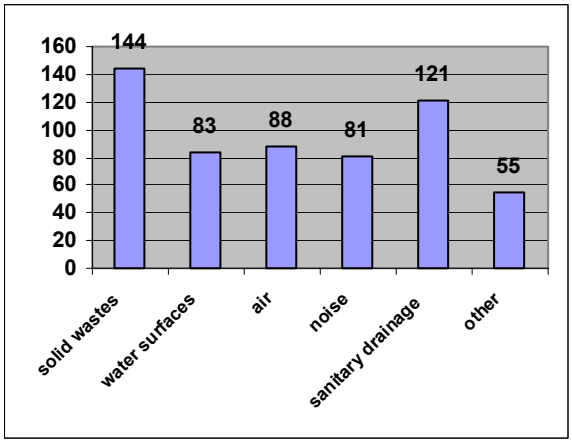
Noise-polluting facilities
From 1/7/2004 till 31/12/2004



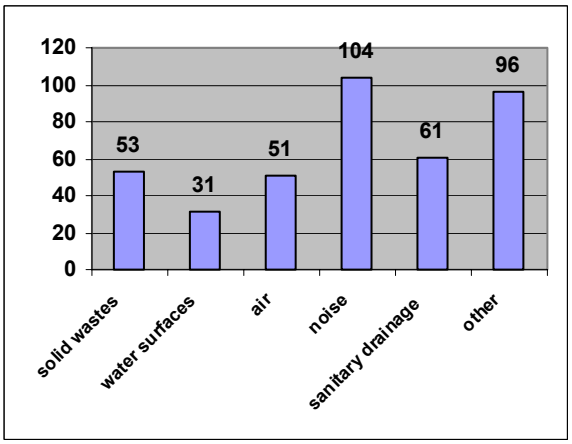
Air polluting facilities
From 1/7/2004 till 31/12/2004



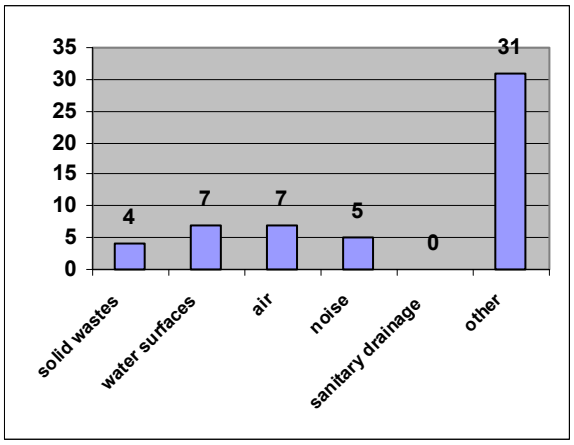
Complaints submitted by citizens in Alexandria RBO From 1/7/2004 till 31/12/2004



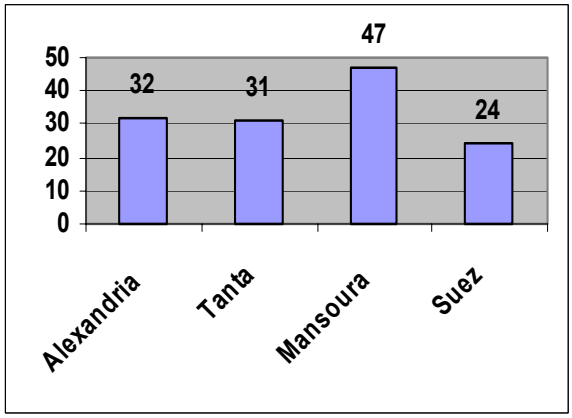
Complaints submitted by citizens in Tanta RBO From 1/7/2004 till 31/12/2004



Complaints submitted by citizens in Mansoura RBO From 1/7/2004 till 31/12/2004



Complaints submitted by citizens in Suez RBO From 1/7/2004 till 31/12/2004



Violation Reports for Environmentally Polluting Facilities from 1/7/2004 – 31/12/2004

Post-Inspection Measures

EEAA role is not limited to implementing environmental inspection and referring reports against violating facilities to the public prosecution (the Penalty part), but extends to treatment and prevention, which complements environmental inspection.

Such treatment and prevention aspects can be summarized as follows:

- Instructing environmentally violating facilities to submit to EEAA specific time environmental compliance plans, which are regularly monitored.
- Instructing environmentally violating facilities (based on their inspection reports) to one of the donor projects comprising an element for offering technical or financial assistance to facilities in order to comply environmentally.
- Contacting the competent administrative authorities concerned with environmental violations of facilities under inspection in order to make such facilities accountable and responsible for addressing their violations by taking the necessary legal and administrative measures against them.

13-E Institutional Strengthening

Introduction

In view of the increasing international interest in environmental issues represented in many international treaties and pacts, many countries have begun to institute local strategies for preserving the environment. However, many problems have emerged during the implementation of such local strategies, and implementation has become the true criterion for measuring the success of any local strategy mechanism for preserving the environment.

Much research have confirmed that the failure of local strategies in some countries came as a result of their inability to build effective legislative and institutional structures capable of implementing such strategies. Consequently, the importance of boosting legislative and institutional structures related to the environmental policies becomes evident.

Thus, Egypt began to institute a legislative and institutional structure capable of responding to the environmental policies requirements at the legislative and institutional levels.

The Legislative Structure

Several legislations have been enacted in Egypt for preserving the environment, including:

- Law no. 45 of 1949 on controlling noise and loudspeakers.
- Law no. 66 of 1953 on the use of fuel, coal and petrol materials.
- Law no. 21 of 1958 on industry.
- Law no. 86 of 1956 on mines and stone quarries.
- Law no. 59 of 1960 on ionized activities.
- Law no. 79 of 1961 on marine disasters and wreckage.

- Law no .53 of 1966 on agriculture.
- Law no .38 of 1967 on public cleanliness.
- Law no.1 of 1973 on industrial establishments and noise prevention.
- Law no.106 of 1976 on housing.
- Law no.52 of 1981 on pollution preventing.
- Law no.173 of 1982 on work environment.
- Law no.3 of 1982 on urban planning.
- Law no.93 of 1982 on sanitary drainage and liquid wastes.
- Law no.48 of 1982 on River Nile protection.
- Law no.102 of 1983 on natural reserves.
- Law no.12 of 1984 on irrigation and drainage.
- Law no. 4 of 1994 on environment preservation and its executive regulations. The provisions of this law are implemented in collaboration with several ministries, and these are the Ministries of: Local Development, Interior, Health, Agriculture, Industry, Petroleum, Electricity and Defense.

This law is considered the first unified legislative regulation for the environment in Egypt that is in line with the international legislative trend of environmental preservation. It forms a strong institutional support to the environmental policy in Egypt. This is clear from the following:

- The law is in line with the international philosophy that linked the environment to sustainable development, as reflected in many international forums and pacts. This law is considered the first legislation in Egypt that uses incentives as an effective implementation tool whether directed to individuals or to institutions, and so it acknowledges the recommendations of the UN Conference on Environment and Development held in Rio de Janeiro, Brazil 1992.
- The law recommended the necessity of representing non-governmental organizations (NGOs) in EEAA board of directors (it is the body mandated by the law to lay out the general policy for environment and prepare appropriate plans for its preservation). The articles of law no. 4 of 1994 included the right of NGOs and individuals to report any environmental violations, and the importance of enhancing the role of NGOs and public participation in developing environmental policies.
- The law included increased the environment-related penalties in preceding laws, especially violations related to the infringement on wild life and natural resources in Egypt in order to address the defects in some already issued laws in this respect.

The Institutional Structure

a. EEAA mandates under MSEA supervision:

- The Law no. 4 of 1994 stipulated that "The Agency (EEAA) shall have a public juridical personality and shall be affiliated to the competent Minister for Environmental Affairs. It shall have an independent budget and its head quarters shall be located in Cairo. The Minister for Environmental Affairs may establish branches for the Agency in the governorates by ministerial decree". In 1997 - for the first time- a minister of environmental affairs was appointed, assuming also the position of EEAA chairman and supervisor of all its activities.
- According to Law no. 4 of 1994, "The Agency shall formulate the general pol-

icy and lay down the necessary plans for the protection and promotion of the environment and follow up the implementation of such plans in coordination with the competent administrative authorities. The Agency shall have the authority to implement some pilot projects".

- "The Agency shall be the national authority responsible for strengthening environmental relations between the ARE and other countries and regional and international organizations. The Agency shall recommend taking the necessary legal procedures to adhere to regional and international conventions related to the environment and prepare the necessary draft laws and decrees required for the implementation of such conventions".
- Prepare draft laws and decrees related to the fulfillment of its objects and express its opinion on proposed legislation related to the protection of the environment.
- Prepare studies on the state of the environment, formulate the national plan with the projects included for the protection of the environment, prepare the estimated budgets for each as well as environmental maps of urban areas and areas to be developed and lay down the criteria to be observed when planning and developing new areas as well as the criteria targeted for old areas.
- Lay down the criteria and conditions which owners of projects and establishments must observe before the start of construction and during the operation of these projects.
- Draw up a comprehensive list of national institutions and organizations as well as of qualified individuals who could contribute in the preparation and execution of environmental protection programs and could be made use of in preparing and implementing the projects and studies undertaken by the Agency.
- Conduct field follow-up of compliance with the criteria and conditions that are binding to agencies and establishments and take the procedures prescribed by law against those who violate such criteria and conditions.
- Lay down and follow up the rates and percentages necessary to ensure that permissible levels of pollutants are not exceeded.
- Gather national and international information on the environmental situation and the changes affecting it on a periodical basis in cooperation with the information centers of other agencies, publish such information and evaluate and utilize it in environmental management and planning.
- Lay down the principles and procedures for assessing environmental impacts of projects.
- Prepare an environmental contingency plan in the manner stated in article 25 of this Law and coordinate with the competent bodies in the preparation of programs to face environmental disasters.
- Lay down a plan for environmental training and supervise its implementation.
- Participate in the preparation and implementation of the national program for environmental monitoring and make use of the data provided thereby.
- Compile and publish periodic reports on the main environmental indicators.
- Prepare programs for the environmental education of the public and assist in their implementation.
- Coordinate with other competent authorities in connection with regulating

and setting safety standards for the conveyance of hazardous materials.
- Administer and supervise natural protectorates.
- Prepare the draft budgets required for the protection and promotion of the environment.
- Follow up the implementation of international and regional conventions related to the environment.
- Propose economic mechanisms to encourage different activities and procedures for the prevention of pollution.
- Implement pilot projects for the preservation of natural resources and the protection of the environment from pollution.
- Coordinate with the Ministry for International Cooperation to ensure that projects funded by donor organizations and countries are in line with environmental safety considerations.
- Participate in laying down a plan to protect the country from leakages of hazardous substances and waste causing environmental pollution.
- Participate in the preparation of an integrated national plan for the administration of coastal areas abutting on the Mediterranean Sea and the Red Sea in coordination with the authorities and ministries concerned.
- Participate with the Ministry of Education in the preparation of training programs for the protection of the environment within the scope of the various curricula in the basic education stage.
- Prepare an annual report on the environmental situation to be submitted to the President of the Republic and the Cabinet, a copy of which shall be deposited at the People's Assembly.

b. The Administrative Structure of the EEAA:

Environment Quality Sector: Concerned with environmental monitoring.
Environmental Management Sector: In charge of managing environmental activities and environmental impact assessment.
Central Department for Protecting Nature: Concerned with supervising national parks and biodiversity.
Central Department for Branches Affairs: supervises the EEAA branches and EMUs in the governorates.
Central Information Department: Responsible for registering environmental data.
Central Department for Communication and Training: Concerned with environmental awareness and training.
Central Department for International Cooperation: Responsible for managing international environmental relations.
Central department for Financial and Administrative Affairs: In charge of the financial and administrative supervision.

c. Environment Protection Fund (EPF):

EEAA shall include "The Environment Protection Fund", which would use its resources in financing the following activities:
- Confronting environmental disasters.
- Conducting pilot and pioneering projects in the field of protecting natural wealth and the environment from pollution.
- Transferring low-cost technologies applied successfully in the field of environmental protection.
- Funding the manufacturing of equipment, devices and plant models for the treatment of environmental pollutants.

- Financing the establishment and operation of environmental monitoring networks.
- Financing the establishment and management of natural protectorates.
- Financing the prevention of pollution from unidentified sources
- Financing studies needed for developing environmental programs and Environmental Impact Assessment studies, and instituting the rates and criteria required for environment preservation.
- Participation in financing environment preservation projects carried out by the local administrative authorities and NGOs.
- Rewarding distinguished achievements in the field of environment preservation.
- Improving EEAA infrastructure and developing its activities.
- Financing other environmental preservation and management activities approved by EEAA board

Clean up Campaign in el Sayadin (fishermen) Village in Hurgada

EPF resources, besides support and donations, include the following:

1. Financial fines and compensations agreed upon or set forth by court for environmental damage.
2. Resources of the Natural Protectorates Fund stipulated upon in law no. 102/1983.
3. EEAA allocations (that is, not less than half the collected revenues of the tax that reaches 25%) levied on air tickets issued by Egypt in Egyptian currency (by virtue of Law no. 101 of 1985 and also according to the Prime Minster decree no. 697 of 1986).

Future Vision and MSEA Efforts to Activate the Ministry Institutional Structure:

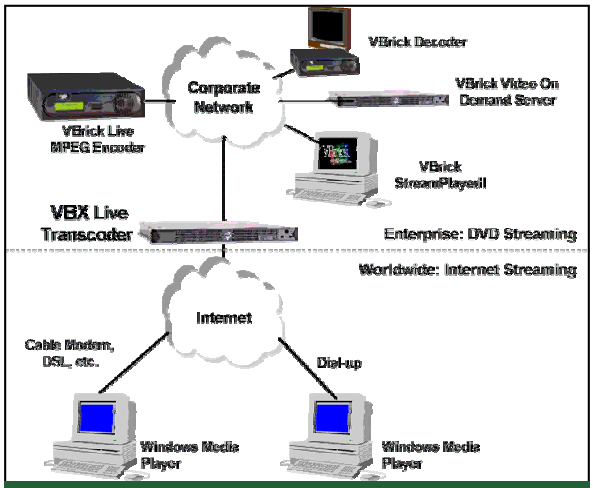
1. Supporting and developing decentralized environmental management within the framework of Danish funded ESP (DEM component) through:
   - Enhancing and preparing environmental Affairs Offices (EAOs) in the Governorates, as 52 million pounds have been provided to develop these offices in Dakahlia, Demiat and Beni Suef governorates and to inaugurate Toshky office.
   - Restructuring and strengthening the Central Department for Branches Affairs (CDBA) and EEAA regional branch offices (RBOs). CDBA currently includes 10 regional branches, by the addition of 2 new branch offices in North Upper Egypt and Sinai in order to cover all Egypt's governorates.

Greater Cairo and Fayoum RBO

2. Boosting partnership projects with society parties such as:

- The project of the cultural educational center for environment preservation (Cairo House).

3. An activation framework for the NGOs role has been instituted through contributing to the implementing the plan for improving the standards of living in the poorest communities. According to law no. 4 of 1994, EEAA board of directors includes 3 members as representatives of the NGOs, with the aim of activating their role and encouraging the participation in finding solutions to environmental problems through:
   - Geographical expansion of NGOs concerned with environment.
   - Instituting a conversation channel with the NGOs through establishing an NGO unit within the Ministry of State of Environmental Affairs.
   - Participation of the NGOs in the mechanisms designed for revising the national environmental work plan and supporting them financially, technically and administratively and boosting their role.
4. Encouraging and developing EEAA employees, by training EEAA personnel of all specializations to conform to the highest international performance levels and supporting EEAA by the highly trained and experienced youth personnel.
5. Enhancing women's role in preserving the environment through the Gender Unit in MSEA and through coordination with the National Council for Women.
6. Boosting the role of youth in preserving the environment through employing youth in municipal and agricultural wastes recycling at recycling plants established in cities by private sector cleaning companies, and agricultural wastes recycling projects to be established by MSEA, in collaboration with the Ministries of Defense and Military Production and the National Organization for Industrialization.
7. Boosting the role of heavy industries through establishing "the Industrialization Unit" in EEAA.
8. Enhancing the role of clean agriculture through establishing "The Clean Agriculture and Recycling Agricultural Wastes Unit" anchored in EEAA.
9. Improving climate protection activities through establishing weather change unit in EEAA.
10. Improving the ozone layer protection activities through EEAA ozone unit.



Video Conferencing

13-F Human Resources Development

Introduction

Several research have proved that the success of national strategies and the ability to achieve their goals in many countries was due to focusing not only on technical and economical aspects of environmental issues and considering them sufficient tools for managing natural resources, but also focusing on human resources that are capable of managing such resources.

Thus, researchers and specialists have realized the importance of the human factor in human resource management. Many philosophies were introduced in this respect calling for the necessity of understanding the complicated and interrelated relations – in most times - between individuals and groups that take part in implementing environmental policies.

It has become evident that developing human resources is only applied effectively through emphasizing participation among active categories in society. Participation means the spontaneous cooperation between people and the competition to actively work and contribute in selecting and implementing development projects and programs that aim at achieving the objectives of society. Consequently, participation helps in deep rooting social responsibility in all development partners, which in turn offers better opportunities for the success of economic reform and structural adaptation programs, which are the ends of sustainable development.

Perhaps the most important effective sectors encouraged to commit to the participation principle are: youth, women and children, being the most influenced by environmental issues. Therefore, environmental work in Egypt has begun to enhance participation of these sectors in environmental

programs.

Youth, women and children are greatly influenced by the negative impacts resulting from environmental issues. Thus, environmental work in Egypt has begun to enhance the participation of these sectors in environmental programs.

Youth

Youth represent the largest percentage of Egypt's population, taking into account the fact that youth constitute the sector most willing and desiring to learn. So it is important to care for instituting policies that would enhance youth participation in environmental action.

Consequently, MSEA has declared 2004 the year for youth and environment and has carried out many activities to enhance their participation in environmental work, most importantly:

1. Establishing informal youth gatherings in all Egypt's Governorates with membership of around 14 million youth.
2. Participating with Ministries of Education and Youth in designing youth training programs during vacations.
3. Establishing 40 environmental groups in 40 youth centers in Giza, Sharkeya, Dakahleya and the New Valley governorates. A budget of LE 10,000 was allocated for each group with a total of L.E 400,000.
4. Setting up visualization for the work of youth groups in these centers and the surrounding environment, each according to their environmental status, while supplying the rooms in such centers with latest audiovisual equipment.
5. Cooperating with the Ministry of Youth in implementing an environmental awareness program in all governorates that addresses the following issues:
   - Preserving the environment and combating pollution
   - Youth and environmental issues
   - Drought and deforestation
   - The black cloud
   - Waste recycling
   - Environmental pollution impact on economy and the GATT Agreement.
6. Agreeing on establishing a national camp in one of the Egyptian protectorates. El Zaranik national park, north Sinai, was selected due to its environmental variations and various environmental activities.
7. Forming a joint committee including representatives of the Supreme Council for Youth and Sports and EEAA to supervise the implementation of activities.
8. A Cooperation Protocol with the Ministry of Youth was signed to spread awareness among youth through holding seminars and camps aiming at implanting the tendency of preserving the environment and its resources. A seminar would be dedicated for each camping group to address environmental issues and problems and youth's role in facing them. The protocol also included establishing a permanent environmental camp for the Egyptian and Arab youth.

Women and Children

The poor and squatter areas are more subjected to environmental problems than other areas. These problems are clearly reflected on these communities' women and children, resulting in marginalizing these communities and aggravating environmental problems.

Therefore, the Ministry of State for Environmental Affairs has paid due attention to these socially marginalized categories and environmental work in Egypt was directed

The Green Corner

to raise their standards through several activities, most important of which are:

1. Establishing a gender unit in MSEA in 2002, undertaking the following tasks:
   - Spreading environmental awareness among women leaderships.
   - Assisting in establishing women NGOs to participate in environmental protection projects in Governorates.
   - Directing attention to rural women and activating their role in preserving the rural environment.
   - Organizing training programs and activities for girls in the field of environmental preservation.
   - Encouraging and activating women leaderships' role in MSEA and EEAA and assigning a greater role to women in all functions and activities, in addition to increasing the number of leaderships among female employees and focusing on women's role in all RBOs activities.
   - Nominating MSEA female employees to join training courses to better their performance level and enhance their experiences through courses organized by the National Council for Women, by affiliate projects or authorities or by entities interested in raising the level of women working in the government sector.

Women Participation

- Developing the general framework for a national plan for women activities and programs in environmental fields. An action program has been thus designed for all Egyptian governorates.
- Organizing a general conference for developing a national strategy for women, environment and development with emanating regional conferences for studying local issues in different governorates to develop programs suitable for the nature of women and children and the ambient environment.
- Preparing a study on the level of women's awareness of environmental and developmental issues in Egypt, in 5 areas in Fayoum governorate, comprising 25 villages. A cooperation project was implemented to achieve the gender unit objectives and supply 5 centers in the governorate with the means that help in training, in addition to organizing workshops and training programs to meet the governorate needs according to the types of environmental problems encountered, the nature of each area and the expected successful training that women and girls take interest in, like handicrafts and computer training in areas of higher educational level.

- The Gender Unit is undertaking the organization of several regional seminars to discuss environmental problems facing women in these Governorates and the means to support their role and participation in solving these issues according to the nature of each governorate or region. This is undertaken in collaboration with governors, branches of the National Council for Women and NGOs active in this field. The Gender Unit has also implemented projects that help in reducing environmental pollutants, useful recycling and other projects.
- Organizing the West Delta first regional conference, held in Marsa Matrouh to develop the framework for implementing plans and programs at the regional level.
- The East Delta second regional conference was held in Port Said in cooperation with the National Council for Women and its branches following the Minster of State of Environmental Affairs' declaration of 2003 as the year of Women and Environment. The most important issues discussed in the conference were those related to women and children in Sharkeya, Damietta, Dakahleya and Port Said governorates to develop a general framework for the participation of the Gender Unit with the entities concerned whether governmental or non-governmental to improve women's status in these governorates with respect to the environmental field.
- Signing a cooperation protocol between the National Council for Women and MSEA in February 2002.

2. Organizing field visits for school students to discover Egypt's protectorates and increase their environmental awareness.
3. Integrating environmental education in many school educational programs.
4. Organizing several environmental competitions for school students.
5. Supporting the Child-friendly Environment Program to achieve positive interaction between children and the environment through involving children in environmental activities which aims at enhancing awareness, changing environmental behavior and allocating a green corner for children in public gardens and in integrated care society libraries.

Training, Awareness and Information

Training

Training achieves a targeted change in the individual to effect a change in performance and thus reach specific desired results.

Consequently, training in the field of environment is one of the major pillars of developing human resources. Training is considered a new area and is achieved through preparing human resources capable of improving environmental conditions in the Egypt. In 2003, around 634 training courses were held in various environmental fields in Egypt, with a number of trainees reaching 1828. Also, some employees were sent abroad to attend specialized training courses, (62 courses and 141 trainees). In 2004, number of trainees reached 1,450 in Egypt and abroad, in addition to training some of the employees from governmental authorities and NGOs, with a total number of 1,473.

Awareness

Increasing awareness of the environment, and its issues and protection methods aims at disseminating environmental knowledge which leads towards a sound environment thus changing behaviors positively. Consequently, several meetings and discussions were held in different communities, and workshops were also held in schools, where environment friendly groups were formed. In addition, awareness of cultural palaces officials was also increased so that they may incorporate the environmental dimension in their different programs countrywide.

As for publications: 12,000 and 7,000 booklets, brochures and stickers related to environmental awareness were published in 2003 and 2004 respectively. The aim is to induce the feeling in citizens of the importance of environmental preservation.

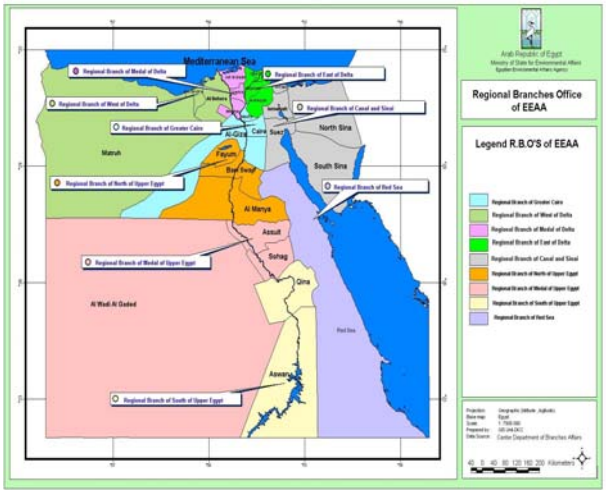
The Media

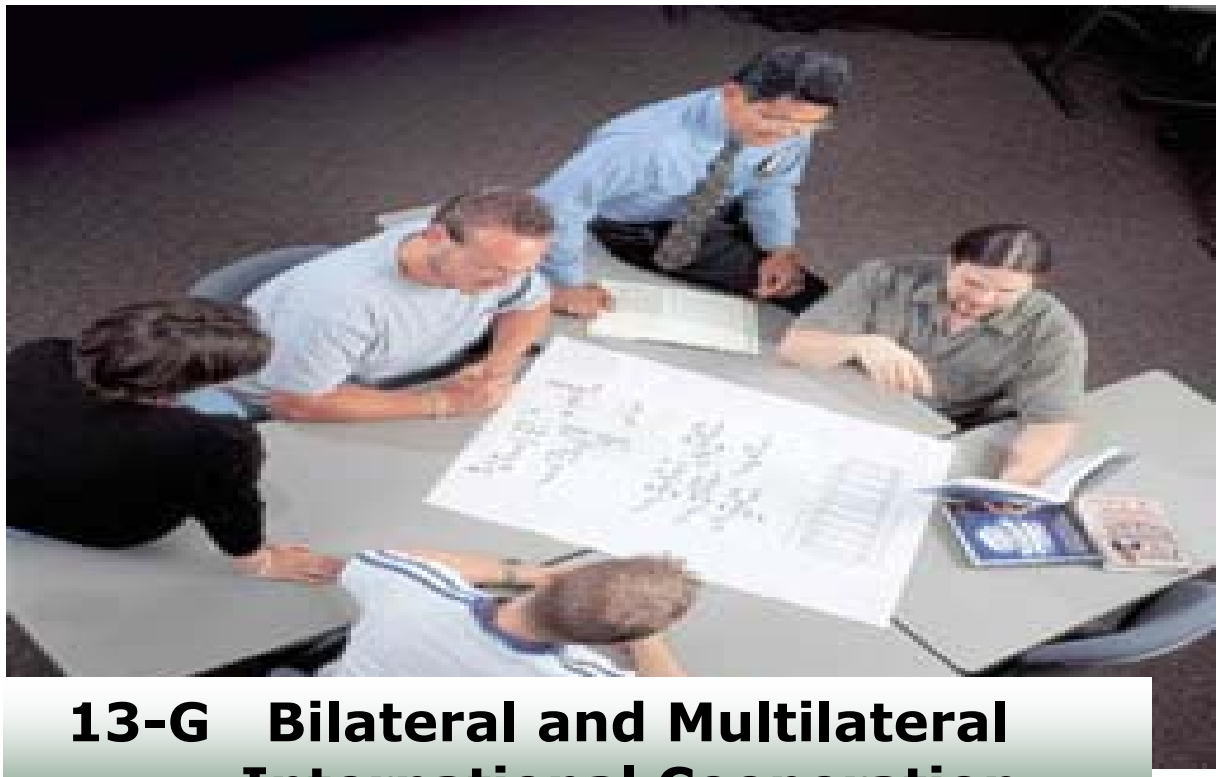
The dependence of governmental institutions, private institutions and civil society organizations on the mass media has become inevitable for presenting their ideas and achieving their development objectives through influencing people's knowledge, trends and behaviors at the relevant time and place.

The Press issues weekly pages, articles and columns about the environment, besides training new field reporters on addressing environmental issues and problems.

Radio: There are 36 programs, some of which are daily while others are weekly, transmitted by national or local radio networks.

Television: there are 12 TV shows targeting different social categories. These programs are distributed on the national and local channels and also on educational channels and satellite networks.





13-G Bilateral and Multilateral International Cooperation

Introduction

The second half of the twentieth century witnessed a growing concern towards environmental preservation and increasing efforts to raise the environmental awareness on the importance of protecting and maintaining natural resources. International conferences were held, in the light of which international and regional conventions and agreements were signed. National legislations were promulgated to reflect such a concern at international, regional and local levels.

Thus, ideas were laid down aiming at planning the main features and certain dimensions for drawing the environmental policy during the coming phase.

By the end of the twenties century and on the threshold of the twenty first century, sayings on unity and cooperation values have widely prevailed the world. Some analysts have described such sayings collectively as a result of "Globalization". Despite of the disagreement of some, these sayings are widely exchanged and they even take various political, cultural and economic and other dimensions. Analysts, despite of their different approaches, pointed out that the clear purpose behind such a term viz; globalization is that individual in old eras was not able to live by himself, thus groups were formed. Today, a country cannot live in isolation from the others, concurrently with the communication revolution widely expanded all over the world. To that end, it was necessary to integrate the environmental dimension within this new system and to maintain the pioneering status of the Arab Republic of Egypt whether on the Arab or the developing countries levels.

Illustrating environmental policy in Egypt

is considered to be one of the process through which several dimensions should be observe that serve the development process and assist to undertake actions through a joint system including all bodies and entities concerned. It is essential also to bear in mind the domestic and international dimensions, as well as the identified dimensions for setting the external environmental policy ahead, including:

Egypt's Geography

Egypt occupies a special and distinguished place; it is located in the center of the world and controls the maritime transportation lines especially with the existence of the Suez Canal. On the cultural level, Egypt is one of the countries whose cultural history reflects the subsequent civilizations starting from the pharaonic, Roman and finally the Islamic civilizations. Moreover Egypt is playing a leading role among the Arab nations.

Economic, Social and Political Dimensions

The Economic Dimension

The major objective Egypt is currently seeking embodied in elevating the individual standard of living; decreasing the unemployment rate; and accelerating the development process. These objectives cannot be attained unless through a surge in exports and reduction in imports: a difficult equation which is not easily solved amid the increasing rate of population and resources scarcity. Consequently, Ministry of State for Environmental Affairs endeavors, in coordination with the service and production sectors, to achieve the international environmental standards, hoping to integrate total quality in the Egyptian product enabling it to meet competitiveness in the world market. The ministry also aims to improve the Egyptian environmental status which actually affects a number of developmental sectors in Egypt, especially the tourist and agricultural sectors, in addition it enhances the performance level for the tourist, health, energy, housing and utilities sectors.

The Social Dimension

Egypt seeks to develop citizens' standard of living; to improve the development process to increase citizens' awareness; and to preserve public health, aiming at reaching all family members in Egypt. Several points have been focused on to develop environmental awareness and to achieve societal effective participation. Great concern was shown towards women and children issues, aiming at attaining thorough coordination with civil society organizations and observing the geographical dimensions.

The Political Dimension

International and political changes impose a new type of political mechanisms to be used; sayings ranging from globalization, small village, one world, and technological and telecommunication revolutions have raised the concern towards developing new tools to strengthen cooperation among countries away from critical political issues. They are established to tackle new subjects, the most important of which are human rights and environment. Diplomacy of environmental action was proposed to develop many collaborative activities with other countries to serve a common aim, namely; environment protection. Water and air constitute a common factor connecting all countries together, benefiting thus from all these activities. It is noteworthy to mention that the Ministry of State for Environ-

mental Affairs has relied on various bases to design the external cooperation policy, including the necessity of observing the regional dimension. The first priority here is to harmonize the international stances with the Arab countries through the Arab Environment Ministers' Council. Belonging to the African cooperation is via the African Environment Ministers' council. Finally there is the coordination at the developing countries level including, G-77 and China; and coordination with the European Union states and the Americas aiming in developing projects.

Egypt's Fulfillment of the International Commitments

Based on Egypt's persistence to fulfill its commitments stated in the Multilateral Environmental Agreements (MEAs), seeking as well to provide a healthy environment for its citizens based on accomplishing the sustainable development principle, Egypt has joined 55 multilateral environmental agreements since 1933 until now.

During the last decade, increasing awareness of transboundary impact of environmental problems lead to signing a number of international agreements supporting sustainable development. In this respect, Egypt entered a number of international conventions and some regional cooperation agreements in order to face the environmental problems. The Ministry of State for Environmental Affairs and its executive body, in collaboration with the Egyptian Ministry of Foreign Affairs played a vital role in this context, through the coordination of implementing Egypt's obligations.

Egypt participates in a number of regional and international organizations, which require regional and international activities within the environmental field. These activities are divided into the following circles:

1. **The Arab Circle:** It is categorized into the Arab League, the Common Arab Committees, the Arab Regional Authorities, the Center for Environment and Development of the Arab Region and Europe (CEDARE) and the Regional Authority for the Protection of the Environment in the Red Sea and the Gulf of Aden (PERSGA).
2. **The Islamic Circle:** It includes the Islamic G-8 and the Organization Islamic Conference.
3. **The African Circle:** It is divided into North Africa Group, Nile Basin Countries Group and the African Union countries.
4. **Central Asia:** It includes the Eight Russian Commonwealth group and Iran.
5. **South Eastern Asia:** Asian Tiger countries, China, India and Japan.
6. **Latin America States:** The most important of which are Columbia, Argentina, Cuba and Brazil.
7. **The European Circle:** European Union, Poland, Baltic Sea Countries, Slovenia, Bosnia, Hungary, Yugoslavia, Czech Republic, Albania, Romania, Ukraine, and Croatia.
8. **Mediterranean Circle:** Activities are achieved through the cooperation with the Mediterranean countries within the framework of Barcelona Agreement (1976).
9. **The American Circle:** Activities are undertaken throughout cooperation with the United States of America and Canada.

Implementation of the World Summit on Sustainable Development Resolutions

After the Earth Summit held in Rio De Janeiro 1992, the concept of sustainable development appeared emerged widely all over the world. It was agreed to introduce this concept to different fields. After five years, however, it is was obvious that states did not undertake any tangible actions to develop this concept. Accordingly, a grace period of five years was identified for world countries to integrate sustainable development in all fields and to observe its sustainability in various activities until the coming world summit on sustainable development in Johannesburg 2002. Such a summit would aimed at review to what extent these countries fulfilled in the field of sustainable development, relevant achievements and what is required from the international arena to assist other countries to achieve the same results in such a field. Egypt participated in the summit through an official delegation constituted of representatives from different ministries, including the Ministry of State for Environmental Affairs. Recommendations approved encompass the necessity of integrating five subjects: water, energy, health, agriculture and biodiversity within the framework of improving and sustainable actions as a real local response to development in Egypt.

Egypt, meanwhile, exerts various efforts to achieve further sustainable development. Such efforts are shown clearly in many procedures, programs and projects Egypt implemented over a complete era since the Earth Summit in 1992 until now.

The speech delivered by President Hosni Moubarak before the World Summit on Sustainable Development in Johannesburg reflects the reality of the Egyptian efforts exerted. Most important among these efforts is laying down a comprehensive program for economic and social reform; combating poverty; expanding social welfare network; providing drinking water, sanitary drainage, and transportation and electricity network; integrating the environmental dimension within the development process; enlarging protectorates; and supporting women's role and effective participation in development plans.

Accordingly, it is clear that Egyptian government deployed many efforts to develop sustainable development in several development sectors, believing in the importance of studying the environmental conditions scientifically and building the capabilities of the new generation of those concerned with the environmental affairs in both Egypt and the Arab world.

MEAs information system

Fulfilling the Egyptian Leading Role Obligations towards Protecting African and Arab Environment

Egypt's important regional role in the Arab world and Africa makes it always endeavoring to achieve integration between Arab nations, through establishing bilateral cooperation with most of the Arab countries. Nine memoranda of understanding were signed with different Arab countries, namely: Sudan, Libya, Tunisia, Algeria,

Morocco, Syria, Jordan, Yemen and United Arab of Emirates. Aiming at realizing an environmental integration among the Arab countries, Egypt established strengthened bilateral cooperation with donor countries to exchange experts and overcome financing problems, which is considered an essential obstacle before the progress of the developing countries' policies. Memoranda of understanding were concluded, as well, with Romania, China and Italy. Further, a Strategy for Environmental Action with Germany was signed in 2003 for a period of 5-10 years.

- **Following guidance of successful international experiences in the field of environment and natural resources management.**
- **Achieving communication with environmental action organizations at the local, regional and international levels to identity the latest international changes concerning the usage of clean environmental technologies.**
- **Enhancing bilateral liaison between Egypt and other countries through implementing joint environmental projects.**
- **Encouraging foreign investments to contribute in implementing some environmental projects that would achieve concurrently sustainable development.**

At the African level, New Partnership for Africa's Development (NEPAP) has been launched, upon the initiative of the presidents of Egypt, Algeria, South Africa and Senegal, Nigeria in 2001, into which the environmental dimension represents a vital factor.

Implementing Egypt's environmental policy depends on four essential principles, in terms of environmental management and initiatives on environment protection

- Boosting integration capacity of governmental sectors of locally and centrally via different means, depending essentially on cooperation protocols, ministerial committees and joint working groups.
- Enhancing partnership between the private and public sectors. The Ministry of State for Environmental Affairs provides continuous support to the private sector to take part in offering environmental services and encouraging technology transfer; and exchanging experts with the foreign side.
- Establishing partnership with environmental NGOs; challenges facing the civil society organizations to identify and how to overcome them.
- Integrating gender issues in environmental policies and plans in response to establishing the National Council for Woman, under the auspices of Egypt's first lady Mrs. Susan Mubarak along with paying special attention to gender issues related to natural resources and the environmental challenges and applications.

Executive Status of Cooperation with Foreign Countries

First: Cooperation at the Arab Level

1- Arab Environment Ministers' Council

Egypt is a member state of the Arab Environment Ministers' Council, which convenes on an annual basis. The Council consists of 22 Arab countries represented at the cabinet level to discuss environmental joint Arab collaboration among other issues.

Trade and environment issues are often ad-

dressed through the Council's meetings; joint environmental projects and the possibility of funding such projects by the United Nations Environment Program (UNEP); partnership created between the Council and the European Union; the Arab Environment Ministers' Council award; and the Arab environment day slogan.

Relationships Development Proposal

It was accustomed for the Arab League to receive and study the agenda; afterwards Egypt's perspectives are presented during the meetings held. During the last period, an initiative for preparing an Egyptian action paper was launched, including:

- Egypt's hosting for the Regional Bank for Plants biological Genes.
- Egypt's hosting for a number of workshops on training Arab personnel to meet Arab nations' obligations set forth in Basel Agreement. Currently, Egyptian action papers and projects for cooperation are in the preparation phase. These projects can start with training concerning protectorates and biodiversity; joint Arab market; and mechanisms of Arab cooperation in the field of inter-trade. Furthermore, Egypt has shown progress in the field of strategic planning, for the Egyptian five-year plan became an example to follow in designing Arab strategic plans.

2- Arab Bilateral Cooperation

Egypt took the initiative to submit and propose bilateral cooperation agreements with the Arab countries and called for the mobilization of common Arab resources to initiate effective collaboration, encouraging in particular the joint Arab environmental investments.

The following is an overview of bilateral cooperation with some Arab countries:

The Egyptian-Syrian Cooperation

The Egyptian-Syrian cooperation is a leading experience, in comparison to the other cooperation projects. This is due to the direct relationships conducted at the Egyptian and Syrian environment ministers' level and the availability of international donors to finance some projects, the most important of which is the Swiss Project for hazardous substances. Syria is assisted by the Egyptian experience in this respect. Moreover, the two countries signed a memorandum of understanding on environmental preservation and a bilateral cooperation agreement (2002). Lately, the two sides have signed the first executive program for technical cooperation in environmental preservation in December, 2003. The Syrian side called for cooperation in training protectorates Syrian rangers in Egypt.

The Egyptian-Tunisian Cooperation

This bilateral relationship is of special significance due to the Tunisian tendency towards the European Union, particularly after signing the Mediterranean-European Partnership Agreement.

In 1999, the two countries signed a memorandum of understanding and a technical cooperation agreement for environment protection.

Another cooperation agreement was concluded between the Tunisian Training Center and the EEAA. Currently, Egyptian trainees are arriving to the Tunisian Center. The two sides exchange visits at the ministerial level. The last meeting was in Cairo, in August 2003.

Development proposal with Tunisia

Egyptian-Tunisian relationships can be developed by inviting Tunisian side to visit Siwa protectorate in Egypt and selecting a similar area in Tunisia to implement a joint project funded by the EU, in a bid to developing the urban and tourism environment in the two protectorates.

The Egyptian-Emarati Cooperation

At the end of 2003, Egypt and the United Arab Emirates signed a memorandum of understanding.

Egyptian-Gulf Cooperation

Currently, cooperation agreements are under discussion to be concluded between Egypt and the Saudi, Kuwaiti and Bahraini sides.

Development Proposal with the Gulf Countries

Opportunities are now provided strongly to market environmental projects among gulf investors, as well as to benefit from Arab donors organizations to find some financing sources for training activities and effectuate the NGOs role.

Egyptian-Sudanese Cooperation

Due to the nature of political relationships between the two countries, the two sides are keen on exchanging advices and consultations. Thus, in October 2002, the two countries signed a memorandum of understanding. In addition a Sudanese delegation participated in a seminar on environment and trade. Currently, communication with the Sudanese side is intensified to receive Sudanese trainees in the field of protectorates and inspection.

Egyptian-Moroccan Cooperation

The Egyptian Ministry of State for Environmental Affairs is keen on holding joint meetings with the Moroccan side, due to the sensitive geographical location of the Morocco Kingdom in north and west Africa and its presidency of the G-77 and China working group in a bid to realizing the memorandum of understanding and cooperation agreement concluded between the two parties. Meetings were successfully held. An executive program on cooperation was concluded. Besides, the Moroccan side offered a proposal concerning the possibility of funding these projects by the Islamic Bank for Development. The last meeting was held at the end of January (2004) aiming at commencing joint cooperation programs.

Egyptian-Yemeni Relations

Egyptian-Yemeni cooperation is confined to the membership of the two countries in the Arab Ministers' Council and their signing of a memorandum of understanding on environment preservation in October 2002. Currently, environmental documents and publications are exchanged between the two countries to decide on the possibility of conducting joint bilateral environmental projects. Coordination is ongoing at higher level, through their membership in the Regional Authority for the Protection of the Environment in the Red Sea and the Gulf of Aden (PERSGA).

Egyptian-Jordanian relations

Egypt signed a memorandum of understanding with Jordan during the meetings of the International Conference on Protectorates and Sustainable Development held in Sharm El-Sheikh late in 2002. Egypt, also, participates in experience exchanging

concerning the Jordanian desert project.

Development Proposal with Jordan

Egyptian-Jordanian cooperation can be strengthened in the field of training for protectorates.

Secondly: Cooperation with Europe

Romanian Cooperation

On 14th of April, 2003, a memorandum of understanding has been signed between the Egyptian concerned ministry and the Romanian Ministry of Water and Environmental Protection.

Egyptian-Czech Republic Cooperation

An invitation was sent to the Czech minister to visit Egypt to discuss cooperation means between the two countries ministries and the possibility of signing a bilateral memorandum of understanding.

Cooperation with Ukraine

Environmental cooperation was approved as one of the joint cooperation domains between the two countries through signing cooperation protocol between the Egyptian and Ukraine governments during the Egyptian-Ukrainian committee fourth session meetings, held on 26 March 2003.

Cooperation with Croatia

Croatia submitted a memorandum of understanding proposal of cooperation with Egypt in the environmental field. The proposal was studied and the Ministry comments were sent to the Egyptian Ministry of Foreign Affairs to reviewed by the Croatian side. The Croatian side expressed their approval and proposed signing the memorandum on July 2003, in Cairo.

Thirdly: Cooperation with Asia

The Egyptian perspective is based on dividing the Asian continent into a number of cooperation areas as follows:

South Eastern Asia

Including: India, Pakistan, Bangladesh, Malaysia and Singapore. These relations witness a relative development, however, it is currently confined to bilateral cooperation in the field of exchanging environmental brochures and publications. Meanwhile, cooperation is developed through the Developing Eight Countries (D-8), including the following Asian countries: Pakistan, Iran, Bangladesh and Malaysia. Egypt initiated a number of cooperation projects in the field of agricultural wastes recycling and converting it into energy. These projects are under study and preparation.

Central Asia

It refers to Islamic Republics (the Russian Commonwealth). Despite the growing cooperation, in particular Egyptian-Azerbaijani relationship, communications lately between the Egyptian MSEA and the technical cooperation fund of the Commonwealth states at the Egyptian Ministry of Foreign Affairs are intensified aiming at reviewing the extent of benefiting such states from the Egyptian experience.

China, Japan and India:

Cooperation with China

Cooperation with China aims at benefiting fully from rice straw. Cooperation in this field was developed between Sichuan Provincial Science and Technology Department and MSEA to abate air pollution and to produce materials of great economic

value. Consequently, upon examining Chinese technologies in this respect, communications between Sichuan Institute for design and researches agricultural machinery and the MSEA were conducted seeking to implement the project for establishing two gas station operating with rice straw. No obstacles were encountered and technologies of the two gas stations were purchased and delivered.

In addition, an agreement was concluded between the MSEA and the Chinese Academy of Forestry. This agreement aims at establishing forests, and protective and green belts; exchanging relevant experience and information; exchanging different kinds of tree seed; and using wastewater to irrigate trees.

A memorandum of understanding was signed on 17th of February 2003 between the Minister of State for Environmental Affairs and the president of the Chinese Academy Mrs. Jiang Zehui.

Cooperation between the MSEA and the State Environmental Protection Administration of the People's Republic of China

A memorandum of understanding was signed for cooperation in the field of solid wastes management; development of environmental policies statistical indicators and climate change; and exchange in technologies for recycling rice straw and clean agriculture. These actions were to be effected through information and experience exchange; relevant workshops and seminars; and joint projects implementation. The memorandum was eventually signed on 1st September, 2003 between the MSEA and the State Environmental Protection Administration of China

Cooperation with All-China Youth Federation (ACYF)

This initiative was carried out to develop and support the Egyptian-Chinese Friendship Forest founded in Sadaat city; to enhance youth delegations exchange in various fields; to encourage practical visits between young businessmen in the two countries aiming at stimulating investment in various environmental projects; to transfer environment friendly technologies and experts; to generalize youth ecotourism; and to facilitate brotherhood ties among cities in the two countries. This initiative resulted in signing a memorandum of understanding on 12th January 2004 to boost abovementioned cooperation areas.

Cooperation with India

Egypt aimed at benefiting from the experts of Maharashtra Institution for Cultivating Forest, mainly Bamboo cultivation that enjoys high economic value. Thus, a memorandum of understanding was concluded with the Indian institution on 11th August 2003, for cooperation in transferring Indian Bamboo cultivation technologies to the desert land using treated drainage water; providing the MSEA with Bamboo seedlings; and exchanging experts and information.

Fourth: At the African level

African environmental cooperation is enhanced within the framework of New Partnership for Africa's Development (NEPAD). The environmental component represents a significant part of this initiative. It includes several issues: combating deforestation; protecting wetlands; the spread of species outside their original environment (invading species); coastal administration for the transboundary protectorates; transnational protected areas; iden-

tifying authority problems in environmental ; and funding. The African Ministerial Conference on the Environment (AMCEN) is the cornerstone for bringing this initiative to real terms.

Cooperation with Senegal

Based on Senegal's willingness, represented by the Ministry of Environment and Sanitation, to enhance the cordial ties in technological cooperation field for environmental protection, recognizing the similarity between environmental problems in both countries, the two states signed a memorandum of understanding during the conference held in Algeria (2003).

Multilateral Cooperation

Egypt is keen on abiding by international obligations within the framework of the concluded international and regional environmental agreements. These agreements provide opportunities for investments; transferring environment friendly technologies; building national capabilities; supporting international cooperation in the diverse environmental domains to fund environmental action national plan programs. Following are multilateral environmental agreements, in which Egypt is a member state (Annex 5).

First: European Union

1- The European Union Commission in Cairo

Action is coordinated effectively between MSEA and the European Union commission. Among the most critical issues that has witnessed growing cooperation lately is the genetically modified organisms; climate change issues; European Union compliance with Kyoto protocol and its willingness to assist member states to the Protocol to meet their goals concerning the greenhouse gases and work together with developing countries to shoulder their relevant obligations; develop technologies for clean development; and grant general financial allocations for partnership.

2- LIFE Program

The year 2003 is considered to be the funding program LIFE last year for initiating environmental programs. Three projects were introduced:

First: Project for reduction of environmental impacts on agricultural activities.

Second: Project for Solid Waste Integrated Management System in Fayum.

Third: Project proposed by the Ministry of Agriculture on skins tannery.

Until now, European Union's approval to finance these projects was not received. The projects proposal is currently studied by the EU.

3- Egypt's Membership in the Mediterranean Action Plan (MAP)

The Mediterranean Action Plan (MAP) was the first international regional program under the umbrella of the United Nations Environment Program (UNEP) within the framework of Barcelona convention ratified in 1976. The plan embodies arduous efforts exerted with the aim of securing a healthy environment for the Mediterranean basin. The Action plan includes the whole Mediterranean basin 20 member states and the European Union countries, to create a Mediterranean healthy environment founded on the sustainable development principle.

The Mediterranean Action Plan framework has officially expanded since 1995 to reflect changes in understanding the relation-

ship between environment preservation and development. The plan second phase is called Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean Sea.

The stage following Rio De Janeiro summit in 1992 was a significant period in the history of Mediterranean Action Plan, during which the Mediterranean country governments and the European group started to translate and adopt the principles set forth by the United Nations Conference on Environment and Development within the Mediterranean context. This step is effected via the preparation of the Mediterranean 21st century agenda; reorienting the Mediterranean Action Plan and Barcelona conventions, and relevant protocols; and constituting a Mediterranean committee for sustainable development. Then, the sustainable development implementation plan in Johannesburg (2002) improved the understanding of sustainable development mechanism, and the requirements and actions necessary for sustainable development effective promotion.

Egypt is an active member in the Mediterranean area. Environmental issues have become priorities to be addressed, creating opportunities for cooperation at the regional and international levels. The MAP has a significant position on Egypt's environmental agenda (Annex 6), where it represents one of its strategic components.

The environmental agenda aims at creating better environment for all Egyptians. Egypt is a member in 55 multilateral environmental international and regional agreements. This requires considering the environmental resources from a social and economic perspective, for the value of these resources benefits everybody.

MAP members participate in approving the strategy, budget and action program to attain MAP objectives of improving the Mediterranean environment through the sustainable development perspective. MAP activities are funded mainly by the Mediterranean Fund supported by the contracting parties and the UNEP. Financial voluntary contributions are also accepted. MAP is also supported by the European Union and the Global Environment Facility.

MAP and the European Union Partnership

Since the MAP inception, the European Group has played an active and specified role represented in:

- Contributing to aquatic environment protection for Mediterranean states through implementing the relevant directives such as the bathing water quality and wastewater treatment, thus, contributing to the implementation of the wildlife resources protocol.
- Encouraging MAP members to protect the environment via the compliance process with resolutions adopted by the European Group.
- Supporting establishing the infrastructure with the aim of enhancing the environment in Mediterranean countries via funds like; LIFE, European Assistance Program and Cards.
- Supporting regional projects undertaken by MAP through the abovementioned funds and voluntary assistance.
- Participating in the environmental technological assistance program for the Mediterranean area, which is an effective partner in the MAP.

After 1995, European-Mediterranean partnership was pushed to encourage coopera-

tion between the European Union and neighboring countries in the Mediterranean area. In the light of the contracting parties thirteenth meeting, partnership was emphasized as follows:

- Geo-politically, some Mediterranean countries shall be members in the European Union, during the coming years; Slovenia, Cyprus and Malta to be accepted in 2004.
- The European Group intensified its activities, legislations and strategies in the field of aquatic and coastal environment through the following initiatives:
  - Adopting a structural approach concerning water.
  - Initiatives for preventing maritime accidents and pollution (the first and the second Reka accidents) via new approaches.
  - Adopting a strategy on European coastal areas management.
  - Preparing a European strategy for aquatic environment.

Secondly: Egypt Membership in the Global Environment Facility (GEF)

The Global Environment Facility supports the Egyptian government in the efforts exerted to protect the environment, in five domains, namely: biodiversity, climate change, international water, ozone layer erosion, soil deterioration and persistent organic pollutants. The Organization encourages private and public sectors to implement projects, and enhance and promote initiatives addressing global environmental challenges and resulting adverse effects at the national level. In addition, the Organization supports and develops the non-governmental sector initiatives through the micro-credit finance program.

GEF implements several projects in Egypt for an amount more than US $ 100 million. Within the framework of partnership between Egypt and GEF many projects are currently conducted, including:

- The Wetlands Development Project located at the Mediterranean protectorates such as: Zaranik, Burulus, Ayumaid.
- Generating thermal power for solar energy.
- Medical Plants conservation.
- Al-Manzalh Integrated Management.
- Introducing electrical power technologies to transportation buses sector.
- Supporting capacities in climate change.
- Enhancing capacities in biodiversity.
- Developing fuel cells in Cairo buses.
- Developing underground water resources in the Western desert.
- Micro-credit finance program.
- Facilitating early implementation of Stockholm Convention on Persistent Organic Pollutants.

Thirdly: Cooperation at local level

The external development in Egyptian relationship in the field of environmental protection was necessary to be accompanied by an advance at both the institutional and legislative levels. This was a major momentum for the MSEA to assume its coordinative role set forth by law no.4 of 1994. The year 2000 is considered the real launching point for establishing a network of cooperation agreements and protocols with ministries, research institutes, and Egyptian universities, in addition to a number of other cooperation instruments concluded between the MSEA and NGOs and civil society organizations, in particular those concerned with woman, childhood and motherhood.

Based on the MSEA policy to face air pollution problem hazards resulting from car

exhausts and sever damages affecting road users due to the skyrocketing increase in harmful gases exhausted from vehicles. The MSEA signed cooperation protocol with the Ministry of Internal Affairs, in pursuance with the provisions of traffic law no 66 of 1973 and its executive regulations and implementing the provision of article (33) of the aforementioned law, granting traffic policeman the right to stop any vehicle does not comply with the conditions of safety and soundness.

The MSEA, further, signed a cooperation protocol with Alexandria University, aiming at protecting and developing the Egyptian environment; assessing environmental impacts for new and existing projects; contributing in preparing models for environment friendly industrial projects; endorsing a number of consulting organizations and research centers to conduct environmental reports; and considering Alexandria University an experts center in the field of Environmental Impact Assessment.

Another cooperation protocol was signed between the MSEA and Mubarak City for Scientific Research and Technology Applications (MCSRTA) in accordance with the target behind establishing MCSRTA and pursuant to the Republican decree no. 85 of 1993 stipulating that such MCSRTA shall be an institute for genetic engineering and biotechnology researches with the aim of addressing environmental, industrial and medical issues via genetic engineering and biotechnology applications.

Desiring to enhance the governmental and non-governmental sectors participation in an integrated development process with an enlightened concept of environment protection, especially in the field of environment protection, natural resources preservation, the MSEA signed a cooperation protocol with the Social Fund for Development.

Believing in the importance of Egyptian women advancement both socially and culturally and in women's effect on environment and environment effect on women, a cooperation protocol was signed between the MSEA and the National Council for Woman, aiming at improving life quality in all local communities and achieving advancement for Egyptian woman. Affirming the MSEA's role in this issue, a special unit inside the MSEA was established for woman and environment.

Bearing in mind the industrial zones important role and their environmental compliance, MSEA signed a cooperation protocol with the Environment Studies and Researches Institute in Qaliuobia Governorate, through conducting studies and researches serving environmental purposes; disseminating environmental education in Qaliuobia governorate; involving the Institute in developing establishments and in applying environmental management systems in various fields including coal kilns, landfills and industrial zones in Al-Khanka.

Effectuating the EEAA role in implementing the MSEA's policy aiming at preserving the air, land, and water environment, a cooperation protocol was signed between the EEAA in its capacity as the MSEA executive authority and the Arab Academy for Sciences and Technology and Maritime Transportation to control maritime pollution and provide training on the principles and techniques of facing oil pollution accidents.

Seeking to face environmental crisis and hazards and setting up complete preparation for control their consequences, EEAA

established an early warning unit to predict any environmental danger. To support the efforts undertaken by the aforementioned unit, a cooperation protocol was signed between the EEAA and the Egyptian Meteorological Authority to protect and develop the environment and to achieve sustainable development for all projects. This protocol aims at providing the EEAA with the information needed by the pollutants dispersion model and providing the early warning unit with qualified experts to design early warning system.

Gender

Since the National Council for Women foundation on 19th January 2002, the MSEA has been keen on establishing a unit for woman with the following objectives: disseminating environmental awareness among women leaderships; assisting in forming female NGOs to take part in environment protection projects in Governorates; paying special attention to rural women and effectuate their role in environment preservation; organizing environment protection training programs and activities for young females; encouraging and activating women leaderships' role inside the MSEA and its executive body (EEAA); giving woman greater part to play in duties and activities; increasing the number of women leadership; and paying special attention to woman's role in RBOs activities. Thus, a cooperation protocol was signed in February 2002 between the National Council for Woman and the MSEA.

Future Perspective

The MSEA perspective concerning the future of environmental action at the local and international levels, is built on making use of local and foreign factors to serve environmental issues, emphasizing, thus, the achievements of Egypt's leading role as an environmental action top priority. Consequently, Egypt adopted some procedures to support sustainable development, including:

- Developing a coordinating entity for sustainable development issues as a supreme committee headed by the Prime Minister.
- Forming a council including heads of NGOs, public interest societies, private sector, representatives of special groups such as: women and youth unions, media, religious men, intellectual and research centers, universities and syndicates. The council aims at holding a forum to discuss and deliberate sustainable development priorities and methodologies to ensure attaining different parties' interests.
- The council shall forward recommendations and proposals to the Sustainable Development Supreme Council, through a sustainable development consultant appointed by the prime minister so that these recommendations and proposals be considered when taking decisions at the Sustainable Development Supreme Council.

Internationally, it is clear that there is a solid ground for Arab cooperation to rely on. The current political strengthened ties can be used to integrate economic dimensions assisting thus in diversifying Egypt's environmental activities funding sources. This requires exploiting Egypt's capacities and proficiencies to support developing southern countries, via foreign financial support encompassing North cooperation and South to South cooperation. Reaching that end, the focus can be on the following cooperation aspects:

- Cooperation experience exchange, provided that funding be effected by a do-

nor country, especially the European Union states.
- Cooperation in training.
- Supporting and encouraging Arab investments in recycling wastes, investment projects and environmental services in Egypt.
- Organizing joint environmental exhibitions and conferences.
- Exchanging visits and opinions.
- Benefiting from political and economic situations in the Arab Gulf area and attracting Arab governmental investments to Egypt to invest in environmental domains including: waste recycling, ecotourism and tourism in protectorates.
- Benefiting from Egyptian human capacities and exchanging training delegations for Arab trainees.
- Developing Egyptian environmental activity to become pioneering in North Africa and cooperation with the European Union after Egypt's introduction to the European Egyptian partnership, as well as the cooperation for African advancement.
- Addressing Funding entities in the Arab, Islamic and African worlds to undertake regional environmental projects providing more opportunities for achieving sustainable development.
- Harmonizing international stances towards environmental issues.

The MSEA seeks to strengthen its ties with the European countries facing similar environmental problems, such as: Albania, Romania and Czech Republic. Furthermore, planning is in the pipeline for establishing partnership principles with developed countries, capitalizing on Egypt's participation in the Egyptian-European Partnership Agreement and its implementation. Thus, the Egyptian government becomes eligible for more support to implement more outcomes to reach the project final objective. Consequently, Egypt becomes a partner in the process of drafting and implementing foreign projects.

Bilateral Cooperation through Donors Support

Since the beginning of nineties, bilateral cooperation has been built on technical and financial support granted by the donors to enhance the environmental policies at that time. These policies were based mainly on reducing pollution, in particular protecting the Nile river water, building capacities and protectorates, (Attached is a chart on completed projects). With environmental policies change in the new millennium and issuance of the national environmental action plan (2002-2017), which prioritize integrating development and organizations, and enhancing information technology, technical assistance was directed towards initiating projects for adopting new environmental policies, alongside supporting previous policies (Attached is a chart on ongoing projects). Egypt's role changed, from a receiver of foreign assistance to a major partner in these projects. During the nineties, Egypt depended greatly on receiving external aid along with technical support assisting in achieving the projects objectives agreed upon.

As for next stage starting with the new millennium, a number of outputs were identified to be implemented, so that the Egyptian government can be eligible to receive more support for more outputs to achieve the project final objective. Thus, Egypt became a partner in the process of designing and implementing foreign projects.

13-H Environmental Legislations

The twentieth century has witnessed an increasing concern and effort to preserve the environment and raise environmental awareness of the necessity of protecting and preserving the environmental resources. International conferences were held, regional and international treaties and agreements on preserving g the environment and nature were signed; and also local legislations were issued in many countries to reveal this concern.

The Egyptian legislator has issued several legislations reflecting the concern of preserving the environment and its resources. This is clearly shown in the Egyptian penal code issued by law no. 58 of 1937 which stipulates a penalty for throwing anything in the way of passers-by that may hurt or harm them. It also imposes penalties for carelessness in cleaning or fixing chimneys, furnaces or labs where fire is used; for throwing stones, solid substances or wastes on cars, houses, buildings, gardens, pounds or properties owned by others; for throwing in the Nile, canals, drainages or other watercourses any tools that may hinder navigation or fill such watercourses. This law also penalizes cutting off growing plants in shops used for public benefit, removing dust, stones or other substances from them without permission; producing noise at night in a way that annoys neighbors; and casting complex substances like animal wastes on building roofs and walls which may harm public health.

The Egyptian legislator then issued many environmental legislations including:

- Law no. 45 of 1949 on controlling noise and loudspeakers
- Law no. 66 of 1953 on the use of fuel, coal and petrol materials
- Law no. 86 of 1956 on mines and stone quarries

- Law no. 21 of 1958 on industry
- Law no. 59 of 1960 on ionized activities
- Law no.93 of 1982 on sanitary drainage and liquid wastes
- Law no. 79 of 1961 on marine disasters and wreckage
- Law no .53 of 1966 on agriculture.
- Law no .38 of 1967 on public cleanliness.
- Law no.1 of 1973 on industrial establishments and noise prevention
- Law no. 66 of 1973 on Traffic
- Law no.106 of 1976 on Housing
- Law no.52 of 1981 on pollution preventing
- Law no.3 of 1982 on urban planning
- Law no.48 of 1982 on River Nile protection
- Law no.102 of 1983 on natural reserves
- Law no. 116/1983 on prohibiting the destruction of agricultural lands and preserving their fertility
- Law no.12 of 1984 on irrigation and drainage

In 1994, the legislator issued the first law for preserving the environment (law no. 4 of 1944) considered an important environmental event and a civilized leap, which made Egypt assume a high status among civilized countries that give special concern to preserving the environment and combating its pollution. This law is considered the first Egyptian legislation aiming at environmental preservation setting an integrated legal framework for such preservation.

Key Features in Law 4/1994 on Environmental Protection

- Recognizing the recent concern with the environment, and due to keenness on the clarity legal provisions guaranteeing its protection, and on the defining of terms included in its provisions, the legislator included definition for 37 terms and phrases on applying the law provisions, in the first article of the Preamble. The legislator also illustrated the administrative authorities responsible for protecting the aquatic environment in item 38 of this article.
- The law prepared a complete regulation for environmental management .It established the Egyptian Environmental Affairs Agency (EEAA) for preserving and improving the environment, and reports to the Minister of Environmental Affairs. The Law approved establishing sub-branches in the Governorates, in accordance with a decree by the Minister of Environmental Affairs, giving priority to industrial governorates.
- The Minister of Environmental Affairs already issued Decree No. 187/1995 establishing eight regional branches (RBOs) for the agency. These are Cairo, West Delta (located in Alexandria), Middle Delta (located in Tanta), East Delta (located in Mansoura), the Canal branch (in Suez city), the Red Sea branch (in Hurghada), Northern Upper Egypt branch (in Assiout) and the Southern Upper Egypt (in Aswan).
- In article Five, the law entrusted the EEAA with many terms of reference including setting the general policy and the plans necessary for environment preservation and development. EEAA is also responsible for following up the execution of these plans in coordination with the relevant administrative authorities. The law also allowed EEAA to execute some pilot projects, and granted it other terms of reference such as setting standards and conditions that should be followed by projects owners and establishments before construction

and during operation; field follow up of implementing the standards and conditions; taking action as stipulated by law against violators of such standards and conditions; setting bases and measures for projects' environmental impact assessment; devising a plan for environmental emergencies; administering and supervising natural protectorates and participating in setting and implementing the National Program for Environmental Monitoring and using its data.

- The law established the principle of public participation in environmental management, devising environmental policies and issuing resolutions on environmental affairs. It stipulated that EEAA board of directors is the supreme authority in its affairs and general policy. The Law, further, stipulated that this board shall be headed by the Minister of Environmental Affairs and formed of twenty members including three members representing NGOs, three representatives of the business sector; two experts in environmental affairs and two members from universities and scientific research centers. The law also granted each citizen or society concerned with environmental affairs the right to report about any violation of the provisions of the environment law and allowed them to resort to competent administrative and judicial bodies in order to enforce the provisions of the environmental law and its executive regulations; thereby allowing public participation in enforcing the environmental law and its executive regulations.
- The legislator was also keen on providing EEAA with the necessary financing to help it perform its duties. Consequently, the Environment Protection Fund was established, allocating its sources for achieving EEAA objectives in order to provide funding sources necessary for overcoming environmental disasters and implementing pilot projects in the fields of protecting natural wealth, protecting environment from pollution, establishing and operating environmental monitoring networks, establishing and administrating natural protectorates, giving bonuses for special achievements and efforts made to protect the environment and supporting the EEAA's infrastructure and developing its activities.
- The legislator has adopted the carrot and stick principle; in addition to penalties stipulated in the law, an incentives system has also been introduced. EEAA, in collaboration with the Ministry of Finance, was assigned to establish an incentives system that may be granted by EEAA or other administrative bodies to authorities, establishments and individuals who undertake actions or launch projects for preserving the environment.
- In law no. 4 of 1994, the Egyptian legislator has formulated a system that necessitates environmental evaluation of developmental activities before performing them, which may minimize their negative impacts and increase their positive effects. Environmental Impact Assessment (EIA) is considered a necessary strategic tool ensuring environmental protection, where the impact of projects and developmental activities is assessed before licensing. The law has mandated EEAA with developing an integrated institutional system including principles and standards for conducting, reviewing and commenting on EIA studies to ensure observing sound work environment; maximum limits for gase-

ous emissions and effluents in addition to the elimination of new sources of pollution. The law has also subjected new expansions or upgrading in existing facilities to the provisions of the aforementioned environmental impact assessment. As for establishments that already existed before the promulgation of this law, they have to comply with its provisions within three years starting from the date of publishing its executive regulation.

- Law 4/1994 follows the principle of transparency, environmental commitment and enforcement. Owners of facilities have to keep a register of the impact of their activities on the environment and to incorporate self-monitoring system in their establishments; Owners also have to report to EEAA immediately by a registered mail with acknowledgement of receipt about any deviation from the standards and specifications of emitted or discharged pollutants and measures taken for correcting such deviations. The law has entrusted EEAA with follow-up of the said registry to ensure it contains realistic data, doing required sampling and carrying out appropriate tests on an annual basis. In case of any violation, EEAA shall inform the competent administrative authority to charge the establishment owner with correcting such violations within sixty days; otherwise, EEAA CEO shall take the following measures in coordination with the competent administrative authority:
  1. Closure of the establishment
  2. Stopping the violating activity
  3. Court order of suitable compensations to treat the damages
- The law includes a whole chapter on hazardous substances and wastes and banning their exchange without license from the competent authority. It has also banned their importation, entry or passage through Egyptian territories. The law has also banned the passage of any ships carrying hazardous wastes in territorial waters or the Egyptian absolute economic Arab zone without a permit from the competent administrative authority. The penalty for violating this rule is not less than five-year imprisonment and a fine not less than twenty thousand pounds and not more than forty thousands; requiring the importer of such wastes to re-export them at his own expense.
- The law simplified marine environment preservation from land and sea pollution sources to include the territorial sea and the Egyptian economic area that extends to 200 marine km starting from the shore line.

Law number 102 of 1983 on natural reserves

Law no. 102 of 1983 stipulated in its article 1 that a natural protectorate - according to its provisions – shall mean any area of land, coastal or internal water unique for its living organisms; plants, animals, or fish, or other natural phenomena with cultural, scientific, tourism or aesthetic values. A natural protectorate is announced by virtue of a Prime Minister's decree upon the recommendation of EEAA.

The law prohibited all actions, behaviors and measures that destroy, damage or cause deterioration to natural environment, or harm the wild and marine lives or plants or even affect their aesthetic level within the protected area.

The law has particularly banned

- Hunting, moving, killing or disturbing wild or marine organisms or doing any action that may harm them.
- Hunting, taking or moving any organic substances or organisms like seashells, coral reefs, rocks or soil for any reason.
- Spoiling or moving any existing plants in a protected area.
- Spoiling or destroying geological or geographical formations or the areas considered habitats for flora and fauna species or for their reproduction.
- Introducing foreign species to a protected area.
- Polluting protectorate soil, air or water by any means.

The law has banned establishing any buildings or establishments, or digging routes, or driving vehicles or practicing any agricultural, industrial or commercial activities in a protected area without permission from the administrative authority, in conformity with rules, conditions and measures issued by virtue of a Cabinet resolution.

The law has also banned all activities or actions in areas surrounding protectorates, by virtue of a Ministerial decree issued upon the recommendation of EEAA, if such areas may impact on the protectorate environment or its natural phenomena, unless permitted by the administrative authority in charge.
Law number 102/1983 has allowed environment preservation societies to resort to administrative and judicial authorities in order to carry out the laws and resolutions on the protection of natural protectorates.

The law has also established a special Protectorates Fund for managing funds, donations and aids allocated for natural protectorates and their entrance fees - if applicable – as well as revenues from fines resulting from enforcing the Law's provisions. Such money shall be allocated for the following purposes:

- Increasing the budget of authorities entrusted with the enforcement of the law.
- Contributing to improving protectorates environment
- Conducting necessary studies and research in this field
- Providing bonuses to inspectors and officers reporting violations to the provisions of this law. It is worth noting that the Protectorates Fund resources were passed on to the Environment Protection Fund by virtue of law 4/1994.

Ministers' Council Decrees were issued successively declaring the natural protectorates that reached 24 natural protectorates (representing 10% of Egypt's surface area). A natural protectorates network is supposed to be completed till the number reaches 40 natural protectorates covering nearly 17% of the Egypt's surface area.

Law no.48 of 1982 on River Nile and watercourses protection from pollution

This law was issued on the 21st of June 1982 with the objective of protecting the River Nile and watercourses from pollution. Article 1 specified the watercourses protected by the law:

1. Fresh water surfaces:
   - The River Nile with its branches and valleys
   - Larger canals, canals of all kinds and articulates
2. Non-fresh water surfaces:
   - All kinds of drains
   - Lakes

- Pools, closed water surfaces and runlets

3. Ground water tanks

The law banned throwing or draining away solid, liquid or gas wastes from buildings, shops, commercial, industrial or tourist establishments, sanitary drainage and other watercourses of all lengths or surfaces without a license from the Ministry of Irrigation according to the standards and regulations determined in a resolution issued by the Minister of Irrigation upon the recommendation of the Minister of Health. The license determines the standards and specifications required for each case.

The law has mandated Ministry of Health agencies with conducting periodical tests of samples of processed liquid wastes thrown by establishments licensed to discharge their wastes in watercourses; and informing the Ministry of Irrigation and the party concerned with the analysis results. The law specified the measures that should be followed in each case according to test results.

The law has also regulated licensing the establishment of new floating houses and renewing licenses for existing ones. It assigned the Ministry of Irrigation with giving permissions to build any establishments with wastes to be discharges in watercourses.

The law has prohibited fuel leakage from river units used for tourism or transportation in watercourses.

The law has entrusted water surfaces police, which reports to the Ministry of Interior, with conducting regular inspection patrols along watercourses, and helping the agencies concerned in controlling wastes, eliminating the causes of pollution and reporting of any violations.

International Legislations

In addition to national environmental protection legislation there are a set of legislations aiming at protecting the environment and preserving environmental natural resources. These are represented in 55 international agreements, treaties and protocols signed and ratified by Egypt and included in annex 5 to this report. Pursuant to the text of article 151 of the constitution, such treaties shall have the power of law following their conclusion, ratification and publishing according to decreed rules.

Constraints Against Implementation of Environmental Legislation

In a World Bank study conducted in 1996, in cooperation with environmental agencies, in six major developing countries; namely, Brazil, China, India, Indonesia, Mexico and the Philippines, it was indicated that environmental policies in these countries focused mainly on legislations as a means of preserving the environment and there are numerous problems hampering the work of competent agencies and offices in these countries. These problems can be summarized in the following:

1. The difficulty of listing and recording information on factories' emissions.
2. Bureaucratic complications encountered during registering data on air or water quality at environmental offices, when they are connected to the authorities responsible for registering publications.
3. The lack of competencies and experience at environmental offices and agencies. This is shown through the information on the benefits of experimental programs, and the use of outcomes to specify priorities in distributing scarce

resources and the small number of trained inspectors qualified to work in this field.

4. Lack of political support necessary for serious implementation of environmental programs. Such programs are sometimes even met with objection and political rejection, resistance and abandonment of implementation. In such cases, it is hard to control pollution and provide for the expenses and burdens of combating.

The situation in Egypt is not different form that in similar major developing countries. Despite the abundance of laws aiming at preserving the environment and its resources; the support provided for the environment by political leadership and the call for taking into account all environmental considerations in state-owned projects, yet the actual application of environmental legislations faces the same problems in Egypt as those faced by its counterparts. These problems can be summarized in the following:

1. Although MSEA has established an information center supplied with up-to-date equipment of information and communication technology, together with an integrated network for exchanging environmental data and information between MSEA, EEAA and the eight RBOs in Cairo, Alexandria, Tanta, Mansoura, Suez, Asiout, Aswan and Hurghada, yet, there is a difficulty in listing and registering data on factories emissions in Egyptian Governorates and other establishments that produce environmentally polluting emissions and discharges, such as, clay brick factories, potteries, coal kilns, lead smelters and foundries and lime industries… etc.
2. The lack of technical staff and qualified experts necessary for implementing environmental legislations and shouldering responsibilities given to the EEAA and its five newly established RBOs. Local agencies could not effectively participate in environmental management because of the deficiency in the EMUs potentials and the humble experience enjoyed by their staff, and the lack of coordination between the EEAA, the ministries and competent administrative agencies concerned with the environment. These facts require support from EEAA and its eight RBOs, through environmental specialists and environmental affairs experts, in addition to competing the establishment of EEAA RBOs in each governorate. Hence, EEAA will be able to perform its duties in all Governorates, and support EMUs in municipalities so that they would assist EEAA and its RBOs in preserving the environment and in the actual and effective enforcement of environmental legislations.
3. The redundancy of authorities assigned with executing environmental legislations and the lack of coordination between them. In addition to the MSEA and EEAA, the Ministry of Water Resources and Irrigation is also assigned with executing the provisions of law 48/1982 on River Nile and Watercourses Protection From Pollution The Ministry of Health is legally mandated with sampling and analysis of samples and with reporting results to the Ministry of Water Resources and Irrigation. The Environment and Water Surface Police of the Ministry of Interior is also assigned with assisting irrigation engineers in apprehending crimes that violate the provisions of the law. Further, the sanitary drainage Authorities and the Ministry of Housing and Utilities

play a role in implementing the same law as well as law 93/1962 on wastes discharges into public drains. Moreover, many bodies cooperate with EEAA in preserving sea water surfaces from pollution, including the Ports and Beacons Authority, the Suez Canal Authority, Ports Authorities in the Arab Republic of Egypt, the Egyptian Public Shore Protection Authority, the Egyptian Public Petroleum Authority, the General Authority for Tourism Development and the General Administration of Environment and Water Surface Police.

The Ministry of Labor has also an important role in protecting the work environment within establishments through navigation and vocational health inspectors. Ministries of Agriculture and Industry have similar significant roles in preserving the environment, which may require some kind of coordination between these ministries and authorities. It may be suitable to form an authority or a supreme council for the environment headed by the prime minister and comprising ministries and authorities concerned with the environment. The Minister of State for Environmental Affairs is to be the Secretary General for this proposed authority or council, whereas the EEAA technical administrations, headed by the executive director of the EEAA, is to be responsible for the technical secretariat of this proposed authority or council.

4. The lack of environmental awareness of citizens and those in charge of managing different projects and establishments, and even those responsible for environmental legislations, in addition to their incomplete knowledge of some environmental provisions and the powers granted to them thereby. This requires raising environmental awareness; holding environmental cultural courses; promoting environmental legislations and training those in charge of implementation on its procedures and on the practice of judicial control by the judicial control officers.
5. The inability of many industrial public and business sectors facilities, as well as some private sector establishments to economize the financial burdens necessary for compliance with the provisions of the law, because of economic constraints and the tendency towards privatizing business and public sector establishments – a fact that has disabled such facilities and establishments from abiding by environmental regulations, standards and rates stipulated upon in legislations.
6. The negligence of applying such legislations to former facilities, due to their hard economic situation and the social dimension resulting from the execution of such legislations and the consequent harm impacting the interests of workers in such industrial facilities.
7. The lack of legal regulations for practicing environmentalists or environmental experts and specialists' functions: unqualified persons conduct Environmental Impact Assessment studies for facilities and project, develop their environmental plans, and environmentally review their compliance. This results in several environmental performance deficiencies and exposes those in charge of managing such facilities to grave risks. Therefore, it is necessary to set forth legal regulations for practicing such functions and develop a pool of expert environmentalists to resort to in implementing such tasks and for reviewing EA studies conducted for new

projects or expansions and improvements of existing ones.

8. Article no.65 of the executive regulation of law 4/1994, promulgated by Prime Minister decree 338/1995, assigned the Ministry of Interior, in coordination with the EEAA, to establish specialized police for environmental preservation within the Ministry and Security Directorates in Governorates to be entrusted with enforcing environment preservation laws and decrees, receiving complaints and reports on this regard and taking legal action thereupon. Despite the lapse of 10 years since the promulgation of this law, the Ministry of Interior has only bestowed the title of "Environment and Water Surfaces Police" on the existing Water Surfaces Police units, without taking any further legal measures necessary to authorize them to undertake measures stipulated in article 65 or to even establish departments at security directorates all over the Egypt's Governorates or provide sufficient number of policemen to undertake this duty. This is one of the obstacles hindering the execution of legislations, primarily law 4 of 1994.
9. Article no. 17 of the Environmental Law no. 4/1994 has stipulated that EEAA and the Ministry of Finance shall establish an incentive system to be granted by EEAA or competent administrative bodies to authorities, establishments and individuals and other entities working on activities or projects that aim at preserving the environment. Article 18 has stipulated the necessity of submitting the above-mentioned incentive systems to EEAA board, and has stipulated that they have to be certified by the Prime Minister. Despite the lapse of 10 years since issuing the law, this system has not been developed yet and, consequently a whole chapter of the law has not come into force. Thus, the aforementioned incentive system has to be developed promptly as one of the most effective methods of enforcing environmental legislation.

Future Vision

The Ministry has developed a draft for introducing amendments to the executive regulation provisions for overcoming its shortages, developing performance and upgrading the levels and standards that have to be complied with by establishments and projects before construction and during operation, as well as to recognizing environmental loads of pollutants while undertaking EIA studies for establishments. Measures are currently being taken for issuing a Prime Minister's decree promulgating such amendments.

The Ministry is currently undertaking necessary measures to review the provisions of laws 102/1983 and 4/1994 to consider introducing required amendments thereon that have been proven necessary following the practical application of the laws.

Chapter IV

MSEA

Ministry of State For Environmental Affairs

EEAA

Egyptian Environmental Affairs Agency

Future Steps and Actions

14 Future Vision for Environmental Action in Egypt

First: Rural And Urban Regions Environmental Development Program which includes:

1- Supporting the Environment Friendly Egyptian Village Program:

- It includes supporting Community Development Associations (CDAs) in the village and employing village youths to achieve more stability in light of the SEAM project experience implemented by Ministry of the State for Environment Affairs (MSEA) in five governorates (Qena – Sohag – Dakahliya – Damietta – South Sinai).
- Transferring the migration current from the village to old cities towards new cities.
- Providing pure water and sanitary drainage services for village people, while setting its cordon.

2- Environment Friendly Cities program:

- Through increasing new industrial city investments and attaching importance to assessing environmental impact of their urban and regional plans.

3- Old existing cities Environmental Development Program:

- Through developing squatter areas inside city borders.
- Effectuating solid waste accumulations disposal program and initiating a national program for recycling wastes to be one of the promising industries.
- Establishing the green belt around Greater Cairo and the Egyptian cities. Controlling Egyptian cities air pollution rate in transportation, energy and industry sectors through expanding natural gas, periodic inspection, transferring pollutants outside cities and establish-

ing industrial zones for each industry with a special environmental management.

Second: Agricultural land Protection Program and Environmental Agriculture (Protecting lands):

1. Implementing environmental agriculture program, expanding organic agriculture, limiting the use of pesticides and depending on biological overcoming.
2. Enumerating vacant land and its cultivation with vegetables and fruits as well as protecting agricultural lands from unplanned urban expansions.
3. Dealing with Desertification Program through the Northern Coast belt and the Nile Valley plans, reclaimed desert lands which have a common infrastructure with the old valley, as well as the oases and desert lands action plan.
4. Ceasing to burn agricultural wastes and establishing waste recycling plants with a first stage of 25 plants.

Third: The Cleaner Production Plan (Clean development mechanism):

1. In application of the Weather Change Agreement approved by the Egyptian People's Assembly, the MSEA shall start with establishing the clean production mechanism and relevant national council and shall continue with protecting the ozone layer through developing industry processes depending on ozone environment friendly materials.
2. Applying the Persistent Organic Pollutants (POPs) Agreement, limiting the use of organic pollutants and controlling its outputs.
3. Applying material and hazardous wastes management systems, particularly in Egyptian industries, while expanding the financing packages of the environment friendly Egyptian industry with loans facilitating benefit from Egyptian industry modernization program to develop environmental management systems.
4. Continuing with the transfer of the most significant polluting industries, such as: (tanneries, foundries, stone factories, crushers, coal, kilns and pottery).
5. Expanding applied energy systems and natural gas, encouraging recycling, closed circles, establishing treatment units, establishing linkage with sanitary drainage and industrial networks.
   Establishing Egyptian industry environmental management program in each of:
   (New industrial cities, free investment zones and private industrial zones, small and medium industries, spread industries, industrial zones in governorates).

Fourth: Environmental Tourism, Protectorates, Coasts and Seas Protection Plan:

1. Encouraging the idea of environmental tourism and attaching attention to increasing the number of natural protectorates to 40.
2. Implementing Integrated Coastal Management Program, protecting the sea for a 200 meters distance and preventing filling up or changing the coast.
3. Implementing Sea Water Quality Protection from Pollution Program and protecting the coral reef line.
4. Applying a special program to limit disasters and accidents and availing necessary emergency plans and equipment.

Fifth: Protecting the River Nile and maintaining water quality in the river and its lakes:

1. Through the River Nile Protection plan which comprises 12 programs for protecting the river water and lakes quality as well as protecting a part of the River Nile, the River girder and coast from violations of establishments and filling up.
2. Nile Lakes and Wet Lands Protection Program, including Nasser, Al-Manzala, Mariot, Al Borlos, Edco and Al Temsah lakes.
3. Implementing an environment friendly tourism and river transportation program to protect the Nile from the effect of 357 floating bodies and 400 scows and encouraging environment friendly river transportation through depending on treatment units and environmental river moorings.

Sixth: Applied, Renewable and New Energy Program:

1. Expanding winds energy and energy produced from solid and agricultural wastes, biogas and natural gas.
2. Limiting the use of gas oil and solar, while developing the Egyptian fuel.
3. Rationalizing the consumption of energy as a means to limit its negative and economic effects.
4. Expanding electricity energy produced from the River Nile and vaults as it is a clean, non-polluting energy.

Seventh: Environment Friendly Transportation Program:

1. Expanding developed and clean collective transportation to limit the use of private cars that depend on solar and benzene and encouraging electric transportation such as the metro, monorail and tram.
2. Transferring the fuel used by 4500 public transportation buses to natural gas, encouraging the use of natural gas by tourism and private buses as well as microbuses, minibuses, taxis and increasing the number of natural gas stations and garages, starting in greater Cairo.
3. Encouraging transportation outside the city and capital, limiting crowding activities inside these cities towards the outside, such as governmental service areas, markets and workshops, while starting the implementation of the second ring road around Greater Cairo.
4. Encouraging river transportation through the River Nile in Greater Cairo to Upper Egypt governorates, while increasing the number of moorings, setting the navigation line and linking moorings with sanitary drainage networks.
5. Fast application of river navigation lines:
   - Al Temsah lake, Ismailia Canal, Athar El Nabi
   - Damietta port Damietta branch, Al Kanater Al Khairiya
   - Al Mahmoudia Canal Rashid branch, Al Kanater Al Khairiya

Encouraging river transportation of passengers and goods, while using environment friendly ships or floating bodies.

Eighth: Human Development and Public Participation Program:

1. Attaching attention to the environmental health affecting the Egyptian citizen, a child, youth, woman and adult and protecting food from pollution, in addition to protection against polluted air and water.
2. Public participation through the Woman

Unit, Civil Associations Unit, Industry Unit, then Youths Unit, managing urban, rural and coastal regions development through cooperation with its inhabitants.

3. Awareness, media information and environmental education through schools, universities, youth centers and information means.

Ninth: Institutional Development (Legislative/Administrative/ Financial):

1. Amending the executive regulation of Law No. 4 of the year 1994.
2. Adjusting the EEAA organizational administrative structure includes:
   - Environment Quality sector (air, water, land).
   - Development activities environmental management sector (agriculture, industry, tourism, housing, energy, transportation).
   - Natural protectorates sector.
   - Regional branches, governorates and environmental inspection sector.
   - Media and information sector.
   - International cooperation for planning and emergency sector.
   - Financial, administrative, legal and environment financing sector.
   - The EEAA shall comprise 5 main sectors of all environmental activity planners.
3. Increasing environmental project and activity resources and financing through non- traditional resources:
   - Applying "The polluter shall pay the price" principle on each person subject to environmental minutes.
   - Applying the principle of environmental incentive on each person who cares for and protects the environment.

   Using non-traditional resources:
   a) Applying the idea of plane tickets on land, sea and river transportation tickets to increase resources.
   b) Imposing a money percentage on all kinds of imported and industrialized cigarettes, in addition to coal and tobacco production factories, water pipes, coffee shop activities, gas oil and solar.
   c) Increasing the percentage of donations and agencies through spreading environment protection funds in clubs, amusement parks, theatres, cinemas, banks and exchange companies.

Tenth: Environmental International Cooperation Program:

1. Expanding technical, administrative, training relationships with countries developed in environmental management systems.
2. Expanding financial relations with international "environmental grants" sources, whether governmental, private, civil or whether Egypt depends only on governmental resources for international finance.
3. Spreading detailed information on the Egyptian environmental activity in embassies and cultural attachés to improve Egypt's environmental image.

Annexes

Priority Pollution Hot Spots in Egypt

Name	Type	HAZARD								Nature of investment	Preliminary estimated financial requirement (in US$)
		Public Health	Drinking Water Quality	Aquatic Life	Recreation	Other beneficial use	Welfare and economy	Weighted total	Relative importance index		
El-Manzala	Mixed (Wastewater)	6	4	6	5	6	5	26.1	100	WWTP (Rehabilitation)	Hundred of millions
Abu-Qir Bay	Mixed	6	1	6	6	6	6	24.9	95	WWTP (Construction)	61.6 million+
El-Mex Bay	Mixed (Wastewater)	6	1	3	5	5	3	19.1	73	WWTP (Construction)	101.2+
Alexandria	Domestic	4	1	4	6	4	3	17.8	68	WWTP (Construction)	In implementation
Damietta	Mixed (River)	6	6	2	2	1	1	16	61		

Annex 2

Estimated Investment for Industrial Pollution Control in Alexandria

Information source	Investments in US$	Projects	Institutions
UNEP/Dutch Gov.	60,000,000	Water recycling, limiting wastes, black liquid, restoring, liquid wastes treatment	Rakta Papers Company
AQ IEMP/STC	8,000,000	Liquid wastes treatment, cleaner production	The National Company for Papers
AQ IEMP/STC	14,000,000	Urea, restoring nitrates from water, recycling	Abu Kier for fertilizers
AQ IEMP/STC	7,500,000	Restoring acids, adjustment processes, liquid wastes treatment	Asmadi
AQ IEMP/STC	5,300,000	Restoring chemicals, water recycling and cleaner production, industrializing wastes or remains	Misr Rion
AQ IEMP/STC	5,300,000	Cleaner production, industrializing wastes or remains	Al Aghzia for industrialized milk products
EPAP Audit	8,000,000	Monitoring network, water recycling, restoring acids and water treatment	National Alexandria Company for iron
Company estimates	4,500,500	Water recycling, restoring chemicals	The Egyptian Company for chemicals
EPAP Audit	8,000,000	Restoring chromium, cleaner production, water treatment	Al Nasr for tanning
Company estimates	12,000,000	Water recycling and treatment, production processes adjustment	Alexandria for petroleum refining
EPAP Audit	7,600,000	Colors harmony, water recycling, updating industrial liquid drainage treatment resulting from production processes in the establishment	Al Amria for spinning and weaving
EPAP Audit	9,500,000	Chemicals recycling and restoring	Al Masria for petrochemicals
EPAP Audit	12,000,000	Water recycling, production processes development	Al Amria for refining

Annex 3

The Executive Stance of Solid Waste Management Projects and Public Cleaning in Governorates

Governorate	Executive stance from privatization	Notes
Alexandria	Onix French Company	
North Sinai	Hilo Care Company of Al Areesh region only	
Suez	Kuwaiti Tanzafco	
Port Said	Misr Service Company	
Cairo	**Northern area**: Om Al Arab and the Arab Contractors companies	
	Western area: Europe Seir Spanish Company	
	Eastern area: FCC Spanish Company	
	Southern area: Europe 2000 and Al Fostat companies	
Aswan	Care Service Company, a Spanish Company and Dala Company	In Aswan, Edfo and Kom Umbo
Giza	**Southern area:** Al Giza Company for Environmental Services (FCC Spanish Company)	Southern Giza, Al Haram, Al Omrania and Bolak Al Daktour districts
	Northern area: The International Company for Environmental Services (Jackros Italian Company)	Working in northern Giza, Dokki and Agouza districts
	Giza Cleanliness and Beautification Authority	Abu Al Nomros, Al Hawamdiya, Al Badrasheen, Al Warak, Awsim councils and cities. There is current work ongoing in other city and markaz councils.
Qena	The project is self implemented in Qena city and other governorate cities and youth graduates are being employed	
Luxor	Amoun Company for cleanliness and beautification	
Al Gharbia	Cairo Service Company in Tanta city, Al Nagar service Company in Mahla	
New Valley	The project is self implemented and youth graduates are being employed	
Damietta	Hilo Care Service Company in Tanta and Ras El Bar cities (It works in Ras El Bar during summer)	
Al Dakahliya	The solid wastes integrated management processes haven't been privatized	

Governorate	Executive stance from privatization	Notes
Al Sharkiya	The solid wastes integrated management processes haven't been privatized	
Al Fayoum	The solid wastes integrated management processes haven't been privatized	
Asiout	The solid wastes integrated management processes haven't been privatized	
Kafr Al Sheikh	The solid wastes integrated management processes haven't been privatized	
Al Menoufia	The solid wastes integrated management processes haven't been privatized	
South Sinai	The solid wastes integrated management processes haven't been privatized	
Ismailiya	The solid wastes integrated management processes haven't been privatized	
Red Sea	The solid wastes integrated management processes haven't been privatized	
Beni Suef	The solid wastes integrated management processes haven't been privatized	
Sohag	The solid wastes integrated management processes haven't been privatized	
Matrouh	The solid wastes integrated management processes haven't been privatized	
Al Qalioubiya	The solid wastes integrated management processes haven't been privatized	
Al Behira	The solid wastes integrated management processes haven't been privatized	

Source: Wastes General Department – EEAA

Annex 4

Waste Recycling Plants Established in Governorates to Date Proposed Sited for Implementing 2002/2003 Plan

Governorates	Garbage amount Ton/day	Number of plants distributed on three lines						Proposed sites for selecting the plan	
		City name	Year 96/97	City name	Year 98/99	City name	Year 99/ 2000	City name	No. of plants
Cairo	9000			Al Katamiya	3	15th May	10		
Giza	4288	Shobramant	1	2 Shobramant 1 Abu Rawash	3			Extension of Shobramant plants	2
Al Qalioubiya	3185								
Alexandria	2400	Abees	1	Montaza	1				
Al Behira	1994	Damanhour	1			Kafr El Dawar	1	Kom Hamada	1
Matrouh	470			Matrouh	1				
Menoufiya	1170			Menouf	1				
Al Gharbiya	1713			Al Mahala	1			Tanta	2
Kafr El Sheikh	1603			Kafr El Sheikh	1	Bela	1	Seidi Salem	1
Damietta	988					Ras El Bar	1	Damietta	1
Al Dakahliya	3600	Al Mansoura	1	Belkas	1	Meet Ghamr	1	Aga Al Manzala	2
North Sinai	217			Al Areesh	1				

Governorates	Garbage amount Ton/day	Number of plants distributed on three lines						Proposed sites for selecting the plan	
		City name	Year 96/97	City name	Year 98/99	City name	Year 99/ 2000	City name	No. of plants
South Sinai	295			Sharm El Sheikh	1				
Port Said	625							Port Fouad	1
Ismailiya	628	Ismailiya	1	Ismailiya					
Suez	400			Suez	1				
Al Sharkiya	1626					Balbees	1	Abu Kebir Derb Negm	2
Beni Suef	738	Beni Suef Al Gedida	1			Samasta	1		
Al Menya	1096	Al Menya Al Gedida	1			Malawi	1	Samalot Al Adwa	2
Al Fayoum	554	Al Fayoum	1						
Asiout	848								
New Valley	75							Al Kharga	1
Sohag	783	Sohag Al Gedida	1						
Qena	944					Qena	1	Nagaa Hamadi	1
Aswan	553			Aswan	1	Edfo	1		
Red Sea	205	Hurghada	1						
Luxor	150	Luxor	1						
Total	**26160**		**10**		**15**		**19**		**19**

Source: Ministry of Local Development

Annex 5

Agreements

Field	No.	Agreement or Convention	Date of ratification (r), enforcement (e) or signing (s)
Air or noise pollution	1	An Agreement On Protecting Workers From Work Dangers in the Practical Environment due to Air, Noise Pollution And Vibrations	4 May 1988 (r)
Bio-diversity	2	An Agreement on Protecting Wet Lands Of International Importance	9 September 1988 (r) 9 September 1988 (e) 9 September 1988 (s)
	3	An Agreement on Protecting Flora And Fauna	21 February 1935 (r) 14 January 1936 (e)
	4	The International Agreement For Organizing The Fishing of Whales	8 September 1981 (e)
	5	An Agreement on Establishing a Public Council For Fisheries in the Mediterranean Countries	19 February 1951 (r)
	6	The International Agreement on Protecting Plants	22 July 1953 (r)
	7	The African Agreement on Protecting Nature and Natural Resources	16 March 1972 (r)
	8	A Protocol on Modifying the Agreement on Protecting Wet Lands of International Importance	9 September 1988 (r)
	9	An Agreement on Organizing International Trade in Plants And Animals Threatened of Extinction	4 January 1978 (r) 4 April 1978 (e)
	10	An Agreement on Protecting Migrating Animals (Bonn)	11 February 1982 (r) 1 November 1983 (e)
	11	An Agreement on Bio-Diversity	2 June 1994 (r)
	12	An Agreement on Establishing An Organization For Protecting Far East Plants	13 April 1995 (r)
Climate change	13	The UN Agreement on Climate Change	5 December 1994 (r)
	14	Kyoto Protocol	15 March 1999 (s)
Cultural heritage	15	An Agreement On Protecting Cultural And Natural International Heritage	7 February 1974 (r)

Field	No.	Agreement or Convention	Date of ratification (r), enforcement (e) or signing (s)
Desertification	16	The UN Agreement on Overcoming Desertification in Countries Suffering From Severe Dryness or Desertification, Particularly In Africa	7 July 1995 (r)
Seas Law	17	The UN Agreement on Seas Law	26 August 1983 (r)
	18	An Agreement on Implementing The Sixth Part of the UN Convention on Seas Law 10 December 1982	22 March 1995 (s)
	19	An Agreement on Implementing UN Convention Items of The Seas Law 10 December 1982 Relevant To The Protection and Management of Fish Migration	5 December 1985 (s)
	20	The UN Agreement on Ships Registration Terms	9 January 1992 (r)
Coasts pollution with oil	21	The International Convention on Preventing Seas Pollution With Oil	22 July 1963 (e)
	22	The International Convention on Interfering in High Seas in Cases of Disasters Resulting From Pollution With Oil	3 February 1989 (r) 4 May 1989 (e)
	23	The Protocol on Cooperating in Combating The Mediterranean Pollution With Oils and Other Things in Cases of Emergency	24 August 1978 (r) 23 September 1978 (e)
Coasts pollution	24	The Protocol on interfering in High Seas in Case of Sea Pollution with other Materials Rather than Oil	3 February 1989 (r) 4 May 1989 (e)
	25	Convention on Preventing Sea Pollution Resulting From Disposal of Wastes and other Things 1972	30 July 1992 (r)
	26	Protocol 1996 on The Convention Preventing Sea Pollution Resulting From Disposal Of Wastes And Other Things 1972	1996 (s)
	27	Protocol 1978 on The International Convention Preventing Pollution Resulting From Ships 1973	7 November 1986 (e)
	28	The Convention On Protecting The Mediterranean From Pollution (Barcelona)	24 August 1978 (r) 23 September 1978 (e)

Field	No.	Agreement or Convention	Date of ratification (r), enforcement (e) or signing (s)
	29	Modifying the Convention Protecting the Mediterranean from Pollution	10 June 1995 (s)
	30	Protocol on Protecting the Mediterranean Coasts From Pollution Resulting from Burying Cargo Vessels and Planes	24 August 1978 (r) 23 September 1978 (e)
	31	Modifying the Protocol on Protecting the Mediterranean Coasts from Pollution Resulting from Burying Cargo Vessels and Planes	10 June 1995 (s)
	32	Protocol on Protecting the Mediterranean Coasts from Pollution Resulting from Land Sources	18 May 1983 (r) 17 June 1983 (e)
	33	Modifying the Protocol on Protecting the Mediterranean Coasts from Pollution Resulting from Land Sources	7 March 1996 (s)
Nuclear energy, hazardous materials and wastes	34	Protocol on Preventing the Mediterranean Pollution From Hazardous Wastes Through Boundaries and its Disposal	1 October 1996 (s)
	35	Basel Agreement on Controlling Transportation through Boundaries to Dispose Hazardous Materials through landfill	8 January 1993 (r)
	36	Modifying Basel Agreement on Controlling Transportation through Boundaries to Dispose Hazardous Materials through Landfill	22 September 1995 (s)
	37	Bamaco Agreement on Preventing the import of Hazardous Materials, the Management And Control of its Transportation through Boundaries inside Africa	30 January 1991 (s)
	38	A Convention on Offering Help in Cases of Nuclear Accidents or Emergencies	17 October 1988 (r) 17 November 1988 (e)
	39	Nuclear Safety Agreement	20 September 1994 (s)
	40	An International Convention on Civil Liability Towards Harms Resulting from Pollution with Oil	3 February 1989 (s) 4 May 1989 (e)
	41	Protocol 1992 on Modifying the International Convention on Civil Liability towards Harms Resulting from Pollution With Oil 1969	21 April 1995 (r)

Field	No.	Agreement or Convention	Date of ratification (r), enforcement (e) or signing (s)
	42	The Convention on Regional Cooperation in Combating or Overcoming Pollution Through Pollution and other Hazardous Materials in Cases of Emergency	20 August 1990 (e)
	43	The International Convention on Rising Awareness, Responsibility and Cooperation Regarding Pollution from Oil	14 March 1991 (r) 14 July 1996 (e)
	44	The International Agreement on Salvage	14 March 1991 (r) 14 July 1996 (e)
	45	Convention on Establishing The African Economic Unity Committee	26 January 1993 (r)
	46	An Agreement on Establishing a Committee to Combat Desert Locusts in The Far East	6 July 1967 (r) 21 April 1969 (e)
	47	The Tropical Woods Agreement	1995/00/9 (r)
	48	The Tropical Woods Agreement 1994	8 November 1994 (s)
	49	Vienna Convention on Protecting the Ozone Layer	9 May 1988 (r)
	50	Montreal Protocol on Materials Harmful to the Ozone Layer	2 August 1988 (r)
	51	(London) Modifying Montreal Protocol on Materials Harmful to the Ozone Layer	13 January 1993 (r)
	52	(Copenhagen) Modifying Montreal Protocol on Materials Harmful to the Ozone Layer	28 June 1994 (r)
Protectorates	53	Protocol On Protectorates in the Mediterranean Basin	8 July 1983 (r)
	54	The Regional Agreement on Protecting The Environment in The Red Sea and Gulf of Eden (Jeddah)	23 March 1986 (e)
Protectorates and bio-diversity	55	Protocol on Protectorates and Bio-Diversity in The Mediterranean Basin	20 August 1990 (e) 10 June 1995 (r)

Annex 6
Foreign Projects

A- Foreign Projects to Date

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
First: Projects relevant to Protectorates					
Siwa Environment Improvement project Foreign component: Italy Local component: Italian debts exchange		3 years	The project aims to develop sustainable agriculture through environment friendly activities and practicing as well as implementing self sustainable small and soft loans through non-governmental organizations (NGOs) in the oases, in addition to declaring Siwa oases as natural protectorates and developing Siwa region as a pioneering area in environmental tourism with traditional handicrafts and cultural heritage advantages in the Western desert	Agriculture/ water resources/ nature protection/ tourism and civilizational heritage	Siwa oases and Matrouh governorate
Wadi Al Rayan protectorate Foreign component: Italy Local component: Italian debts exchange		3 years	The project aims to guarantee continuous administrative unity in Wadi Al Rayan protectorate area and supporting this area to be pioneering in the field of environmental education and sustainable development topics.	Agriculture/ water resources/ nature protection/ tourism and civilizational heritage	Wadi Al Rayan and Al Fayoum governorate
Aelbet Al Ateek protectorate Foreign component: Italy Local component: Italian debts exchange		3 years	The main project output is a detailed management plan ready for implementation in Wadi Aelba protectorate.	Nature protection	

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Al Fayoum oases project Protectorates Foreign component: Italy Local component: Italian debts exchange		3 years	The main aim of the project is increasing the value of natural and civilizational resources through a cooperation strategy between the EEAA and The Supreme Council of Antiquities, which results in creating a civilization are in Al Fayoum region.	Agriculture/ water resources and civilizational heritage	Al Fayoum
Second: Projects relevant to development and institutions					
Assessment support project and environmental management **SEAM-I** **DAFID**			The Support of Environmental Assessment and Management SEAM aims to improve environmental management in a complementary method in Al Dakahiliya, Sohag, Qena and Damietta governorates. Its main outcomes are represented in effective environmental management and planning systems in Sohag and Al Dakahiliya (These systems are repeated in Qena and Damietta by the MSEA) as well as trying to eradicate poverty in the four governorates and promoting communities participation and awareness programs.	In the fields of medical wastes/ industry/ industrial wastes/GEAP	
Support of Environmental Assessment and Management (development and institutions) project **SEAM II** **DAFID**	1/9/1999	5 years	This program supports environmental efforts in the fields of environmental protection as well as formulating and implementing environmental priorities and creating a more effective environmental management. Since the beginning of 2004, the project is preparing the South Sinai GEAP in cooperation with the European Union.	Hazardous materials/ hazardous wastes / industry / maritime and coastal management/ solid wastes/air quality/ environmental disasters institution	A national program implemented Egypt-wide

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Implementing the Red Sea and Eden Gulf strategic program plan			PERSEGA is a NGO authority that attaches importance to protecting coastal and maritime ecosystems in the region		Regional
Third: Projects relevant to pollution					
The Project of the Supply of Equipment for the Regional Environmental Monitoring Network	Mid of 2000 Actual: End of 2001	Two years and a half	The project aims to equip labs in Asiut, Aswan and Hurghada branches with equipment required for environmental monitoring		Asiout, Aswan and Hurghada
EMTP Environmental Monitoring Training Program	September 1997	4 years	The project aims to equip the central environmental lab in Cairo and labs network in other branches of the MSEA in charge of required equipment and necessities in governorates, in addition to supplying them with training programs required for staff in such labs so that they would be capable of using such equipment.	Monitoring/ training	Central and regional labs
EPAP **Finnish Aid** **World Bank**	1 February 1997	7 years	It supplies different industries with financial and technical aids till they reach their goal of abiding by environment laws. This project includes financial, technical and institutional components and another relevant to awareness.	Industry	Cairo, Alexandria, Al Fayoum, Al Dakahilia, Suez, Al Sharkiya, Al Gharbiya, Qena, Aswan

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
EEIF **Canadian International Development Agency (CIDA)** **Egyptian Environmental Initiatives Fund**	1/6/1997	7 years	This project encourages managing and protecting natural resources in Egypt, particularly land and water through the private and free sector in Egypt. This is achieved through strengthening the efficiency of small and medium projects to improve the environmental efficiency of the production process and enhancing the ability and efficiency of NGOs and civil community associations to contain local environmental initiatives and support the private sector in the fields of environment non-polluting works.	Energy/ hazardous wastes/industry/ local wastes/air quality/ environmental awareness	Small and medium projects, NGOs and civil community associations
Fuel and hydrogen technology usage in facilitating collective transportation means **Global Environment Facility (GEF)**	End of 2001	5 years	The main aim of the project is to minimize thermal occlusion gases and other pollutant emissions. This project has been implemented in Egypt through eight buses operating with fuel cells.	Transportation	National
Activities available to facilitate the early plan of implementing Stockholm Persistent Organic Pollutants Agreement	May 2001		The agreement aims at preventing the production or usage of any intended products of persistent organic pollutants and limiting, or preventing, if possible, chemical substance quantitative emissions	Persistent organic pollutants	National
Providing transportation buses sector with electrical energy technology				Climate change	National

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Developing fuel cells in Cairo buses				Climate change	National
Fourth: Projects relevant to capacity building					
ESP capacity building **DANIDA**	1/9/2001	6 years	The ESP promotes national efforts in the field of environmental management as the program objectives focus in general on supporting the Egyptian government's office in achieving its environmental goals, taking into consideration the fulfillment of environmental terms and institutional capabilities development in the field of environmental management, which supports the community's ability to maintain a healthy and clean environment.	Institutional capacity building/ information/ GEAP/ environmental management/ environmental awareness	Cairo, Aswan and Beni Suef governorates

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Fifth: Projects relevant to information technology					
EEIS **CIDA** **Egyptian Environmental Information System**	1/6/1997	March 2001/ a new initiative till September 2004	This project aims at supporting Egyptian government decision makers in formulating and implementing imperative policies, enacting laws and implementing laws, projects and programs relevant to water and land resources in Egypt. Its main systems include: developing the and efficiency capacity of the MSEA in taking right decisions regarding environment protection and management through implementing the environmental information system, i.e. promoting possibilities of delivering environmental data and information to the ministry by local governmental organizations and academic institutions and establishing a continuous link between the MSEA and other organizations concerned with the environment (ministries, administrations, institutions, projects funded by other international contributors, NGOs and academic centers).	Environmental Information System	Egypt-wide
Sixth: Projects relevant to medicinal plants					
Conservation and sustainable use of medicinal plants in dry and semi-dry ecosystems in Egypt **GEF**	1/2/2002	7 years	It aims at the maintenance and sustainable use of medicinal plants in dry and semi-dry ecosystems in Egypt	Nature protection	**Saint Catherine**

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Seventh: Projects relevant to solid and industrial wastes					
Public sector industries EPF **The German Construction Bank (KFW)**	1/7/1997	7 years	The project aims to fund investments necessary for implementing industrial projects in the public sector in the field of industrial wastes treatment.	Industry	Cairo/Giza/ Damietta/ Alexandria/Al Dakahleia and Al Gharbiya
Eighth: Projects relevant to maintaining wet lands					
Wet lands conservation project **GEF**	1/10/1999	5 years	It aims to conserve wet lands, bio-diversity systems and ecosystems at the Mediterranean coasts.	Nature protection	Regional
Wet lands in Al Manzala lake **GEF**	September 1997		The project encourages sustainable development through enhancing international and local economic and environmental opportunities. It aims to establish and implement a test channel capable of treating 25-50 thousand cubic meters per day from Bahr Al Bakar drain before being drained in Al Manzala lake.	Nature protection	Port Said
Wet lands conservation The Mediterranean region **GEF**			(Al Zaraneek – Al Borolos – Al Ameed protectorates)	Bio-diversity	Regional

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Ninth: Projects relevant to water					
Water Resources Planning Decision Making Support System **Foreign component: Italy** **Local component: Italian debts exchange**		3 years	The project aims to improve the approach followed to merge environmental, economic and social dimensions in development standards and water resources plans analysis, as well as contributing to developing technicians' capabilities, high levels management at the Water Resources National Center and end users (EEAA, Ministry of Irrigation and Water Resources).	Water Resources Department	**National**
Al Manzala lake integrated management **GEF**			The project treats twenty five thousand cubic meters of Bahr Al Bakar drainage water per day before being drained in Al Manzala lake. The project maintains the ecological system, supports sustainable development with the participation of the region inhabitants as well as research and executive authorities in a number of ministries.	International waters	**National**
The second stage of managing Matrouh resources				International waters	National
Tenth: Projects relevant to climate change					
Working under the Montreal Protocol Umbrella program	1/10/1993	Not determined yet	The project aims to exchange materials used in industries which are responsible for the ozone layer erosion. In addition, the program offers training courses and awareness campaigns relevant to its activities.	Ozone layer erosion/industry and cooling sectors/foam industry/ cleaning materials	National

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Improving energy efficiency and limiting thermal occlusion			This project aims to restore methane gas resulting from garbage landfills activities.	Climate change	Regional
Thermal occlusion gases and action plans capacity building to implement the United Nations Framework Convention for Climate Change (UNFCCC) requirements			The project aims to help the state through capacity building to implement the UNFCCC requirements.	Climate change	National
Eleventh: Projects relevant to bio-diversity					
Red Sea Coasts and Maritime Resources Management **GEF/ Mediterranean Action Plan (MAP)**				Bio-diversity	National
Bio-diversity Strategy, Action Plan and the first capacity building development report **GEF**				Bio-diversity	National

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Eleventh: Projects relevant to bio-diversity					
Helping in building capacities required by the state represented by the Bio-diversity Department **Foreign component: Italy** **Local component: Italian debts exchange**				Bio-diversity	National
Best practices promotion for the conservatona nd sustainable use of internationall y significant bio-diversity in dry and semi-dry regions. **GEF**				Bio-diversity	National

Annex 6

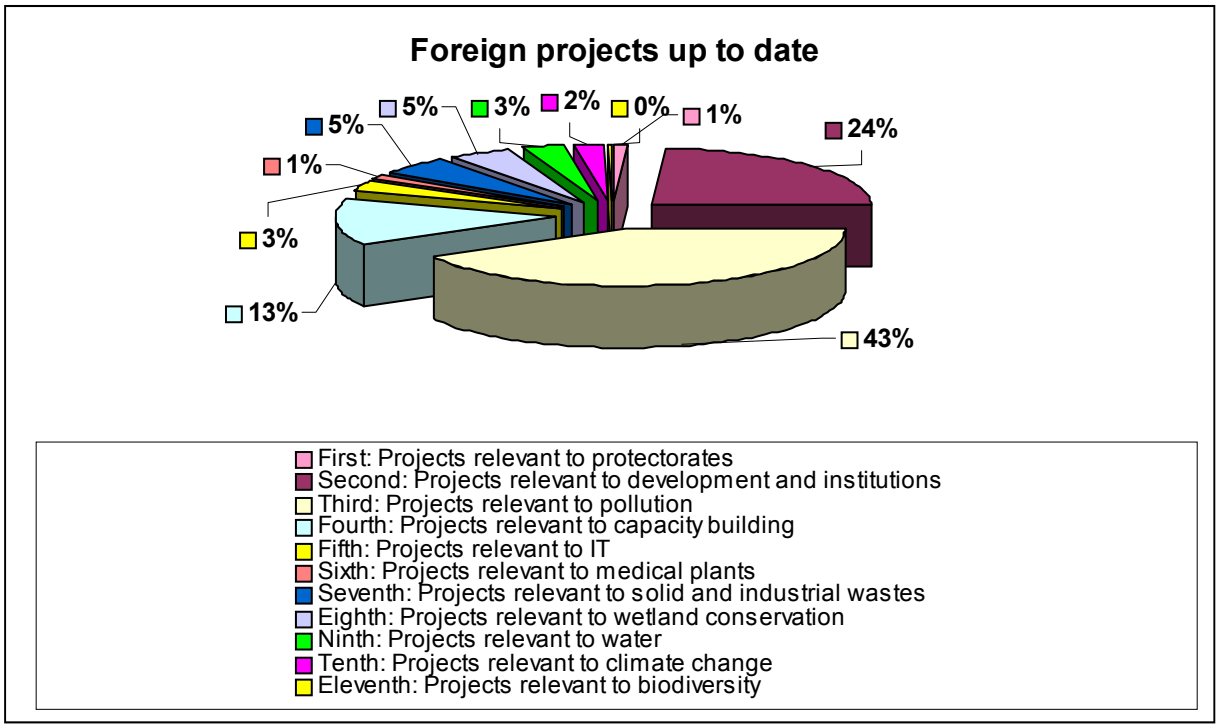
B- Finished Foreign Projects

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
First: Projects relevant to protectorates					
Aqba Gulf Protectorates Development Program **EU**	July 1996- the end of 2002	5 years	The project aims to develop and maintain natural resources and the coastal environment system in Aqaba Gulf as a main base to support tourism development in South Sinai, in addition to developing the capability and efficiency of the agency in the nature protection sector.	Natural protectorates	Aqaba Gulf
Saint Catherine protectorate project **EU**	July 1996- the end of 2002	5 years	Protecting the natural, historical and religious heritage in Saint Catherine protectorate. The protection of coastal environmental systems and natural resources is the project's main objective, in addition to urban planning and right management of natural resources in protectorates.		Saint Catherine
Second: Projects relevant to pollution					
The Project of the Supply of Equipment for the Regional Labs Network **JICA**	1997	3 years	The project aims to equip the central lab and five branch labs of the Agency with equipment required foe environmental monitoring	Monitoring	Central lab in Cairo, Greater Cairo branch and Fayoum
Industrial Wastes Integrated Management **EU LIFE 3rd COUNTRIES**	May 2001	2 years	Establishing an integrated system for treating solid wastes resulting from 6th October industrial city, as well as preparing contract and tender (overbidding) terms for the activities proposed through the system.	Local solid wastes	6th October city

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Oil pollution combating centers in Sharm El Sheikh and Nuieba **EU**	June 1996	December 2002	The project aims to establish a center for urgent response to emergencies and setting procedures and mechanisms to combat pollution by oil in Aqaba Gulf	Coastal and maritime zones management	Sinai/Sharm El Sheikh
Pollutant Release and Transfer Register project (PRTR) UNIDO GEF/MAP	December 2001	11 months		Wastes management	Alexandria, Suez, Tanta and Al Mansoura
Using fuel cells in 2-stroke motorcycles	March 2000	31 months	The project aims to minimize thermal occlusion gas emissions through transferring two engines in 2-stroke motorcycles into operating with compressed natural gas. This project is implemented in three stages: Determining potentials and obstacles, transferring and delivering technology and its transfer to local market		National
Restoring methane gas from landfills	February 2000	32 months	The project aims to design and establish two cells of landfills in Cairo fit of restoring gases resulting from wastes inside it		National

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Study for formulating a national strategy on clean environmental development mechanism **WB**	October 2000	Extending to 6 months	The strategy aims to determine to determine institutional national requirements for clean development mechanism institutional national requirements, prepare projects to be implemented in the framework of clean environmental development mechanism and study global market approaches on minimizing thermal occlusion gas emissions of clean development mechanism projects. This study focuses on sectors enabling clean development mechanism projects in Egypt, such as energy, industry, transportation, wastes management and agriculture sectors.		National
Third: Projects relevant to capacity building					
Organizations Support Program (OSP-1) **DANIDA**	August 1994	4 years	This project continues to support the MSEA in strengthening the environmental management efficiency so that it would be capable of developing and managing tools supporting the enforcement of Law No. 4 of the year 1994 at the local and central levels. This is achieved through developing the MSEA organizations in governorate branches, the EPF, Environmental Impact Assessment (EIA) and implementing environmental laws.	Institutional	Cairo, East Delta and Alexandria branches
National Environmental Action Plan (NEAP) **United National Development Program (UNDP)**	1996	5 years	This project aims to update the NEAP and further supports ESP implemented by the MSEA through coordinating with ministries, governorates, NGOs, local authorities the activities and projects of specialized contributors. The main activities are: Defining the problem, linking objectives and assessing future work options and recommendations.	Planning	A national program implemented Egypt-wide

Project/ Program name	Date of starting	Project duration	A brief description of the project	Project environmental work field	Geographical coverage
Fourth: Projects relevant to solid wastes					
Solid waste landfill sites study **EU LIFE 3rd countries**	March 1999	3 years	The project aims to prepare a study on hazardous industrial wastes management and treatment in Greater Cairo	Solid wastes	National
Sixth: Projects relevant to information technology					
A guiding project in the field of technological cooperation	October 1999	Not determined yet	This project aims to achieve consensus among the main Egyptian institutions on a number of priorities. The expected results of this project are offering proposed fields for the transfer of technology under the supervision of the Climate Change National Committee		National
Seventh: Projects relevant to hazardous wastes					
Hazardous Wastes Management Project in Alexandria **Finnish Government**	October 1999	3 years	A pilot project for establishing hazardous industrial wastes nucleus, starting from factories, transportation, assembling, temporary storage, disposal through incineration, treatment and recycling.	Hazardous wastes	Alexandria, Suez, Tanta and Al Mansoura
Eighth: Other projects					
Civilizational heritage protection support project in Sakara (first stage) (Italy)	June 2000	June 2002	The main objective is improving natural and cultural resources sustainable management in Sakara.	Civilizational heritage	Sakara - Giza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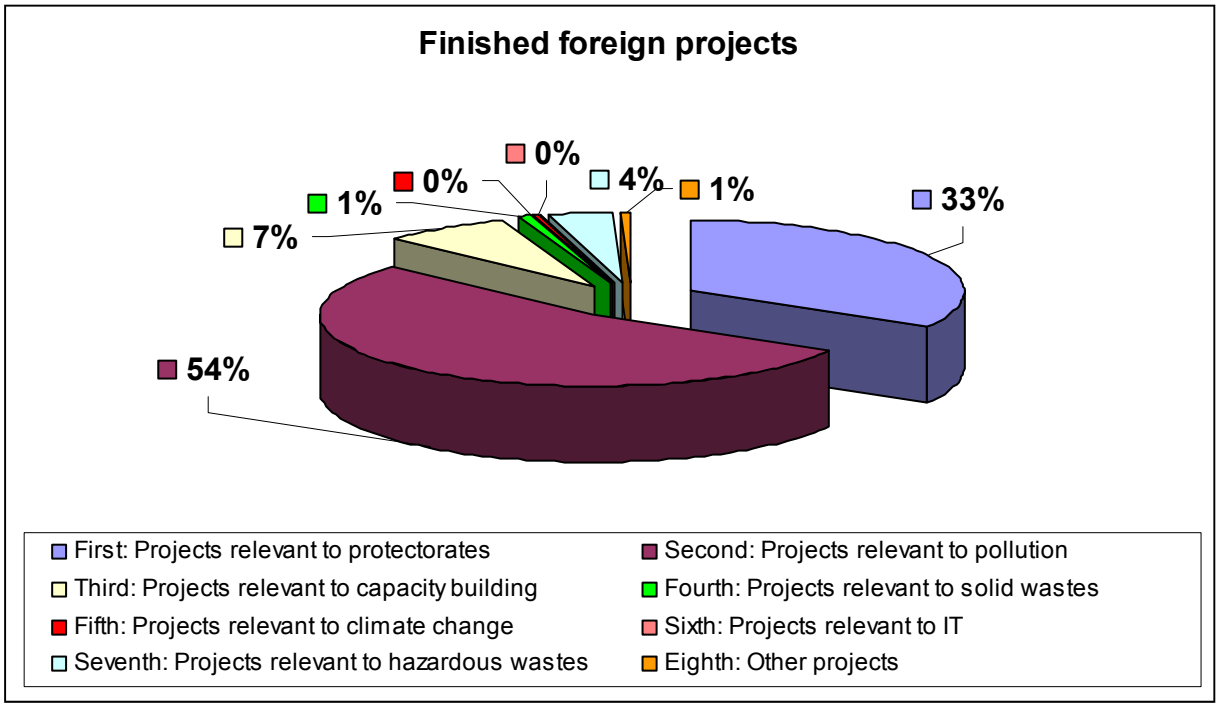
Third: Projects relevant to pollution
Fourth: Projects relevant to capacity building
Fifth: Projects relevant to IT
Sixth: Projects relevant to medical plants
Seventh: Projects relevant to solid and industrial wastes
Eighth: Projects relevant to wetland conservation
Ninth: Projects relevant to water
Tenth: Projects relevant to climate change
Eleventh: Projects relevant to biodiversity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Second: Projects relevant to pollution
Third: Projects relevant to capacity building
Fourth: Projects relevant to solid wastes
Fifth: Projects relevant to climate change
Sixth: Projects relevant to IT
Seventh: Projects relevant to hazardous wastes
Eighth: Other projects

List of Acronyms

AHED	Association for Health and Environmental Development
ALECSO	Arab League Educational, Cultural and Scientific Organizations
AMCEN	African Ministerial Conference On The Environment
ANC	Authority of New Communities
AOYE	Arab Office for Youth and Environment
APE	Association for the Protection of the Environment
ARFI	Arab Regional Financial Institution
ATM	Air Traffic Management
BASEL	Convention of BASEL (control of transboundary movements of hazardous wastes and their disposal)
BCM	Billion Cubic Meter
BOD	Biochemical Oxygen Demand
BOT	Build, Operate, and Transfer
B.S	Black Smoke
C&D	Construction and Demolition
CAIP	Cairo Air Improvement Project
CAMP	Coastal Areas Management Program
CAPMAS	Central Agency for Public Mobilization and Statistics
CBD	Central Business District
CBO	Central Business Organization
CDA	Community Development Association
CDM	Clean Development Mechanism
CEDARE	Center for Environment and Development for Arab Region and Europe
CEO	Chief Executive Officer
CEOSS	Coptic Evangelist Organization for Social Services
CFCs	Chlorofluorocarbons
CIDA	Canadian International Development Agency
CITES	Convention for International Trade in Endangered Spaces
CMS	Convention on Migratory Species
CNG	Compressed Natural Gas
CNS	Communication & Navigation Systems
CO2	Carbon Dioxide
COD	Chemical Oxygen Demand

CPM	Critical Path Method
DANIDA	Danish International Development Agency
DEM	Digital elevation Models
DFID	Department for International Development
DO	Dissolved Oxygen
DRC	Desert Research Center
DRI	Drainage Research Institute
ECEP	Energy Conservation and Environmental Project
ECES	Egyptian Center for Economic Studies
EEAA	Egyptian Environment Affairs Agency
EEC	Energy Efficiency Council
EEHC	Egyptian Electricity Holding Company
EEI	Emerging Environmental Issues
EEIF	Egyptian Environmental Initiatives Fund
EEPP	Earth Education Partnership Program
EESA	Egyptian Energy Service Association
EHMIMS	Egyptian Hazardous Materials Information and Management System
EIA	Environmental Impact Assessment
EIMP	Environmental Information and Monitoring Project
EIS	Environmental Information Systems
EMU	Environmental Management Unit
EMG	Environmental Management in the Governorates
EPAP	Environment Pollution Abatement Project
EPF	Environmental Protection Fund
EPM	Environmental Planning and Management
EQI	Environmental Quality International
ERF	Environmental Revolving Funds
ERSAP	Economic Reform and Structural Adjustment Program
ESP	Environmental Sector Program
EU	European Union
Eutrophication	Eutrophication is a condition in an aquatic ecosystem where high nutrient concentrations stimulate blooms of algae
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investments
FEA	Friends of the Environment in Alexandria
FEDA	Friends of the Environment and Development Association

FEI	Federation of Egyptian Industry
Faecal Streptococci	Kind of harmful bacteria
GCR	Greater Cairo Region
GDP	Gross Domestic Products
GEF	Global Environmental Facilities
GHG	Green House Gases
GHGRP	Green House Gases Reduction Project
GIS	Geographic Information System
GMA	Global Mercury Assessment
GMO	Genetically Modified Organisms
GOE	Government of Egypt
GOFI	General Organization for Industry
GOPP	General Organization for Physical Planning
GPA/LBA& MEDPOL	Global Program of Action for the Protection of the Marine Environmental from Land Bared Activities
GTZ	German Technical Cooperation Agency
GWS	Ground Water Sector
HACCAP	Hazardous Analysis & Critical Control Points System
HCRW	Health Care Risk Wastes
HCW	Health Care Wastes
ICA	Institute of Cultural Affairs
ICARDA	International Center for Agricultural Research in Dry Areas
ICCON	International Consortium for Cooperation on the Nile
ICC	Information and Computer Center
ICED	International Center for Environment and Development
ICT	Information and Communication Technology
ICZM	Integrated Coastal Zone Management
IDB	Islamic Development Bank
IDSC	Information and Decision Support Center
IFCS	International Forum on Chemical Safety
IPIS	The International Program on Chemical Safety
ISI	Import Substitution Industry
ISO	International Standard Organization
IT	Information Technology
JICA	Japanese International Cooperation Agency

LDC	Less Developed Countries
LIFE	LIFE program USAID/Egypt for Lead Pollution Clean-Up in Qalyoubia
LMO	Living Modified Organisms
LPG	Liquefied Petroleum Gases
M&E	Monitoring and evaluation
MALR	Ministry of Agriculture and Land Reclamation
MAP	Mediterranean Action Plan
MENA	Middle East and North Africa
MEAs	Multilateral Environmental Agreements
METAP	Mediterranean Environmental Technical Assistance Program
MHUUC	Ministry of Housing, Utilities, and Urban Communities
MLD	Ministry of Local Development
MLF	Multilateral Fund Secretariat
MOEE	Ministry of Electricity and Energy
MOFA	Ministry of Foreign Affairs
MOHP	Ministry of Health and Population
MOSA	Ministry of Social Affairs
MSEA	Ministry of State for Environmental Affairs
MSDS	Material Safety Data Sheet
MSWs	Municipal Solid Wastes
MSY	Maximum Sustainable Yield
MTBE	Methyl Terially Butyl Either
MWRI	Ministry of Water Resources and Irrigation
NAFTA	North America Free Trade Agreement
NAP	National Action Plan
NAPOE	National Association for Protection of Environment
NARSSS	National Authority for Remote Sensing and Space Sciences
NAWQAM	National Water Quality and Availability Management Project
NBI	Nile Basin Initiative
NC	National Communication
NEAP	National Environmental Action Plan
NEES	National Energy Efficiency Strategy
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization

NIOF	National Institute of Oceanography and Fisheries
NOPWASD	National Organization for Potable Water Sanitation and Drainage
NOU	National Ozone Unit
NRI	Nile Research Institute
NSS	National Spatial Strategy
NWC	National Women Council
NWRC	National Water Research Center
NWRP	National Water Resources Plan
OAU	Organization for African Unity
ODS	Ozone Depleting Substances
OEP	Organization for Energy Planning
OPEC	Oil Producing and Exporting Countries
ORDEV	Organization for Reconstruction and Development of Egyptian Villages
PAH	Poly Aromatic Hydrocarbons
PAP	Priority Action Program
PCB	Polychlorinated Biphenyl
PERSGA	Program for the Environment of the Red Sea and Gulf of Aden
PFTC	Department of Planning, Follow-up and Technical Cooperation
PIC	Prior Informed Consent
P&I	Protection and Indemnity
PM10	Particular Matter
POPs	Persistent Organic Pollutants
PPC	Policy Planning Committee
PPM	Part Per Million
PPP	Polluter Pays Principle
R&D	Research and Development
RAC	Regional Activity Centers
RBO	Regional Branch Offices
RFP	Request for Proposals
RIGW	Research Institute for Groundwater
RMP	Refrigeration Management Plan
SAICM	Strategic Approach to International Chemicals Management
SAP	Strategic Action Program
SCA	Supreme Council for Antiquities
SDU	Sustainable Development Unit

SEDO	Small Enterprise Development Organization
SEAM	Support for Environmental Assessment and Management
SFD	Social Fund for Development
SGP	Small Grants Program
SHW	Solar Hot Water
SMART	Scientific, Miserable, Attainable, Relevant and Trackable
SME	Small and Micro-Enterprises
SPAMI	Specially Protected Areas of Mediterranean Importance
TDA	Tourism Development Authority
TDS	Total Dissolved Solids
TLV	Threshold Limit Values
TOE	Ton Oil Equivalent
TSM	Total Suspended Matter
TSP	Total Suspended Particles
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Center for Human Settlements
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention for Climate Change
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
VET	Vehicle Emissions Testing
VOC	Volatile Organic Compound
WHO	World Health Organization
WB	World Bank
WRI	World Resources Institute
WTO	World Trade Organization

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