Acknowledgement

Danish International Development Assistance (DANIDA), its Environmental Sector Programme (ESP) and its Environmental Management Unit Component (EMU) who have funded the capacity building of EMUs including development of this Action plan implemented by EEAA extend its gratitude to all who contributed in developing the Environmental Action Plan of Giza Governorate.

We are keen to highlight the contributions of beneficiaries' working groups who participated in developing Giza Environmental Action Plan, based on our believe that the environmental action plan is only owned and managed by the sons of the governorate.

We also extend our gratitude and special thanks to General Engineer/ Sayed Abdul Aziz Shehata, Giza Governor, whose personal participation and kind support contributed a lot in developing the Environmental Action Plan of Giza Governorate.

Introduction

The Ministry of State for Environmental Affairs and its Implementing Agency has taken great steps towards deepening the concept of Environment, improving its conditions, and protecting the natural resources. Since the adoption of Environmental Action Plan 2002-2007 and starting implementing it with the first five-year plan 2007, and the second five-year plan 2008-2012, which we are in process now. These steps were demonstrated by the achievements of the Ministry and its Implementing Agency over the last three years, where a significant improvement on the environment was observed as well as balancing its systems.

In an integrated effort to the National Strategy developed by the Ministry and its Implementing Agency, the participation approach was adopted in developing environmental action plans, in addition to empowering the decentralization methodology, which the Government of Egypt and The Ministry of State for Environmental Affairs gave special attention as they believe in the necessity of collaboration among all ministries and governmental agencies with non-governmental organizations (NGOs) and community development associations (CDAs) to promote the environmental action. In this context, the Ministry of State for Environmental Affairs and its Implementing Agency supported the developing of Environmental Profile for each Governorate. Therefore, each governorate, with full support from the ministry, has developed its Environmental Action Plan, which it shall commit to implement within the jurisdiction of the governorate, taking into consideration handling the great challenges which it faces in light of the complexity of the sustainable development's triangle, with its three dimensions, socially, economically, and environmentally.

I'm pleased to praise the Environmental Action Plan of Giza Governorate which shall contribute significantly in solving the environmental problems and improving the different echo systems, in addition to protecting the natural resources and achieving the sustainable development.

In this context, I would like to thank DANIDA, ESP, SDEM and EMU components for the great efforts they exerted to support Giza governorate to develop its Environmental Action Plan.

Special thank you also goes to General Engineer/ Sayed Abdul Aziz Shehata, Giza Governor, and all gentlemen who participated in developing the plan, and for their

dedication and constructive efforts. I hope that the implementation of the proposed programs and projects in the plan shall enhance the environmental management systems, improve the environmental services, and preserve the natural resources to achieve the goals of the sustainable development.

Perhaps, what President Hossni Mubarak said that "Preserving the environment is not an entertainment or luxury any more, yet it became crucial to protect our resources for the coming generations", and which the Egyptian Constitution confirmed in its article no. (59) that "Protecting the environment is a national duty and laws shall regulate the procedures of keeping good environment", perhaps they give us great support to our joint work to keep sound environment for us and for our coming generations.

I ask our Lord to guide us to the benefit of our country and our environment.

Minister of State for Environment

Engineer/ Maged George

Introduction

The scientific planning based on information and data – collected and documented in reality, is among the basis which decision makers relay on when taking decisions and procedures to achieve comprehensive and sustainable development in all fields (social, economic, and environmental). In this context, Giza Governorate has completed the developing of its Environmental Profile in cooperation with EEAA and DANIDA EMU component. This Profile includes accurate description of the environmental profile in the governorate and the environmental impacts of the various economic fields. The profile concludes with accurate description of the main environmental problems in the governorate. In continuation of the fruitful cooperation between Giza governorate and the State Ministry of Environmental Affairs, an Environmental action Plan was developed withing the framework of DANIDA EMU component. This Plan includes proposals of number of environmental projects that contribute effectively in solving the environmental problems in the governorate. As we praise the constructive cooperation between Giza governorate and the Ministry of State for Environmental Affairs, we do hope that this Plan shall be put in place in accordance with the ongoing support of the Ministry to the environmental action in governorates, in order to effectively contribute to solve the environmental problems in Giza Governorate.

May God guide us.

Giza Governor

General Engineer/ Sayed Abdul Aziz Shehata

Giza Governorate
Environmental Management Unit (EMU)

Document of Reference

Environmental Action Plan

Giza Governorate

2007 – 2008

Prepared by: Giza EMU Team
In coordination with: EMU, EEAA

Introduction:

The environmental profile which was developed for Giza Governorate and which includes the framework of the environmental situation in the governorate and the main environmental issues and priorities in Giza is the basis to determine the main issues that affect the environment in the governorate. This Profile is the first part of the process of developing the environmental action plan of Giza governorate.

Developing the environmental action plan of the governorate depends primarily on the environmental issues which were determined based on the governorate environmental profile. It also equally depends on the results of the working groups meetings which were formed for that purpose and which include in its membership representatives of the service directorates in the governorate as well as various executive agencies in direct relations with such issues. They also include representatives of scientific and research agencies.

Working groups were divided into five groups which dealt with the following topics (water and wastewater – solid and hazard wastes – industrial pollution – air pollution from non industrial sources – agriculture and animal production). Several sessions were held for each working group, which discussed the environmental issues of each group and presenting solutions proposals for such issues, whether such solutions are procedures, legislations, or projects. Then each group developed document of reference including the discussions of the working groups' sessions and the proposals made by each group.

Acknowledgement

Giza EMU extends its gratitude and appreciation to all who contributed in developing the environmental profile of Giza governorate, which came in a form suitable to the unique position of great Giza governorate. The environmental profile resulted in the environmental action plan of the governorate, which shall handle the environmental problems in the governorate through procedures, legislation, and projects whether governmental or private. In this regard, we shall praise the working groups which contributed in developing this plan with their ideas and experience. We do hope that this plan shall achieve the goals of the executive and popular agencies of the governorates namely the environmental sanitation on the land of Giza to realize better tomorrow for Giza citizens.

Special thank you goes to:

1- Engineer/ Thana'a El Deep	Deputy Housing Minister in Giza
2- General/ Ismail Mahmud Farid	Chairman of Executive Agency of industrial and investment zones in Abu Rawash
3- Dr. Shakinaz Taha El Sheltawi	Manager of Environmental Researches and Studies – Cairo University
4- Engineer/ Rawia Ramadan Aly	Water operations manager – Giza Housing Department
5- Chemist/ Saber Abdul Rahman Ahmed	Quality control manager in the water Company

6- Engineer/ Hussein Shaban Korani	General Manager of Sanitary Drainage Department in Giza
7- Engineer/ Awad Mahmud Aboud	Manager of Return Projects Department – Cleaning and Beautification Authority
8- Engineer/ Sami Mahmud Saad	Deputy of Return Projects Department – Cleaning and Beautification Authority
9- Dr. Sayed Gad El Mawla	Manager of Vet Medicine Directorate in Giza
10- Professor/ Mahmud Mohamed Baghdadi	Manager of Agriculture Directorate in Giza
11- Dr. Mohsen Hussein Omar	Manager of Environmental health Department of Health Directorate in Giza
12- Mr. Abdul Fattah El Kashef	Manager of Planning and Follow up Department in Giza

Special thank you goes also to Dr. Aly Abu Seddira – Head of Branches Sector in EEAA and to Dr. Fatma Abu Shouk – Head of Environmental Management Sector of EEAA, and to Dr. Tarek Genena (EMU component consultant) and to Dr. Salah El Sherif (component manager) and to all ex managers of the component for their efforts and support they dedicated to the governorate represented by EMU.

Giza Governorate in the Environmental Profile

Giza Governorate is among the most important and oldest governorates of Egypt due to its deep rooted history in the ancient Egyptian civilization. It was the first capital of united Egypt (Manf) seven thousand years ago. Its monuments stand as witness on this history. It has one of the most important Pharos monuments and the most important historic monuments in the world that is Giza Pyramids, which is one of the world seven wonders, in addition to Sphinx and sun boats as well as Sakkara pyramid and another 30 smaller pyramids.

On the other hand, Giza is a first class agricultural governorate, as it has big spaces of agricultural lands of field crops, vegetables and fruits. It also has big number of poultry farms that contribute in increasing the poultry wealth countrywide.
It also has huge space of deserts either in eastern or western deserts within the administrative boundaries of the governorate.

Administrative sections of the governorate:

The total area of Giza is about 85.153 km^2 and the administrative space of the governorate is 13.184 km^2 out of which 1.191 km^2 is populated.
The governorate include rural and urban as well as Bedouin areas:

- 10 Markazs out of which 8 are located west Nile River: Kerdasa Markaz and city – Oseem Markaz and city – El Warak Markaz and city – Imbaba Markaz and Menshat El Kanater city – Giza Markaz and Abu El Nomrus city – Badrashain Markaz and city – Ayatt Markaz and city – Wahat (Oasis) Markaz and Bawiti city.
- 2 Markaz east to Nile River: El Saff Markaz and city - Atfeeh Markaz and city.

- 12 cities including the above mentioned cities as well as Giza city (the capital of the governorate) – El Hawamdyia.
- 7 districts (Hay) all are affiliated administratively to Giza city: north Giza – El Agouza – El Dokki – Boulak El Dakrour – El Haram (Pyramids) – El Umraniya-south Giza.
- 46 Shyiakha (small division), 51 local rural units, 170 satellite villages and 581 Kafr and Naga'a (small villages).

Regional Profile of Giza governorate:

Giza is one of the governorates of Greater Cairo Region, which includes Cairo, Giza and Kalubia governorates.

Giza governorate has its regional importance due to the following reasons:

1- Being one of the governorates of Greater Cairo gives it the features of the capital, as it ahs some important ministries and agencies, in addition to the existence of some embassies and consulates.
2- Giza governorate is a link between Lower Egypt and Delta governorates on one hand and Upper Egypt governorates on the other hand. It also links Greater Cairo governorates to Alexandria and Mersa Mattrouh governorates, as it has the Miser-Alexandria desert road, which links it to Alexandria governorate.
3- Giza governorate has scientific and researches importance among Egypt governorates, as it has on its land number of great scientific institutions that are:

1) Cairo University, which is the oldest Egyptian and Arab universities.
2) National Center for Researches.
3) Agricultural Researches Center.
4) Vaccine and Serum Researches Center.
5) Tudor Belharis Institute for Researches.

In addition, there are other scientific and Researches institutions as well as number of scientific museums which receive ten of thousands of visitors such as the Agriculture Museum in Dokki and the Zoo of Giza. Also, there are Orman Gardens which is among the most important places in Egypt. The new Egyptian Museum is now under construction next to Giza three pyramids.

1- Giza Environmental Action Plan as Strategic Frame work:

1-1 Introduction and orientation:

The environmental action plan of the governorate is the applicable translation to solve the environmental problems in the governorate, which was developed by the end of the environmental profile of the governorate.

Developing the environmental action plan depends primarily on the environmental issues which were determined based on the environmental profile of the governorate and it also depends equally on the outcomes of the meetings of consultative working groups which were formed for this purpose which included representatives from the service directorates in the governorate and the executive agencies in direct relation with such environmental issues as well as representatives from scientific and Researches institutes.

1-2 Why do we need action plan?

The existence of a plan that is developed using a scientific approach based on real and accurate data and includes priorities of implementation is a must and urgent need for the decision maker starting from EMU manager in the governorate, higher political leaderships and ending with the governor (the highest political leadership in the governorate) to enable all of them in their positions to make the right decision in the right time.

Therefore, the environmental action plan of the governorate is the effective tool which enables the environmental officials in the governorate to take the decisions to solve the urgent and top priority environmental issues in line with the available resources. On the other hand, the dissemination of the governorate plan to implement environmental projects with economic nature is a motive and incentive to local and foreign donors and to the investors to implement such projects to benefit from the economic returns and to achieve the expected environmental benefits to the ambient environment and to citizens.

1-3 How the environmental action plan of the governorate was developed?

The working team of EMU classified the environmental issues included in the environmental profile into sub groups, each has working group which includes experts. These groups were divided into the following:

- Working group for water and wastewater field.
- Working group for solid and hazard wastes.
- Working group for industrial pollution.
- Working group for pollution from non industrial sources.
- Working group for agriculture and livestock.

Five members of EMU working team were selected to appoint each of them as a secretary for each of the formed working groups.

Thus, number of brain storming meetings was held for each working group attended by its members. Every secretary of each group was provided with data and statistics that outline the scope of each problem and determine the investment cost of each project to solve it. The meetings came up with a vision to solve the environmental problems of each group through activating procedures or developing legislations or proposing projects, either governmental or private.

The document of the environmental action plan was discussed with the component consultant, where he asked for clarifications of some points and made some remarks that were taken into consideration and the document was modified according to his recommendations.

It is worth noting that the priorities of the proposed projects in the plan were set up according to popular questionnaire which was implemented during the development of the environmental profile.

On the other hand, promptly after the Higher Environmental Committee endorses the plan, we shall invite Egyptian and foreign investors to attend the first environmental investing conference of Giza governorate to market the proposed projects to solve the environmental problems in the governorate.

1-4 Future vision for year 2012:

- It is expected to review the environmental return of the environmental projects to be implemented to handle the environmental problems included in the environmental profile and to restructure such projects to achieve its goals.
- Database shall be developed to include all activities within the governorate and to be updated annually to enable developing sound environmental profile and environmental action plan.
- It is expected that EMU working team shall coordinate with all executive and research agencies in he governorate to update the data of the current environmental profile and to finalize the new profile by 2012.
- It is expected to develop new environmental action plan for the governorate by 2012 to solve the environmental problems included in the new profile.

1- Water and Wastewater

1- Background

The population of Giza governorate according to the estimated count at the end of 2006 is about 5.817.185 capita. They obtain potable water from two sources: Nile River and its branches and the ground water through wells. Giza governorate gave top priority to water projects by developing integrated plan to implement new projects of water supply, in addition to rehabilitate and replace the existing networks in both rural and urban areas. On the other hand, with the interest of the governorate in implementing its various developmental plans and programs, the sanitary drainage sector witnessed great development through implementing projects to get rid of frequent wastewater flow down streets in some areas and to provide deprived and slum areas with the service.

This is an addition to the general state trend over the past two years to expand in building potable water plants and extend water and wastewater services to the deprived areas countrywide, which the country has allocated big budgets to provide all deprived villages and areas by the end of 2008 with water and wastewater services. Generally, the population of centers and cities of the governorate enjoy the service of potable water, which covers big number of cities and villages. The total length of the pipes of water networks is about 3584.6 linear km, which transfer 503.022 m^3 of potable water for about 3.698.491 capita. The average water consumption per capita in the governorate is 200-220 m^3 / day in cities and 165-185 m^3 / day in villages and 280-300 m^3 / day in new cities.

The sanitary drainage service covers the entire Giza city, where there is a good wastewater network which covers the city seven districts. The number of households in urban areas in the governorate, which have wastewater service from the general network, is 144.208, while there are 66.260 households with private wastewater services (The Central Agency for Public Mobilization and Statistics 2005). Yet, due to the rapid increase of population in the governorate and the increased pressure on the different utilities, it is a must to expand in providing residential areas with such utilities. Therefore, Giza governorate implemented number of projects to upgrade wastewater services in urban areas in addition to the current projects and the planned ones for the future by the water company of Greater Cairo under the short-term, Shrouk, and investment plans.

On the other hand, many rural areas suffer from the lack of public wastewater service and depend on trenches system or directly dispose wastewaters through pipes from the houses into the waterways.
The annual report of Central Agency for Public Mobilization and Statistics (2005) said that the number of households in rural areas which have wastewater service through public networks is 53.436 at 17.31% out of the total households in the rural sector, while 255.271 households at 82.69% have non public wastewater services.

2- Achievements over the last five years:

2-1 Decrees and procedures:

Decree no. 7513, year 2005 was issued by the Governor, forming a joint committee, which includes representatives from Housing and Population Directorate in the governorate, Greater Cairo Water Utility, EEAA Branch of Greater Cairo and Fayoum, and EMU in the governorate. The committee is competent to visit water purification plants (artisan and mobile) within the jurisdiction of the governorate and take samples from the inlets and outlets of these plants to verify its compliance with the specifications and to determine the procedures to be taken to make the water quality in compliance with the standard specifications.

First: Portable Water:

- Number of projects was implemented to improve potable water quality in north pyramids area in addition to the expansions of Imbaba water plants and networks upgrading in the Church area as well as building a main line of pipes at 28 km length from Imbaba water plant to Rimaya (Shooting) square.
- New plants were built to purify water in Abu El Nomros, Ayatt, and Atfeeh.
- Water project was completed to provide 19 deprived villages with water in Menshat El Kanater, Badrashain, and Ayatt Markazs.

Second: Wastewater:

- Forcemain networks were extended to the Church area with 18 km length and foremain line of 650 m to serve the areas of Church, Monieb, Othman Moharam, and Sidi Ammar including building a pumping station in the Church area.
- Networks were extended in Abu El Fottouh area with 3.5 km length.
- Church pumping station was built.
- Bekbashi pumping station was built.
- Wastewater service was improved in Bain El Sarayat area in Dokki.
- Wastewater lines were rehabilitated in the area behind Imbaba police station and in Sidi Salem Street, north Giza, with 1.5 km length.
- Sludge line project from Zinain plant to Abu Rawash at 13 km length was implemented.

2-2 Technical and administrative support:

- Competent company for potable water shall be established within the governorate jurisdiction to be affiliated to the Greater Cairo Water Holding Company, to supervise water plants in the cities and Markazs of the governorate.

2-3 Implemented projects and programs:

- 130 potable water projects were implemented as well as 70 wastewater projects in Markazs and cities of Giza governorate.

2-4 Projects and programs under implementation:

- 120 potable water projects and 71 wastewater projects are currently under construction in the Markazs and cities of the governorate.

3- Current situation: Problems and causes:

Current Situation	Significant problems and negative impacts	Main causes of the problem	Current plans or programs to handle the situation
Expansion in using water tanks on the roof of residential, governmental and private buildings	Polluted water in the tanks which endanger the public health	- Water stability in the tanks - Technical defects in the design or construction of the tanks - Poor maintenance and disinfecting.	- Tanks to be inspected by Environmental health inspector - Greater Cairo Water Utility, based on a request from landlords, disinfects the tanks against certain fees.
Lack of water networks and some are very old	Deterioration of networks result is polluting water due to exposure to mixing with wastewater from drains and canals and other pollutants, which endanger the public health	- Poor manufacturing and technical defaults in design and construction. - Insufficient isolation of the networks. - Networks are near drains and canals and wastewater lines. - Poor maintenance of the networks. - Old age of these networks.	- Rehabilitation of old networks by Greater Cairo Water Utility and conducting regular maintenance. - Ongoing inspection of water and assessing quality control standards by environmental health inspector. - Purchasing plastic pipes with different diameters and accessories, water leakage detecting devices, and extending networks to the deprived areas.
Lack of plants in some areas and bad conditions of some existed plants.	Due to population increase and expansion of residential areas, excluded from the urban planning, this needs to provide water, which	- Old age of the plants. - Poor maintenance and disinfection of the plants. - Lack of resources for	- Expanding and rehabilitating the existing plants - Regular maintenance by

	put more burdens on the existing plants, which requires building many more plants to meet the needs of the citizens from clean potable water.	maintenance or purchasing its materials.	competent authorities. - Building plants in the deprived areas. - Rehabilitating water plants.
Lack of wastewater plants in different areas which let citizens to build non isolated trenches in addition to the deterioration of some existing plants	Polluting potable water due to its mixture with leaked wastewater in addition to polluting the ground water with wastewater leaked from the non isolated trenches.	- Old age of the networks. - Poor maintenance and disinfection of the plants - Poor manufacturing and technical defaults in design and construction. - Insufficient isolation of the networks	- Building wastewater treatment plants. - Purchasing equipment for wastewater service (e.g. trucks, tanker, tires, mosquito killer). - Constructing pumping and purification stations and extending networks and forcemains. - Regular maintenance for the networks and plants.

4- Vision and goals:

1- Expansion in establishing potable water plants all over the governorate.
2- Extending potable water networks to all areas in the governorate, especially the deprived areas.
3- Adopting a program to clean water tanks on the roofs of buildings and also clean and disinfect the public water tanks.
4- Upgrade wastewater networks within the governorate.

5- Targets and required works:

Main goal	Targets of next five years to achieve the main goal	Decrees, procedures, institutional support, projects and programs required to achieve the targets
Covering all deprived areas with water and	- Expanding the erection of water purification plants all over the governorate.	- Actual operations of Giza Water Company, affiliated to Water Holding Company of

wastewater service.	- Extending purified potable water to all areas in the governorate, especially the deprived ones.	Greater Cairo to supervise water plants n the Markazs and cities of the governorate.
Ensure providing citizens with pure potable water.	- Adopting a program to clean water tanks on the roofs of buildings and also clean and disinfect the public water tanks	- Issuing a decree to oblige Landlords Unions of the Buildings which have water tanks to contract specialized companies to clean the tanks regularly.

6- List of proposed projects incorporated in the five-year plan

Top priority projects

Proposed project	Competent authority	Proposed agencies to implement the project	Estimated budget	Timeframe	Proposed funding agencies
1- Roof Water Tank Cleaning Project by private company	Governorate	-SFD or Fresh Graduates Employment Fund - Establishing a private company employing fresh graduates (Faculty of Sciences) to clean, disinfect and maintain the water tanks under supervision of Health Directorate (Environmental Health)	Under study	6 months – one year	SFD or Graduates Employment Agency
2- Project to increase safety rates in the water plants that use chloride	Governorate	- EPF or SFD to finance the project - Housing Directorate. - EEAA.	Under study	6 months – one year	- EPF or SFD to finance the project
3- Wastewater Network Upgrading Project in slum areas with frequent wastewater overflow in Tawabek and Andalus area in the pyramids	-Wastewater Utility	-Wastewater Utility -Governorate	LE300.000	6 months	50% from Wastewater Utility + 50% from the governorate and the public
4- Purchasing big vacuum of 10 m^3 capacity to suck wastewaters from deprived villages	-Wastewater Utility	-Wastewater Utility. -Local Units.	LE350.000		EPF + Wastewater Utility + Local Units
5- Upgrading chloride system in artisan water purification plants to use liquid chloride instead gas chloride	-Giza Water Company	- Giza Water Company	LE60.000 per unit		Giza Water Company

7 Description of priority projects or programs:

7-1 Roof Water Tanks Cleaning Project:

Problem description:

- Many buildings and residential and service establishments place water tanks on the roofs to collect and store potable water and keep its natural and chemical features.
- Due to the fact that some of these tanks are not complying with health requirements or may encounter physical or chemical changes, which shall result in polluting potable water.

Project description and components:

The proposed project depends on the idea of forming a private company to provide the following:

- Cleaning and disinfecting water tanks on the roofs of the buildings through contracting landlords or owners unions or the managers of the establishments which have water tanks on its roofs.
- Provide regular maintenance service to the water tanks.
- Provide scientific and technical advice to the landlords when establishing, replacing, or maintaining the tanks.
- This project is proposed to be under the supervision of Health and Housing Directorate in Giza and funded by SFD.
- It is proposed that the fresh graduates of scientific faculties shall be employed in this project.
- Upon establishing the company, it is proposed to present it to the Local Popular Council of the government to set up the fees and to oblige landlords to pay it.

Project Implementing Agency:

- Health and Population Directorate in Giza – SFD – Fresh Graduates Employment Agency.

7-2 Project of upgrading safety standards in water plants that use chloride:

Problem Description:

- Due to frequent leakage of chloride gas from the plants that use chloride to purify the water, which is dangerous to the workers in such plants and to the near residential areas.

Project Description:

- Make an inventory of water plants within the governorate excluding Giza city.
- Study the project of upgrading safety standards from the technical viewpoint with EEAA.
- Offer the project idea through open tender to competent private sector companies.

- Receiving bids from the companies supported with technical and financial offers.
- Examine the bids and select the best one.
- Implement the project through the fresh graduates.

Project Implementing Agencies:

- SFD is to finance the project.
- EPF.

7-3 Project of upgrading wastewater network in random streets in Tawabek and Andlus area in Pyramids:

Problem Description:

- Due to deterioration of wastewater networks in the slum areas in the governorate, which result in frequent overflow of wastewaters in these areas, which mean that such networks must be rehabilitated.

Project description and components:

The proposed project depends on upgrading wastewater networks of the random streets that suffer from frequent overflow of wastewaters in Tawabek and Andalus area through rehabilitating and renovating the networks and increase its capacity as per the following:

No.	Street name	Length (m)	Current diameter	Required diameter	Cost
1	Sheraton Street in Tawabek	300 m	7"	12"	LE140.000
2	Hassan Allam Street in Trabie'e	150 m	7"	9"	LE60.000
3	Hassan Badrawi Street	200 m	7"	12"	LE90.000
4	Napoleon sub street in Tawabek	30 m	6"	9"	LE10.000
Total					LE300.000

- This project is proposed to be under the supervision of Wastewater Company of Greater Cairo, West Nile Sector.
- It is proposed that the fresh graduates of scientific faculties shall be employed in this project.
- Upon establishing the company, it is proposed to present it to the Local Popular Council of the government to set up the fees and to oblige landlords to pay it.

Project Implementing Agencies:

- Wastewater Company of Greater Cairo, West Nile Sector.
- Local Units of such areas.

7-4 Project of upgrading chloride systems in artisan water purification plants to use liquid chloride instead of gas chloride:

Problem Description:

- Due to frequent leakage of chloride gas from the plants that use it to purify water, which is dangerous to the workers of such plants and residents of the near areas.
- Due to the difficulty of using gas chloride cylinders for the workers in the water purification plants.

Project Description:

It is a treatment system to treat potable water with hypo chlorite sodium as follows:

- A pump to inject chemicals.
- Polyethylene tank of limited capacity with all accessories and non-return valves of polyethylene with all fittings as technically required.

Project Implementing Agencies:

Giza Water Company.

2- Solid, medical, and hazard wastes

1- Background:

Population of Giza governorate according to the estimated count by the end of 2006 is about 5.817.185 capita. Solid municipal wastes quantity is about 5095 tons per day, where the rate of wastes generation in urban areas is 0.945 kg/person/day. It is expected to be 1.00 kg/person/day in 2010, while the wastes generation rate in rural areas is 0.65 kg/person/day.

Solid wastes management issue is among the serious issues that face the environmental management in Giza governorate. The seriousness of this issue comes from the huge quantities of wastes and its increase every year, the variation of such wastes and its components and sources, and the shortage of the resources of the managing bodies to handle all such wastes. In addition, the resulted big accumulations represent serious problem facing the local authorities and needs tremendous efforts to eliminate this problem. Individual and corporate behaviors contribute a lot to aggravate the problem, in addition to lack of environmental and hygiene awareness of the individuals and officials of organizations and institutions and their low appreciation of the importance of the problem and methods of handling it.

The most serious factor of this issue that it was not managed in an integrated way, as a series of linked works and tasks that require unified management, but it was handled by various and different bodies and institutions of no unified management. Wastes collection is assigned to different individuals or institutions that use different methods in wastes collection, while the transportation of wastes is handled by other entities, some of them use open trucks which scatter the wastes and some other use special trucks for waste transportation.

The scope of the solid wastes problem in Giza city is different from the rest of the governorate Markazes and cities, as it is less serious because the wastes collection is handled by specialized companies as well as the General Authority of Cleaning and Beatification in Giza. Waste collection in the governorate Markazes and cities depend on the efforts of the local units with its modest resources, which can not meet the actual needs of the residents of such Markazes and cities.
On the other hand, Giza governorate has no landfills, but it has controlled dump in Shubrament in Abu El Nomrous Markaz and city, which belongs to the General Authority of Cleaning and Beatification in Giza, with 714 feddans as total area. Two sites in Shubrament dumpsite were assigned to be rehabilitated and to establish two landfills. EIA was submitted to EEAA for the two sites, as they are complying with all the environmental requirements. Obstacles encountered implementation include the rejection of Monuments Authority, as the land assigned for the two companies is included in the Decree no. 90, year 1978 (Public utility, monuments). Excluding this area from the limits of the Decree is underway.

Also, there are some random dump sites in the desert backyard that belong to local units of some markazs and cities of the governorate, where they are used to dispose solid wastes being collected from local units. The waste is buried and covered with sand or they are burnt as in Ayatt, Saf, Attfeeh, and Wahat markazs.
Among the most serious issues related to solid wastes sector in Giza governorate is the safe disposal of medical and hazard wastes. The governmental hospitals in the governorate include 11 incinerators with total capacity of 3095 kg of medical wastes, which does not represent a big portion of the medical wastes of the governorate. These incinerators are operating using different systems and capacities. Some of them are even not working currently. The final disposal of the incineration residue represents a problem, as there is only the Shubrament public dumpsite to dispose such residue.

Generally, we can summarize the environmental problems in Giza governorate as follows:

1- Lack of integrated system for solid wastes management in the governorate.
2- Insufficient equipment and machines of collecting and transportation of wastes, either in the General Authority for Cleaning and Beautification or in cleaning departments in the Local Units which are not covered by the service of the General Authority.
3- There are no landfills in the governorate and wastes are disposed through dumping it is Shubrament controlled dumpsite.
4- Lack of integrated system to dispose hazard wastes (medical – chemical – slaughterhouses wastes – etc).
5- There are farms to raise begs in Ard El Lewa'a, Barageel, and Saftt El Laban areas This is a big problem due to the accumulation of wastes, where waste collectors sort the waste and feed begs.

2- Achievements in the last five years:

2-1 Decrees and procedures:

- A decree was enforced to collect service fees against collecting and disposing wastes through adding the fee to electricity bill (law 10, 2005) in Giza city.
- Two projects were implemented to remove the accumulations of solid wastes as follows:

  First: Accumulations Removal Project was implemented in cooperation with SFD during the period from 15/9/2002 through 12/5/2003 with total cost of LE800.000, where a quantity of 104.915 tons was removed as follows:

- Within Giza city, 72.915 tons of accumulated wastes were removed.
- Within Oseem markaz and city, 18.000 tons of accumulated wastes were removed.
- Within Warrak markaz and city, 5.760 tons of accumulated wastes were removed.
- Within Giza markaz and Abu El Nomrous city 8.240 tons of accumulated wastes were removed.

Second: Coordination took place between the governorate and EEAA and National Service Agency of the Armed Forces to make inventory for the historical accumulations within the governorate. The accumulations quantity in the governorate amounted to 3 million cubic meter. During year 2005, 1.9 million cubic meters of such wastes were removed on three phases, where about 38.523.38 tons of these wastes were removed during 2006.

2-2 Technical and administrative support:

- The Ministry of State for Environmental Affairs, through the Cabinet, supported the General Authority for Cleaning and Beautification with equipment of LE10 millions during year 2006.

2-3 Implemented projects and programs:

- Two specialized cleaning companies were contracted to collect, transport and final disposal of wastes in Giza seven districts. One of the two companies withdrew and the other still working (International Company for Environmental Services), which works in the districts of north Giza, Dokki, and Agouza.
- Seven local specialized were contracted to work in collect, transport and final disposal of wastes in the districts of Umranyia, Haram, south Giza, and Bulak El Dakrour
- Soil Wastes Management project was implemented in El Regha – Abu Swair – El Badrashain area with one million Egyptian pounds funding from the Swiss Fund. The Egyptian Society for Heroes of Ability and Toleration implemented the project and is collecting the service fees from the citizens.

2-4 Projects and Programs under implementation:

- A detailed study is underway by the governorate, ministry of environment, housing ministry, and local development ministry to develop an integrated solid management system (collection, transportation, sorting, disposal, and recycling) at the level of the governorate.

3- Current situation: Problems and Causes:

Current Situation	Significant problems and negative impacts of the current situation	Key reasons of the problem	Current plans or programs to handle the current situation
Lack of integrated system and general plan for solid wastes management	- Wastes accumulations in various places. - Self ignition of wastes, which causes the black cloud phenomenon.	- Disability to collect all the generated wastes daily, which results in accumulating the wastes. - No enough public awareness, as they dump the wastes randomly.	- A detailed study is underway by the governorate, ministry of environment, housing ministry, and local development ministry to develop an integrated solid management system (collection, transportation, sorting, disposal, and recycling) at the level of the governorate.
Lack of integrated system for medical and hazard wastes management	1- No sorting of medical and hazard wastes of hospitals, clinics, and medical centers from the solid wastes. 2- Leakage of some medical wastes from medical centers and clinics (especially plastic disposable syringes) to be recycled illegally.	- No enough awareness of collectors of hospital wastes. - Lack of laws which oblige hospitals, clinics, and medical centers to sort medical wastes from source and dispose it safely.	-Collection is done by the General Authority for Cleaning and Beautification and the Italian Company, but the system is not integrated.
There are historical accumulations in various	-Wastes self- ignition causes the black cloud phenomenon.	- No daily collection for the generated wastes, which	- A project to remove waste accumulations is

places in the governorate		result in accumulations. - No enough awareness of citizens, who dump the demolition and solid wastes randomly.	underway in cooperation with the governorate EEAA and National Service Agency of the Armed Forces. - Coordination is underway with Construction and Housing Research Center to list all accumulations of demolition wastes and how to benefit from it.
No landfills to dispose wastes except for one controlled dumpsite for solid wastes in Shubrament and some random dumpsites.	1- Wastes accumulation in various places in the governorate. Wastes self- ignition causes the black cloud phenomenon.	There are administrative obstacles and others related to state ownership of the land, all made it difficult to find sites with environmental requirements to establish landfills.	-Various locations are being studied to establish landfills for solid and hazard wastes.
No enough recycling plants in the governorate.	1- There are big quantities of unused solid wastes, which are a burden on waste collection and transportation system, which result in waste accumulation.		
There are farms to raise begs in Ard El Liwa'a, Barageel, and Saftt El Laban areas This is a	1- There are many cages of waste collectors and begs farms, which spread bad odors and increase the risk of self-ignition of the accumulated wastes. 2- Begs are the mediator of Bird		- A presidential Decree is being processed to remove begs farms from Greater Cairo governorates to Wadi El Dabab, east of 15th

big problem due to the accumulation of wastes, where waste collectors sort the waste and feed begs.	Flu virus, which increases the risk of the virus to endanger human beings after being changed.		of May City.
No enough awareness of the workers of solid wastes, as there are no training courses for them. Also, no enough awareness of citizens, who dump the wastes randomly.	-١Wrong behaviors of citizens who dump wastes in streets, roads, and empty lands.	-Lack of public awareness programs on how to deal with solid wastes. The culture of wastes segregation from source needs to be promoted to ensure that wastes are not spread or accumulated in the streets and to handle any new technology in the field of solid wastes.	- Coordinating with NGOs to develop public awareness programs for citizens and workers n the field of waste collection to inform them of the concept of the waste sorting from source and waste recycling.

4- Vision and goals:

1- Developing integrated system for solid wastes management in the governorate including (collecting and sorting wastes at source – wastes transportation – recycling the recyclable wastes through establishing compost plants and plants to recycle glass, plastic, and paper – final disposal of wastes through sanitary landfill).
2- Developing integrated system for safe disposal of medical and hazard wastes in the governorate including wastes collection, sorting, and transportation by specialized and equipped vehicles and dispose it by incineration or sterilization and then to be disposed in the landfills.
3- Promoting environmental awareness of citizens to change their behaviors in handling solid wastes.
4- Promoting environmental awareness of the workers of solid wastes.
5- Activating the existing legislations and make it obligatory for hospitals, clinics, and health centers so as to force them to segregate hazard medical wastes in colored bags and to contract companies or organizations specialized in the field of collecting, transporting, and safe disposal of hazard medical wastes through incineration or sterilization and then in the landfill. Also, the governorate shall – through open tender – contract a specialized company in hazard and medical wastes management.

5- Targets and required works:

Main goal	Targets of the next five years to achieve the goal	Decrees, procedures, institutional support, projects, and programs required to achieve the goal
Developing an integrated system for solid wastes disposal in the governorate including (collecting, sorting, transporting, recycling and final disposal) and building landfills.	1 -Developing integrated system for solid wastes management in the governorate including (collecting and sorting wastes at source – wastes transportation – recycling the recyclable wastes through establishing compost plants and plants to recycle glass, plastic, and paper – final disposal of wastes through sanitary landfill).	----------
2- Developing integrated system for safe disposal of medical and hazard wastes in the governorate	6- Developing integrated system for safe disposal of medical and hazard wastes in the governorate including wastes collection, sorting, and transportation by specialized and equipped vehicles and dispose it by incineration or sterilization and then to be disposed in the landfills. Also, the governorate shall – through open tender – contract a specialized company in hazard and medical wastes management.	----------
3- Promoting environmental awareness of citizens through awareness programs to change their behaviors in	1- Developing integrated program for public awareness in coordination with the General Authority for Cleaning and Beautification in Giza, EEAA, and NGOs.	----------

handling solid wastes.		
4- Promoting environmental awareness of the workers of solid wastes.	1- Developing integrated program for public awareness in coordination with the General Authority for Cleaning and Beautification in Giza, EEAA, and companies working in the field of solid wastes management.	----------
5- Developing new legislations (laws or decrees) in the field of solid wastes management.	1- Activating the existing legislations to make it obligatory for hospitals, clinics, and health centers so to segregate hazard medical wastes and to contract companies or organizations specialized in the field of collecting, transporting, and safe disposal of hazard medical wastes.	----------

6 List of the proposed projects:

High priority projects

Proposed project	Responsible agency	Proposed implementing agencies	Estimated budget	Timeframe	Proposed donors
1- Establishing a company to collect, transport, and safe disposal of medical and hazard wastes.	Governorate	- Private sector - Civil society organizations			
2- Establishing a factory to recycle solid wastes (glass – plastic – paper)	Governorate	- Private sector - Civil society organizations			

3- Operating composting factories belonging to General Authority for Cleaning & Beautification	Governorate	- Private sector			
4- Establishing composting factory using organic wastes.	Governorate	- Private sector - Civil society organizations			
5- Building two landfills for solid waste disposal, one in northern part and the other in southern part of the governorate.	Governorate	- Private sector - General Authority for Cleaning & Beautification			
6- Utilizing Methane gas generated from wastes dumpsite in Shubrament.	Governorate	- Private sector			

7 Description of priority projects or programs:

7-1 Establishing a company to collect, transport, and safe disposal of medical and hazard wastes:

Problem description:

Lack of integrated system to dispose hazard wastes generated in the governorate (medical wastes –chemical wastes – slaughterhouse wastes – etc) and some people recycle it which is very danger for the persons who deal with such products.

Project description and components:

- The project idea shall be offered to private companies in open tender. The selected company shall establish integrated system for hazard and chemical medical wastes as well other wastes. This system shall provide services of collecting wastes and transporting it to assigned place to be treated by incineration or through chemical treatment or other methods and then to be disposed in the sanitary landfills. Such companies shall employ fresh graduates from scientific faculties (Sciences – agriculture – pharmacology - etc)

Project implementing Agencies:

- Giza governorate represented by Health Directorate in Giza – private companies interested in the project.

7-2 Solid wastes recycling factories (glass – plastic – paper):

Problem description:

Due to the increased solid wastes generated in the governorate which amount to 5095 tons per day, including 1324 tons of paper and 305.7 tons of plastics and 127.4 tons of glass representing big burden on the process of transporting and disposing in wastes landfill in Shubrament, so on sorting such wastes at source, we can reuse them and produce some products, which achieve economic returns and improve the disposal of the solid wastes as well as reduce the burden on those who transport the wastes and dispose it in the landfill in Shubrament.

Project description and components:

The project depends on using the recyclable household wastes, which we propose that the implementing company should collect it from houses directly against some cash to be paid to the citizens to simulate them to sort the wastes at source. This should be done after promoting the residents awareness of the idea of sorting the waste at source and put them in special bags. Organic wastes shall be delivered to the waste collectors to dispose it in the landfill.

Project components:

- It is proposed to submit the project to investors through an advertisement in the national newspapers to ask them to submit their technical and financial offers to implement the project.

- Bids to be received from investors and study them.
- Select the best offers technically and financially according to the terms of the governorate.
- The implementing company is to establish the required buildings and provide the necessary equipment.
- The project shall then be started.

Project implementing Agencies:

- Private sector, on a condition that a percentage of the return shall be assigned to the governorate (General Authority for Cleaning and Beautification) to be used in improving the service and upgrade the performance of the solid wastes management system in the governorate.

7-3 Establishing factories to produce compost from organic wastes:

Problem Description:

Due to the increased solid wastes generated in the governorate which amount to 5095 tons per day, including 2394.7 tons of organic wastes, representing big burden on the process of transporting and disposing in wastes landfill in Shubrament, so on sorting such wastes at source we can reuse such wastes in producing high quality compost, which is used in improving agriculture production by adding it to the agricultural crops.

Project description and components:

This project is proposed to include two parts:
First: Rehabilitating compost factories belonging to General Authority for Cleaning and Beautification in Shubrament dumpsite, which are out of order now.
Second: Within the framework of the plan of utilizing wastes, it is necessary in the next stage to establish two composting factories at least, and we propose that their locations shall be in Menshat El Kanater and El Saff.

As for the project description and components:

- It is proposed to submit the project to investors through an advertisement in the national newspapers to ask them to submit their offers.
- Bids to be received from investors and study them and selecting the best offers according to the terms of the governorate.
- The project shall then be started.

Project implementing Agencies:

- Private or public companies specialized in this field.

7-4 Building two sanitary landfills for solid wastes, one in the northern part and the other in the southern part of the governorate:

Problem Description:

Due to the increased solid wastes generated in the governorate which amount to 5095 tons per day, which are increased rapidly due to the increase of the population, and due to

the long distance between Shubrament landfill and the northern markazs of the governorate (Menshat El Kanater – Oseem – El Warak – Kerdassa) on one hand and the southern markazs (El Ayatt – El Saff – Attfeeh) on the other hand. Therefore, it is urgent to build these two sanitary landfills to facilitate the waste transportation from the aforementioned makazes to safely dispose them in the proposed two sanitary landfills. Income sources to the implementing company shall come from (collecting certain fee against allowing wastes collection trucks to enter the landfill and dispose the wastes. The fee shall be determined according to the contract with the governorate – the implementing company can utilize the methane gas which is expected to be generated from the controlled sanitary landfill of slid wastes).

Project description and components:

- It is proposed to submit the project to investors through an advertisement in the national newspapers to ask them to submit their offers.
- Bids to be received from investors and study them and selecting the best offers according to the terms of the governorate.
- Suitable locations shall be selected and assigned, in addition to starting preparing them to implement the project.
- The project shall then be started.

Project implementing Agencies:

- Private sector.

7-5 Utilizing the methane gas generated from Shubrament landfill:

Problem description:

Due to the accumulation of solid wastes in the sanitary landfill in Shubrament and due to the decomposition of such wastes, the methane gas is produced, which is a flammable hydrocarbon gas when exposed to oxygen and which result in self-ignition of the disposed wastes.

Project description and components:

The project includes utilizing methane gas generated from Shubrament landfill as a source of clean energy within the context of Kuto Agreement for Clean Development.

- It is proposed to submit the project to investors through an advertisement in the national newspapers to ask them to submit their offers.
- Bids to be received from investors and study them.
- Select the best offer according to the required technical and financial terms.
- The project shall then be started.

Project implementing Agencies:

- Private sector.

3- Industrial Pollution

1- Background:

Giza governorate is among the big industrial governorates in Egypt, due to the existing of big number of industrial activities in it, and also due to establishing specialized industrial zones such as Abu Rawash industrial zone and the industrial zone in 6th of October City. Also, there are big strategic industrial corporations in Giza governorate such as the complex of sugar companies and complementing industries, Eastern Company for Tobacco, companies of oils and soap in Badrashain and Ayatt, etc as the industrial activities are many in he governorate either macro, medium, or micro industries.
The environmental problems resulted from the industrial activities in Giza governorate can be summarized as follows:

- The spread of small activities polluting the environment and causing noise (2700 workshops) inside the residential areas in the various governorate provinces and markazs.
- The spread of smelters in side the residential area, which pollutes the air.
- The existing big number of clay bricks' factories, which run on mazot fuel in Saff, Ayatt, Badrashain and Menshat El Kanater, which pollutes he environment.
- Lack of assigned zones for coal manufacturing nits and potteries in compliance with environmental standards, which endangers this industry and pollutes the environment.
- Lack of infrastructure of utilities (sanitary drainage and industrial drainage) for some industrial zones as in Abu Rawash industrial zone and Arab Abu Saed as well as industrial zones in Attfeeh.
- Spread of pre stressed concrete factories in Abu Rawash industrial zone and the emitted dust from cement during preparing the concrete due to the lack of related filters.
- Spread of small and random factories in the zone of 44 Baia'a in km 26 of Miser-Alexandria desert road. Also, Sadat Association is recycling the plastic covers of wires through burning large quantities of wires on the public road, which help the spread of black cloud phenomenon.
- The spread of tiles-marble factories, which result in emitting dust from processing operations like cutting the marble and the residues.
- The spread of limestone, clay, and sand quarries and lack of precautions during extraction and transportation, which result in emitting its dust.

2- Achievement over the past five years

2-1 Decrees and procedures:

- Several decrees were issued over the last five years by the Governorate to regulate the operations of the polluting activities during the occurrence of the black cloud, as such decrees forbid operating the coal manufacturing nits and potteries and fix the working hours of the smelters from 7 am to 5 pm during the period from 1 September through end of November.
- Many companies within the governorate have complied with environmental standards over the past five years, including 17 factories in 2005, 50 clay bricks in 2006, and 4 factories in 2007.

- A joint committee including representatives from EMU in the governorate, Civil Defense Department of Giza, and Industrial Security Department of the Labor Force Directorate of Giza as well as representatives from Engineering Department and Follow up Department of Industrial Zone Agency of Abu Rawash to inspect the industrial activities and ensure their compliance with environmental, civil defense, and industrial security requirements and take the necessary measures against the violating activities.
- Environmental Unit was established in the headquarter of the Industrial Zone Agency of Abu Rawash to serve investors and facilitate the procedures of obtaining the approval of EEAA and to follow up the factories of the industrial zone environmentally.
- Regular Inspection Plan was implemented on the industrial facilities in the governorate, where 345 facility were inspected as follows:

- During 2005, 123 facilities were inspected.
- During 2006, 94 facilities were inspected.
- During 2007, 128 facilities were inspected.

2-2 Technical and administrative assistance:

- EMU component, EEAA has provided the EMU of the Governorate with number of industrial emissions measuring devices as follows:

- 2 noise measuring devices.
- 2 Sulfur monoxide measuring devices.
- 2 Carbon monoxide measuring devices.
- 1 water analysis device.
- 2 digital cameras.
- 1 GPS device.
- 1 GIS system.
- Governorate EMU was supported with Toyota double cabin vehicle.

2-3 Implemented projects and programs:

A project was implemented to upgrade 50 clay bricks factories in Arab Abu Saed zone in Saff area, where they were converted to run on natural gas instead of mazot.

2-4 Projects and programs under implementation:

- A City for the craftsmen is under construction outside the residential area in km 36 of Fayoum Road with total cost of 60 millions Egyptian Pounds to date. Smelters (41) and crafts workshops (2700) shall be relocated from the residential area into this new City as soon the infrastructure is completed and prepared to receive such activities.
- 311 clay bricks factories are under upgrading in Arab Abu Saed and Saff area to convert them to run on natural gas instead of mazot, in cooperation between Ministry of Petroleum and State Ministry of Environment.

3- Current Situation: Problems and reasons:

Current Situation	Significant problems and negative impacts of the current situation	Key reasons of the problem	Current plans or programs to handle the current situation
Spread of small activities polluting the environment and causing noise (2700 workshops) inside the residential areas all over the governorate	1- Air is polluted due to emissions of some of such activities. 2- Loud noise due to such activities. 3- Roads are occupied, which impedes movement and increases air pollution.	- Most of crafts activities are existed before issuing environmental law 4, 1994 and are lacking environmental requirements. - Most of such activities work without permits.	There is a plan to relocate and upgrade all current workshops inside the residential areas (2700 workshops) to Craftsmen City, which shall be completed in 2009 with total cost of about LE60 millions.
Spread of smelters inside residential areas, which pollutes air despite stressing on compliance with environmental requirements and making environmental register for each smelter.	1- Air is polluted due to emissions of some of such activities. 2- Loud noise due to such activities.	- Most of crafts activities are existed before issuing environmental law 4, 1994 and are lacking environmental requirements.	There is a plan to relocate and upgrade all current smelters inside the residential areas (44 smelters) to Craftsmen City, which shall be completed in 2009 with total cost of about LE60 millions.
There are big numbers of clay bricks that run on mazot fuel in Saff, Ayatt, Badrashain, and Menshat El Kanater that pollute the environment.	1- Air is polluted due to emissions of some of such activities.	- Using mazot fuel in the ovens of such factories without spraying. - Non compliance of operators of fire fighting system in theses factories to tune up fuel quantities, which result in emitting polluting gases into air.	There is a plan to upgrade 311 clay bricks factories in Arab Abu Saed zone and Saff area and convert them to run on natural gas instead of mazot. As for Ayatt and Badrashain, the clay bricks factories shall spray the mazot.
There are no assigned	1- Air is polluted due to emissions of	- Owners of such activities do not use	1- Implementing a project to

areas for coal manufacturing units and potteries and thermal bricks in compliance with the environment, which endangers this industry and pollutes the environment.	some of such activities.	modern systems for burning to avoid emissions negative impacts. - No legal positions of such activities and lack of permits, as most of them are established on agricultural lands or taken by force.	upgrade coal manufacturing units according to the modern model approved by EPF. 2- Relocate potteries outside the residential area and upgrade them.
Lack of infrastructure of utilities (sanitary and industrial drainage) of some industrial zones as in Abu Rawash, Arab Abu Saed, and Attfeeh.	1- Polluting soil and groundwater due to leakage of industrial untreated wastewater from trenches. 2- Unsafe disposal of industrial and sanitary wastewater those are disposed in waterways or public roads, which affects the public health.	- No sanitary drainage network in Abu Rawash industrial zone. - No treatment plants for industrial and sanitary wastewaters in Abu Rawash industrial zone. - Non compliance of the owners of the factories to build isolated trenches for wastewaters to prevent the leakage of sanitary and industrial wastewaters into groundwater.	1- Establishing treatment plants for each sector of Abu Rawash industrial zone. 2- Planting green belt of trees around Abu Rawash industrial zone. 3- A sanitary drainage network is under construction in Abu Rawash industrial zone funded by the European Union.
Spread of tiles and marble factories.	Emitting dust from processing operations.	- No filters or equipment to mitigate dust emissions. - Residues of processing operations are wastes (powders and reject) that are disposed on the public roads.	1- Factories owners must be forced to install equipment to mitigate dust emissions through the regular inspection of such factories every week. 2- Implementing a program for reuse of the operations residues and reject as follows:

			- Draying and compressing such residues and turn them into powders. - Reuse of such residues in making some kinds of thermal bricks with desired colors through establishing a production line and methods for reuse. The area Agency can help by permitting building on 65% of the land space of each factory instead of 50%.
Spread of pre stressed concrete factories.	- Air pollution. - Spread of dust from mixing operations. - Dropping of mixture during transportation and deforming the roads.	- Factories do not use filters in mixing stations. - No care is given to fix minor breakdowns of transporting trucks of the concrete, which result in dropping the mixture during transportation.	1- Pre stressed concrete factories shall be forced to: - Install special filters on mixing plants and must be inspected regularly and permits must be linked to the validity of such filters. - Factories owners must be forced to not dealing with invalid backs. - Appoint one EMU members within the Executive Agency of the industrial zone, who must have full power to daily inspection of such facilities.
Spread of plastic wires factories, which have no	- Occurrence of black cloud due to burning of the plastics to melt and	- Lack of special furnaces.	- Implementing of a program to upgrade such factories in 44

permits.	reuse it.		Baia'a in km 26 of Miser-Alexandria desert road and install special filters on its chimneys.

4- Vision and goals:

1- Evacuating of the residential areas in the governorate from all current crafts workshops (2700 workshops) by 2009, through relocating them to the Craftsmen City and upgrading them.

2- Evacuating of the residential areas in the governorate from all current smelters (41 smelters) by 2009, through relocating them to the Craftsmen City and upgrading them.

3- All clay bricks factories in the governorate shall comply with environmental requirements to run on natural gas if possible and upgrade other factories to run on mazot spraying system to reduce pollution.

4- Relocate polluting activities (coal manufacturing units and potteries) to outside the residential area of each markaz and city of such activities and upgrading their burning systems.

5- Establishing industrial wastewater treatment plants for the industrial facilities in Abu Rawash industrial zone and planting trees forest depending on treated wastewater.

6- Plastic wires recycling factories shall comply with the environmental requirements and shall be upgraded through installing new and modern furnaces to melt plastics using electricity or natural gas and installing the necessary filters on them.

7- Establishing new production line to reuse the marble industry wastes in manufacturing of thermal bricks.

8- Building sanitary drainage network in Abu Rawash industrial zone to dispose into Abu Rawash plant. Studies of pumping stations and forcemain lines are completed and the project is waiting for providing the necessary funding.

5- Targets and required works:

Main Goal	Targets of the coming five years to achieve the main goal	Required decrees, procedures, institutional support, projects and programs to achieve the targets
Relocate all existing workshops inside the residential area (2700 workshops) to outside.	- Completing the infrastructure and connect the necessary utilities to Craftsmen City, which is planned to be finished in 2009, and relocate the workshops to it.	----------
Relocate all existing smelters inside the residential area (44 smelters) to outside.	- Completing the infrastructure and connect the necessary utilities to Craftsmen City, which is planned to be finished in 2009, and relocate the smelters to it.	----------
All clay bricks in the governorate to comply with the environmental requirements.	- Upgrading all clay bricks factories in Arab Abu Saed and Saff areas and provide them with natural gas. - Upgrade all bricks factories in Menshat Al Kanater, Badrashain, and Ayatt to run on natural gas if possible, and if not burning systems in such factories shall be upgraded to run on mazot spraying system.	----------
Upgrade and relocate polluting activities (coal manufacturing units and potteries) to outside the residential area.	- Relocate the activities of coal manufacturing units and potteries to outside the residential areas of the cities and markazs. - Upgrade burning systems of such activities to reduce its emissions.	----------
Developing a comprehensive projection to improve methods of disposing industrial wastewater of industrial facilities in Abu Rawash industrial area and treating	1- Developing complete inventory for all industrial activities in the industrial zone in Abu Rawash and determining the type and quantity of the wastewater (if any) resulting from each activity and make a list of the facilities which have treatment units. 2- Establishing treatment plants for industrial wastewater to serve the different sectors of	----------

and safe disposal of it.	activities in industrial zone in Abu Rawash. 3- Planting trees forest around the industrial area and using the treated wastewater to irrigate it through providing the Executive Agency of the industrial zone by 2 equipped wastewater tankers to transport treated wastewater and irrigate the greenery.	
Improving air quality and reduce air pollution in the governorate.	- Implementing a project to comply with the environmental requirements of thermal bricks factories in Attfeeh markaz and city and convert them to run on natural gas.	----------
Upgrade plastic wires recycling factories in km 26 of Miser-Alexandria desert road.	- Building plastic smelting furnaces in such facilities and providing them with filters to reduce emissions.	----------
Establishing new production lines to reuse wastes of marble industry to manufacture thermal bricks.	- Permitting the factories which did not build on the total space of their lands to establish new production lines on 65% of the space assigned for building on it.	----------

6- List of proposed projects included in the five-year plan:

Projects of high priority:

Proposed project	Responsible entity	Proposed implementing agencies	Estimated budget	Timeframe	Proposed funding agencies
1- Building the craftsmen City. 2- Relocate 44 smelters. 3- Relocate 2700 workshops.	Governorate	Craftsmen City	LE 60 millions	Project is underway and is planned to be finished by 2009	- Ministry of International Cooperation through Economic Assistance to Egypt.
2- Program to upgrade 311 clay bricks factory in Arab Abu Saed and Saff to run on natural gas instead of mazot		Ministry of Petroleum + Ministry of Environment	LE600.000 per factory	Project is underway	-Funded by Kuto Agreement plus contributions from factories owners
3- Establishing industrial wastewater treatment plants for each sector of Abu Rawash industrial zone and planting greenbelt around the industrial zone in Abu Rawash using treated wastewater in irrigation and providing the industrial zone Agency with 2 tankers to use them in reusing the treated wastewater in irrigation	Governorate	Housing & Utilities Directorate + private companies	------	----------	Funded by DANIDA + Abu Rawash industrial zone + Factories owners
4- Establishing a factory for chimney filters after	Governorate	Investors and pieces of lands	------	Within one year	----------

studying the needs of the polluting factories.		can be provided for implementation			
5- Providing the small polluting factories which burn the plastic wires with furnaces running on electricity or natural gas.	Governorate	DANIDA	------	Within one year	----------
6- Program to upgrade marble factories to reuse heir operations wastes in manufacturing thermal bricks.	Governorate	Investors	------	Within two years	Marble factories in the industrial zone may be allowed to increase their buildings space from 50% to 65% to establish production lines to recycle wastes of marble industry.
7- Establishing plants and network for sanitary drainage in the industrial zone of Abu Rawash	Governorate	Sanitary Drainage Company	------	Within three years	-Ministry of International Cooperation through the Economic Assistance program. -Industrial Development Authority through Industry Modernization and Development Program. - Self funding.

Medium priority projects:

Proposed project	Responsible entity	Proposed implementing agencies	Estimated budget	Timeframe	Proposed funding agencies
4-Implementing a project to upgrade coal manufacturing units according to the modern model approved by EPF.	Governorate	Local Unit of Attfeeh markaz - EEAA	Under study	1-2 years	Coal manufacturing units' owners through loans from EPF.

5- Implementing a project for thermal bricks to comply with environmental requirements in Attfeeh markaz and city and convert them to run on natural gas.	Governorate	Local Unit of Attfeeh markaz - EEAA	Under study	1-2 years	Factories owners

Low priority projects: None.

7- Description of priority projects or programs

7-1 A project of establishing Craftsmen City and relocating and upgrading smelters and workshops:

Problem description:

- Giza governorate suffers from noisy workshops inside the residential areas (2700 workshops) of various activities, which harm the population due to the harmful emissions of such workshops and noise as well as the occupation and blockage of main and sub roads.
- Existence of smelters of various types (cast iron – aluminum – copper) in Warrak and Oseem markazs hat pollute the environment with their harmful emission.

Project description and components:

- A suitable location was selected to establish the Craftsmen City.
- Approvals of different administrative authorities on the selected location are secured.
- EIA of the project was developed in coordination with Cairo University.
- Studies of the project and City designs were developed in cooperation with the consulting firm and the project is offered in tender for contractors.
- Work is underway n the project by establishing the infrastructure and connecting necessary utilities.
- After completing utilities connection, the required buildings shall be built according to the proposed design of workshops and smelters.
- After finishing the constructions, smelters and workshops shall be relocated according to the relocation timetable to be set up.
- Governmental sector is represented by Giza Governorate in cooperation with Ministry of Environment and Ministry of International Cooperation.

Estimated Cost of the Project:

- 60 millions Egyptian Pounds funded by US Economic Assistance Fund through Ministry of International Cooperation.

7-2 Upgrading clay factories in Abu Saed and Saff areas

Problem Description:

- The biggest gathering of clay bricks factories in Egypt is existing in Saff markaz and city in Arab Abu Saed and Saff areas. All such factories are running on mazot fuel, despite lots of them are running on upgraded burning system, which is mazot spraying system to reduce the emissions. Yet, mazot fuel in all cases result in polluting emissions as it contains high percent of sulfur.
- Operators of burning system in such factories do not tune up fuel and air quantities during burning operations, which result in incomplete burning of the

fuel, which in turn resulting polluting emissions for the environment (carbon monoxide – sulfur dioxide, and others).

Project description and components:

- Making inventory for the clay bricks factories in Arab Abu Saed and Saff areas, as the numbers of such is 311 factories.
- Obtaining the approvals of various entities on the project.
- Signing off implementation contracts with factories owners, each in a time.
- Developing the studies of the project and designing the proposed systems of the upgraded burning systems.
- Starting implementing the project.
- Training of factories operators on the new burning system.

Project implementing agencies:

- Ministry of Petroleum in cooperation with Ministry of Environment.

Project estimated cost:

- The cost of upgrading per factory is LE600.000. The total cost shall be calculated based on the final number of the upgraded factories excluding the cost of establishing the gas decompression plant.

7-3 Upgrading coal manufacturing units

Problem description:

- Number of coal manufacturing units is existed in Attfeeh, Menshat Nasser, and Hawamdyia markazs, all are running on primitive burning methods using polluting fuel and emitting harmful emissions for the environment.

Project description and components:

- Making inventory for coal manufacturing units in the governorate.
- Selecting location in each markaz of coaling activities to place all activities in it and obtaining the approvals of various entities on this location.
- Developing technical and financial studies of the project to estimate the required cost of each unit.
- Forcing the owners of coal manufacturing units to use the upgraded model approved by EPF as a precondition to be complied with environmental requirements and granting them the required permits.

Project implementing agencies:

- Governorate – EPF – Owners of coal manufacturing units.

Project estimated cost:

- The cost of upgrading per unit is ----LE.

7-4 Establishing Pilot project of industrial wastewater treatment plant in Abu Rawash Industrial Zone:

Problem Description:

- Lack of infrastructure of utilities (sanitary and industrial drainage) in Abu Rawash industrial zone.
- Non compliance of most factories owners to build isolated trenches for sanitary or industrial drainage, which result in leakage of the wastewater into the ground water.

Project description and components:

- Listing the existing industrial facilities in Abu Rawash industrial zone, classified per type of activity.
- Selecting the proposed site for establishing the industrial wastewater treatment plant, and establishing forcemain network from the factories to this plant.
- Obtaining the approval of the Industrial Zone of Abu Rawash on this site and assigning the necessary area for the project.
- Developing the required studies and designs according to the required technical specs.
- Tendering the project in open tender to implement it after providing the necessary funds from the Industrial Zone of Abu Rawash and factories owners as well as any other potential sources.
- Starting implementing the project, then starting operations after finishing constructions.
- Using the treated wastewater in irrigating green belt around the Industrial Zone of Abu Rawash.

Project implementing agencies:

- Governorate – Executive Agency of the Industrial Zone of Abu Rawash.

Project estimated cost:

- The projected estimated cost of the project is ----LE.

7-5 Implementing the Sanitary Drainage Project of the Industrial Zone of Abu Rawash on 1404 feddans:

Problem Description:

- Lack of sanitary drainage infrastructure in the Industrial Zone of Abu Rawash.

Project description and components:

- There are ready studies to establish 3 pumping stations and forcemain lines to dispose in Abu Rawash plant.
- The area of 44 Baia'a is included in the detailed plan of the infrastructure of the investment area (44 Baia'a on 1000 feddans).

Project implementing agencies:

- Governorate – Sanitary Drainage Company – Housing Directorate of Giza.

Project estimated cost:

- The projected cost of the project is LE60 – 70 millions.

7-6 Upgrading thermal bricks factories project in Attfeeh markaz and city:

Problem description:

- There are 21 thermal bricks factories in Attfeeh markaz and city consuming 900 tons per month from mazot fuel, which pollutes the environment. Also a mazot price has increased locally and internationally.
- Air is polluted due to the emissions of such factories, which also contributes to forming the black cloud.

Project description and components:

The project includes the developing of the studies of upgrading thermal bricks factories to install modern burning systems running on natural gas and establishing gas decompression plant to decompress the natural gas which shall be used in such factories. Project components are:

- Coordinating with EEAA and Ministry of Petroleum to form a technical committee to describe the project technically and determine the estimated financial cost.
- On approving the project implementation, the project shall be tendered in an open tender to private companies specialized in this field.
- Technical and financial offers to be received form the bidders and studied to select the best offer technically and financially.
- Developing contracts between the factories owners and the implementing company and the Ministry of Petroleum.
- Notifying factories owners and inviting them to sign the contracts.
- Starting implementing the project.

Project implementing agencies:

- Supervising agencies: Governorate – EEAA.
- Technical agencies: Private sector – Ministry of Petroleum.

Project estimated cost:

- According to the technical and financial studies.

7-7 Manufacturing chimney filters project:

Problem description:

- There are big numbers of industrial activities in the governorate, which use different types of fuels and producing emissions into the ambient air directly

through chimneys most of which are not equipped with filters, which pollutes the air.

Project description and components:

The project aims at providing chimney filters suitable to different activities to provide the polluting factories with them to reduce their emissions. Project components are:

- Coordinating with EEAA to form a technical committee to describe the project technically.
- Listing the needs of the factories in Abu Rawash industrial zone and other industrial facilities in the governorate from the filters and the types of such filters.
- When the committee approves the project, it shall be tendered in an open tender on the investment companies with experience in this field.
- Technical and financial offers to be received form the bidders and studied to select the best offer technically and financially.
- Starting implementing the project.

Project implementing agencies:

- Supervising agencies: Governorate – EEAA.
- Technical agencies: Private sector.

Project estimated cost:

- According to the technical and financial studies.

Funding:

- Through investors. Pieces of lands in Abu Rawash industrial zone to be assigned to contribute in implementation as per the project's requirements.

4- Air Pollution from non industrial sources

1- Background:

The population of Giza governorate according to the estimated population count at the end of 2006 is 5.817.185 capita. Therefore, it is among the high density population governorates and also it has industrial and agricultural activity density. In addition, Giza governorate has a network of highways and sub roads that link it with Greater Cairo governorates, such as the ring road and the bridges over the Nile River. They also link Giza with Lower Egypt governorates and North Coast through Miser-Alexandria desert road, and with Upper Egypt governorates through Misr-Assuit agricultural road, Misr-Assuit Western road, Fayoum road, and Wahat (Oasis) road. Also, Giza is among the big industrial Egyptian governorates due to the existence of big number of industrial activities and establishing of specialized industrial zones like Abu Rawash and 6th of October industrial zones.

Due to the above, air pollution sources in Giza are not limited to industrial activities only but also they include non industrial sources like emissions from fuel ignition of vehicles that run every day in the streets with high density as well as power generation plants. Also, open burning of wastes is a main source of air pollution in the cities and it increases as the population increases. Villages suffer from air pollution due to the burning of agricultural wastes in addition to fuel burning in agricultural equipment and irrigation pumps as well as the particulates emitted in the air due to dust roads in the rural areas.

On the other hand, due to the high population density in the governorate and the big number of vehicles, there are other negative impacts on the environment like the high noise level, especially in the public squares and residential areas such as in the low income and slum areas as well as the industrial areas.

2- Achievements over the past five years:

2-1 Decrees and procedures:

- Minister of Interior's decree no. 2226, year 2002 was issued to commit vehicles owners to measure their vehicles' emissions before renewing licenses.

2-2 Technical and administrative support:

- Stations equipped with all technical and measuring equipment were established to measure the vehicles emissions and approve its technical validity on renewing licenses in 11 sites in Giza governorate.

2-3 Implemented projects and programs:

- The governorate in cooperation with EEAA has converted 60 governmental vehicles belonging to the governorate to run on CNG during the period from 2004 through 2006, funded y the Ministry of Finance.
- A project was implemented to establish stations for emissions measuring. The stations were established by the Ministry of Environment in cooperation with Ministry of Interior and Greater Cairo governorates (Giza, Cairo, and Kalubia).

- EEAA has implemented a pilot project in Greater Cairo governorates to replace 100 taxis with new ones run on CNG. The project was extended to replace another1000 taxis with CNG ones.
- Greenery was increased in the governorate, where 72.000 trees were planted in the markaz, cities, and districts of the governorate during 2005.
- The governorate in cooperation with Ministry of Environment and Ministry of Agriculture planted timber trees forest irrigated by treated wastewater in Ghammaza desert and Saff city on 500 feddans with modern irrigation system.
- The General Authority of Cleaning and Beatification in Giza planted Mubarak Park on 110 feddans in the crossing point of Fayoum road with Marine Oasis road, where parks and gardens were forested in one part, and timber trees forest was planted in the other part.

2-4 Projects and programs under implementation:

- Due to the changes of vehicles in fuel ignition efficiency over time, and the depreciation of their engines, therefore, a study is underway in cooperation with EEAA to implement a project to replace the old taxis and minibuses with new one running on CNG.
- Currently, sites to establish solid wastes landfills are being searched to prevent the open burning of wastes and mitigate the self ignition of wastes.
- A pilot project is underway to recycle the agricultural wastes. The project is implemented by Agricultural Directorate in the governorate to produce compost and untraditional fodder from the wastes to mitigate waste open burning.

3- Current situation: Problems and reasons:

Current Situation	Significant problems and negative impacts of the current situation	Key reasons of the problem	Current plans or programs to handle the current situation
Non industrial pollution sources like fuel burning in power generation plants	1- Increasing of polluting emissions and its harmful impacts on public health	- Using fuels that pollute the environment and produce harmful emissions due to its incomplete burning.	Upgrading power generation plants an using environmentally friendly fuels.
Increasing vehicles movement all over the governorate	4- increasing harmful emissions from these vehicles 5- Increasing noise levels in high traffic density areas and public squares	- Inefficient fuel burning in various vehicles - Excessive use of horns and cassette recorders by vehicles drivers.	- Developing measures to run the old vehicles - Activating traffic laws
Spread of wastes open burning	2- Increasing polluting emissions and its harmful impacts on public health	- Solid wastes accumulation in various areas in the governorate	1- Organizing wastes collection and transportation 2- Selecting suitable sites in the desert backyard 3- Developing integrated system for solid wastes management and implement it in districts, cities, and villages outside Giza city and support it, as the law prevents imposing any fees on units and facilities in villages and also due to non

			implementation of fee collection in districts and cities o date 4- Utilizing the tow sides of the ring road to establish small projects, especially near the residential areas and building U turns for vehicles and reducing accidents and traffic jams.
Some incidents of agro wastes burning as well as fuel burning in the agro equipment and irrigation pumps	a. Increasing polluting emissions and its harmful impacts on public health	- Quantities of un-recycled agro wastes	3- Agro wastes recycling programs
Spread of dust roads in rural and low income areas	3- Increasing particulate matters in the air	- Low budget for road pavement and maintenance	1- Developing short and long plans and programs

4- Vision and Objectives:

The main goal of the project is to mitigate air pollution through eliminating its sources.

1- Improving air quality through implementing forestation and greenery projects.
2- Mitigating pollution from transportation means through activating traffic laws and engines tune-up.
3- Mitigating solid wastes open burning and self ignition.
4- Mitigating agro wastes open burning.

5- Targets and required works

Main Goal	Targets of the coming five years to achieve the main goal	Required decrees, procedures, institutional support, projects and programs to achieve the targets
1- Improving air quality through:	1- Forestation and greenery increasing through using adequate trees type for Egyptian conditions	- Sector forestation programs - Incentives system for private sector investors
2- Mitigating pollution from transportation means	1- Traffic laws activation. 2- Engine tune-up. 3- Implementing vehicles emissions measuring before licensing 4- Replacing the old vehicles by new ones.	- Timetable to replace old vehicles through providing loans - Drivers training and awareness linked to renewing license.
3- Mitigating open burning and self-ignition of solid wastes	1- Implementing programs to remove waste accumulation 2- Developing integrated system for waste solid management 3- Waste disposal sites in desert backyard	- Implementing projects to regulate collection, transportation, and disposal of wastes. - Developing integrated program to remove all accumulations, especially on the ring road sides and using these sites. - Tendering these programs through involving the private sector in cleaning and utilizing these sites. - Developing integrated system for solid wastes needs coordination and implementing all plans developed by concerned agencies (Ministry of Environment, Local Development Cleaning and Beautification Authority, CDAs, popular agencies
4- Mitigating open burning of agricultural wastes	1- Implementing programs to recycle agricultural wastes and converting it to compost and untraditional fodder.	Research and application projects regarding using wastes as fodder by adding food additives.

6- List of proposed projects included in the five-year plan:

Projects of high priority:

Proposed project	Responsible entity	Proposed implementing agencies	Estimated budget	Timeframe	Proposed funding agencies
1- Establishing vehicles' engines tune up and emission testing stations	Governorate	Giza governorate Ministry of Environment Private sector	According to studies	5-10 years	Private sector and governmental or international support
2- Running vehicles on electricity in the monument areas in the governorate	Governorate	Giza governorate Ministry of Environment Private sector	According to studies	5 years	Private sector and small grants programs and CDAs
3- Modifying Cleaning Law	Governorate	Giza governorate Ministry of Environment		----	Adding item stipulates that Cleaning and Beautification Authority is among the responsible agencies of removing wastes and reporting the violators

7- Description of priority projects or programs

7-1 A project of establishing vehicles' engines tune-up and emissions testing:

Problem description:

- Due to the increased traffic in Giza governorate, as it is a central governorate which links between Lower and Upper governorates and also links between Greater Cairo governorates, which results in increasing the emissions of transportation means that run in the governorate every day, increasing of which (especially lead) affects harmfully the public health and causes many physical and mental diseases.
- Non compliance of many vehicles drivers – especially taxis – to tune up the engines of their vehicles, which make them source of air pollution emissions due to the inefficient burning of fuels.
- Many statistics and studies confirm the increase of air pollution in Giza beyond permissible limits, which result in high rates of lead in the air.

Project description and components:

Establishing vehicles' emissions testing and engines tune up as well as maintenance operations.

- Identifying suitable sites to implement the project in coordination with Traffic General Authority in Giza.
- Tendering the project through open tender to private companies competent in this field, so they can submit their technical and financial offers.
- The submitted bids shall be examined by competent authorities (EEAA – Traffic General Authority).
- Selecting the best technical and financial offers.
- Starting implementing the project.

Project implementation agencies:

- Governmental sector represented by Giza governorate in cooperation with Ministry of Environment and private sector.

Project estimated cost:

- According to the submitted offers.

7-2 Running of electrical vehicles in the monument areas in the governorate:

Problem description:

- Giza governorate is among the governorates that contain big Pharos monuments. It contains Giza Pyramids, Sphinx, Sun museum, Sun Boats, Sakkara Pyramid and other monuments older than 3500 years.
- It is scientifically evident that vehicles running on petrol fuels produce harmful oxides and gases that interact with humidity and water vapor and form acids harming buildings and monuments and result in corrosion of the outside layers, thus endangering national wealth visited by tourists from all over the world.

Project description and components:

- Identifying suitable sites to implement the project and running electrical vehicles in coordination with Tourism General Authority and Traffic General Authority in Giza.
- Tendering the project through open tender to private companies competent in vehicle manufacturing field, so they can submit their technical and financial offers.
- The submitted bids shall be examined by competent technical authority (EEAA – Tourism General Authority - Traffic General Authority).
- Selecting the best technical and financial offers.
- Starting implementing the project, and studying the possibility of providing night shelter for the vehicles by the governorate as a basic need for the project.

Project implementation agencies:

- Governmental sector represented by Giza governorate in cooperation with Ministry of Environment and private sector.

Project estimated cost:

- According to the submitted offers.

Other projects proposals:

- Preventing using donkey carts in transporting wastes (through enforcing the decisions of Cleaning and Beautification Authority).
- Upgrading wastes transportation vehicles.
- Sorting wastes and reusing them (paper – glass – plastic, etc).
- Enforcing Traffic Law on vehicles running (security and solidity).
- Organizing awareness seminars for vehicles drivers before issuing license including all legal and behavioral aspects and safety factors, etc.
- Sorting agricultural wastes and reusing it in producing fodder and artificial woods manufacturing.
- Paving dust roads using By Bass and developing timetable for the pavement process.
- Planting roads sides with suitable trees adequate for the Egyptian conditions to improve air quality and expanding the project of planting houses' roofs.

5- Agriculture and animal production

1- Background:

The population of Giza governorate according to the estimated population count at the end of 2006 is 5.817.185 capita. Agriculture activity is among the main activities in the governorate, as it is agricultural governorate in the first place. Around 14.4% of its manpower works in agriculture. The area of agricultural land in the governorate is more than 249.727 feddans, out of which 194.141 feddans are cultivated in the governorate districts and cities, yet the area cultivated with crops is more than 511.522 feddans, due to cultivating the land more than once in the year (cultivation cycle includes winter crop then summer crop in the same piece of land).

Crops in Giza governorates vary between field crops (summer and winter) and vegetables and fruits. The agriculture sector includes other related activities like poultry and cattle raising, in addition to some industries that depend on agriculture raw materials like food processing and textiles.

As for animal (livestock) production, the governorate has 22 slaughterhouses producing 5164.75 tons of wastes annually, in addition to poultry slaughterhouses that produce 157.56 tons of wastes annually.

The environmental problems resulting from agriculture and animal production activities in Giza governorate can be summarized as follows:

1- Agriculture wastes accumulation or open burning, as the quantity produced by the governorate is about 900.000 tons of corn, 120.000 tons of wheat as well as moderate quantities of other crops wastes. There is no cultivated land with rice or cotton, therefore, there is no burning of rice straw or cotton sticks.

2- Unsafe disposal of the remaining of agriculture pesticides' backs and they have traces on humans, animals, vegetables and crops, in addition to the unsafe disposal of chemical fertilizers' wastes.

3- There is 157310 tons of slaughterhouses wastes in Giza city annually or 437 tons daily that are not safely disposed.

4- Slaughterhouses are not complying with environmental requirements (unsafe disposal of liquid wastes like blood and solid wastes like feces and dead animals, etc).

5- Most of the slaughterhouses (cattle and poultry) are located inside the residential areas.

2- Achievements over the last five years:

2-1 Decrees and procedures:

- A pilot program was implemented by Giza Agriculture Directorate to recycle agro wastes by converting it into compost and untraditional fodder.

- Currently, the automated slaughterhouse in Monieb area is being upgraded including new chambers for slaughtering and concrete slab to collect feces. This slab is designed with slopes to allow water resulting from the feces to go to the discharge network and then to the public wastewater network.

2-2 Technical and administrative support:

- Providing agro departments with tractors and shredders to shred the agro wastes and recycle it as untraditional fodder and compost.

2-3 Implemented projects and programs:

- Annually, a pilot program is implemented to recycle agro wastes through converting it into compost and untraditional fodder by Giza Agriculture Directorate.

2-4 Projects and programs under implementation:

- Studying providing a number of shredders to shred and recycle agro wastes based on the needs of each district.
- Currently, the automated slaughterhouse in Monieb area is being upgraded including new chambers for slaughtering and concrete slab to collect feces. This slab is designed with slopes to allow water resulting from the feces to go to the discharge network and then to the public wastewater network.
- Establishing new slaughterhouses in west Shobak area in Badrashain.

Projects and programs proposed by Agriculture Directorate:

First: Recycling wastes in marine Oasis, which require the following points:

- Train farmers on how to benefit from palm trees wastes.
  - Branches in making baskets and furniture.
  - Leaves in making carina.

  This requires providing the following:
  - Purchasing 5 machines to make carina.
  - Hiring experienced workers to make baskets using branches, form Manawat village to train some young people on making baskets and furniture.
- Dispose the remaining wastes.
- Train farmers on making piles of compost next to each field using backfilling outside the farm. To do so, it takes making a t least 5 experiments in each village after providing the required plastic for covering the bottom and lining the sides of the pits as well as a loader or excavator to make the trenches.

Second: Recycling agro wastes in other governorate districts:

Agriculture Directorate has trained farmers to use farm wastes in making untraditional fodder through crushing corn sticks in Badrashain, Ayatt and Oseem markazs through providing 3 shredders. It needs to provide the Directorate with 10 shredders to cover the governorates markazs and to provide plastics to cover the compost piles and the useful liquid produced by Animal Production Research Center. The liquid consist of 91% molasses, 205% urea, and 605% water to increase the value of the agro wastes.

Third: Minimizing the use of pesticides:

Man is in permanent conflict with pests that attack plants and cause losses up to 30% of the agro production. The key way to mitigate such pests was the use of pesticides. But over time, it became evident that the wrong use of pesticides caused a lot of health problems, in addition to emerging of new pests' generation resistant to pesticides, while it affect humans, animals, and the natural enemies of pests and on bees as well.
Therefore, it was a must to minimize the use of pesticides and depend on integrated mitigation system through using types resisting some diseases, reorganizing the cultivation cycle, and using bio-mitigation methods.

Agriculture Guidance role in minimizing the use of pesticides:

1- Establishing the Trichograma lab in marine Oasis to spread trichograma parasite to mitigate small dates warm.
2- Establishing early warning station in Ayatt to know the extent of infections of some pests and the right timing to use pesticides as per the technical recommendations and rates.
3- Intensifying the guiding campaigns to explain the risks of the random use of pesticides.
4- Pesticides monitoring department, in coordination with the police, inspect pesticides selling shops and confiscate the pesticides in contradiction with the allowed types by the agriculture department.

Fourth: Eliminating palm trees mite:

Project goal: protecting the national wealth.

- Difficulties and challenges:
  1- Farmers do not accept to bear the cost by their own.
  2- Spraying process needs organization in fixed and suitable times.
  3- Financial support (sprayers – pesticides – vehicles support part time workers).
  4- Incentives for the operators of resistance operations.

Roles and responsibilities:

1- Ministry of Agriculture 2- The governorate

Giza governorate already has supported pesticides and gave the pesticides at half price to farmers in marine Oasis.

- Skills and expertise:

Agriculture department is carrying out its role in providing guidance through a team that launches regular awareness campaigns using all methods (seminars in the fields, cafes, and guidance centers – experienced engineers from agro research centers – using video tapes).

3- Current situation: Problems and reasons:

Current Situation	Significant problems and negative impacts of the current situation	Key reasons of the problem	Current plans or programs to handle the current situation
1- Problems of agriculture wastes accumulations or open burning	1- Problems of agriculture wastes accumulations or open burning. Agro wastes in the governorate are 900.000 tons of corn, 120.000 tons of wheat and moderate waste quantity of other crops.	- No integrated system to use all agro wastes despite of there is a pilot program implemented by Agriculture Directorate in Giza	
2- Unsafe disposal of agro pesticides remaining and chemical fertilizers wastes	1- Exposure to the poisoning impact of the remaining of these pesticides and chemical fertilizers	- No safe way to collect and dispose these wastes and the farmers awareness is insufficient	
3- There are 157310 tons of slaughterhouses wastes annually in Giza or 437 tons daily and no safe way to dispose them.	1- Pollution of the ambient environment 2- Poultry wastes may be a source for bird flu disease	- No precautions are taken to dispose the dead animals and meat wastes (incinerators), as they are thrown outside the slaughter house - Unsafe disposal of feathers and bones of poultry slaughterhouse	
4- Slaughterhouses are not complying with environmental requirements	1- Unsafe disposal of liquid wastes like blood and solid wastes like feces, which pollutes the groundwater reservoir due to leakage of the resulting liquid wastes 2- Dead animals, etc pollute the ambient environment	- No treatment for the wastes of these slaughterhouses	

5- Most of the slaughter houses are inside the residential areas	1- Dumping the liquid wastes, which pollutes the ambient environment	- No facilities to treat the wastewater of these slaughterhouses	

4- Vision and objectives:

1- Safe disposal of agriculture wastes by recycling and producing products of economic return.
2- Recycling wastes of palm trees (branches, leaves, etc) and producing products of economic return, as there are half million palm trees in marine Oasis and Badrashain areas and others.
3- Relocating slaughterhouses outside the residential areas (if possible) or upgrading them and correct their environmental conditions to reduce negative impacts of their liquid and solid wastes.
4- Preventing poultry breeding on the roofs of residential buildings by utilizing such roofs in forestation project.

5- Targets and required works:

Main Goal	Targets of the coming five years to achieve the main goal	Required decrees, procedures, institutional support, projects and programs to achieve the targets
1- Safe disposal of agro wastes and optimizing its use	Utilizing the agro wastes in producing some secondary products of economic return like compost and untraditional fodder	
2- Using palm trees wastes (like branches and leaves, etc)	Producing some secondary products of economic return, as there is half million palm trees in marine Oasis and Badrashain areas	
3- Cattle and poultry slaughterhouses must comply with environmental requirements	Relocating slaughterhouses outside residential areas and upgrading them to reduce their negative impacts from liquid and solid wastes	
4- Preventing breeding poultry on the roofs of the residential buildings and utilizing these roofs in forestation project	Adopting forestation project for the roofs of the private and governmental buildings in the governorate	
5- Setting up temporary slaughter points for sheep during Al Adha Feast	Protecting the environment in Giza areas, especially during Al Adha Feast	

6- List of proposed projects:

Proposed project	Responsible entity	Proposed implementing agencies	Estimated budget	Timeframe	Proposed funding agencies
1- Upgrading slaughterhouses in the governorate	Governorate	Vet medicine department - Vet services authority - Animal production research center – newly graduates	- LE100 millions to relocate Monieb slaughterhouse - LE50 millions to upgrade the other slaughterhouses	3-5 years	From the selling amount of the land of the slaughterhouse of Monieb (LE150 millions)
2- Establishing a company to set up poultry slaughterhouses and freeze and sell the poultry	Governorate	Private company under supervision of vet medicine department	Under study	3-5 years	National banks
3- Establishing open zoo on the road of the marine oasis	Governorate	Ministry of environment – Water Resources and Irrigation Ministry – Tourism Ministry – Agriculture Ministry	Under study	2-3 years	National banks
4- Forestation of residential and governmental buildings roofs	Governorate	Local units – Agriculture department – Gardens research institute - CDAs	Under study	Through five year plan	SFD (through funding unemployed graduates in each building)
5- Utilizing of palm trees wastes (branches, leaves, etc) to produce secondary products of economic return	Governorate	Private sector - CDAs	Under study	6 months – one year	SFD (to fund graduates) National banks (for investors)
6- Safe disposal of slaughterhouses wastes	Governorate	Vet medicine department - EEAA	LE390.000 excluding wages of drivers, workers and administrative		Vet medicine department - EEAA

			staff		
7- Safe disposal of slaughterhouses dead animals	Governorate	Vet medicine department - EEAA	LE300.000 excluding wages of drivers, workers and administrative staff		Vet medicine department - EEAA
8- Setting up temporary slaughter points for sheep in Al Adha Feast	Governorate	Vet medicine department			Vet medicine department
9- Utilizing agro wastes	Governorate	Agriculture department - CDAs			Agriculture department - CDAs

7- Description of priority projects or programs:

7-1 Project of upgrading slaughterhouses in the governorate

Problem description:

- There are 32 slaughterhouses in Giza resulting in number of environmental problems that affect the ambient environment.

Project description and components:

- Due to the expansion of the residential area until it became very near from Monieb slaughterhouse, which needs to be relocated outside the residential area. It is proposed to sell the land on which the slaughterhouse is located and using the selling amount (LE150 millions) in relocating it to its new location in 6th of October City. The relocation process is frozen now due to lack of funding. The remaining amount can be used in upgrading the rest of the current slaughterhouses.

Project implementation agencies:

- Giza governorate represented by vet medicine directorate – vet services authority – animal production research center – fresh graduates.

Project estimated budget:

- About LE100 millions for relocating of Moneb slaughterhouse to 6 October City and around LE50 millions to upgrade the rest of the slaughterhouses.

7-2 Forestation of roofs of residential and governmental buildings:

Problem description:

- Citizens use the roofs in breeding of poultry, which impose the risk of bird flu.
- Citizens stockpile their used furniture and woods, etc on the roofs, which impose the risk of setting fires.

Project description and components:

- Developing public awareness plan to promote the importance of the forestation of roofs, environmentally and economically, in cooperation with the specialists of research centers and universities.
- Developing suitable designs to implement the project in a way that does not affect the safety of the buildings.
- Providing the necessary funding through the participation of citizens and local donors as well as the governorate contributions.

Project implementation agencies:

- Local units of Giza – Agriculture Directorate of Giza – gardens research institute – CDAs.

7-3 Establishing a company to set up poultry slaughterhouse, poultry freezing and selling:

- Emerging of bird flu disease and its spread over Egypt's governorates.
- The risks of selling and handling of frozen birds and chickens and the possibility that they might hold bird flu virus.

Project description and components:

- Listing the centers of poultry farms in the governorate in coordination with vet medicine department.
- Selecting two sites or more to establish poultry slaughterhouse to serve the north and south sectors of the governorate and provide them with freezing units and selling outlets.
- Conducting technical and financial initial studies to implement the project.
- Tendering the project on the public and private companies.
- Starting implementation.

Project implementation agencies:

- Private Sector Company under technical supervision of vet medicine directorate n the governorate.

Project estimated cost:

- Under study.

7-4 Safe disposal of poultry slaughterhouses:

Problem description:

- There are 157310 tons of slaughterhouses wastes annually in Giza or 437 tons daily.
- These wastes are disposed in unsafe way through private sector and General Authority for Cleaning and Beautification, which results in environmental pollution during transportation.

Project description and components:

- Establishing a project or a company to transport these wastes in sound and civilized way and utilizing the return of these wastes by contracting the factories of poultry fodders to benefit from such wastes to manufacture fodders.
- Transport these wastes in equipped vehicles, through purchasing and equipping of 3 trucks.
- Improving and upgrading the public slaughterhouses services from the return of the project.
- The project shall be managed through a management structure to be formed before starting implementing the project.

Project implementation agencies:

- Vet medicine directorate in the governorate.

Project estimated cost:

- 3 equipped trucks; the cost of one truck is LE130.000 (one hundred thirty thousand pounds), with total cost of LE390.000 (three hundred ninety thousand pounds) excluding the wages of drivers and workers (3 drivers, 6 workers, 2 administrative assistants).
- Funding agencies: 25% from vet medicine directorate + 75% from Ministry of Environment.

7-5 Safe disposal of public slaughterhouses executed animals:

Problem description:

- Existence of executed animals inside the public slaughterhouses, either total or partial bodies, which are disposed with incomplete burning inside a chamber in the slaughterhouse and emits smokes and bad odors in the ambient air.
- Slaughterhouses are existed inside the residential areas.

Project description and components:

- Providing 3 small trucks of 1.5 tons capacity, distributed as follows:
    - One truck for Saff, Atfeeh, Ayatt and Badrashain markazs.
    - One for Monieb and Warak slaughterhouses.
    - One for Kerdasa, Oseem, and Menshat El Kanater slaughterhouses.

- Passing with the truck on every slaughterhouse twice every day.

Project implementation agencies:

- Vet medicine directorate in Giza.

Project estimated cost:

- 3 equipped transportation trucks LE100.000 (one hundred thousand pounds) each with total cost of LE300.000, excluding the wages of the drivers, workers, and administrative staff.

7-6 Establishing temporary slaughtering points for sheep in Giza City:

Problem description:

- Huge quantities of solid and liquid wastes from sheep slaughtered inside cities and districts during Al Adha Feast and the resulting pollution.
- Slaughterhouses are existed inside the residential areas.

Project description and components:

- Establishing 30 temporary slaughtering points in assigned locations in the districts (south Giza – Dokki – Agouza – Pyramids) to slaughter the sheep and discharge the liquid wastes on the public sewerage network and collecting the solid wastes like feces in a nearby place and disposed immediately after slaughtering by Cleaning Authority or special trucks in the proposed projects.
- Providing the necessary vets to examine the slaughtered animals.

- Providing butchers and workers and organize their work.
- Collecting slaughtering fees slaughtering fees and handing over them as in the public slaughterhouses.

Project implementing agencies:
- Vet medicine directorate in Giza.

7-7 Utilizing the wastes of palm trees (branches, leaves, etc):

Problem description:
- There are over 1.4 million palm trees in Giza governorate distributed on the various districts (marine oasis – Badrashain – Ayatt) producing wastes amounting to 70.000 tons annually (branches, leaves, etc).

Project description and components:
- Tendering the project on the NGOs and CDAs and investors in each markaz that have palm trees to convert the wastes into wood en sheets – carina – furniture – baskets and compost as well as ropes.
- Developing technical and financial feasibility studies for the project as per each markaz conditions.
- Marketing the idea with the agencies interested in implementing the project.
- Tendering the project for implementation.
- Soliciting the help of experienced persons from Manawat and Abu Nomros villages as technical staff to train who wants to implement these projects.

Project implementing agencies:
- Private sector of industrial investments – NGOs of small projects and handcrafts.

Funding agencies:
- SFD – investors – NGOs.

7-8 Utilizing agro wastes:

Problem description:
- Agriculture waste is the secondary product of the agro production system, so its utilization must be optimized with economic ways in addition to the environmental return of disposing such waste.

Project description and components:
Project justifications:
- Converting agriculture wastes into untraditional fodder of high nutrition value and decreasing the need to purchase processed fodder.
- Disposing agro wastes by recycling as compost or fodder decreases the pests' infections as most of these wastes provide good environment for pests to complete their life cycle.

Project description:

- Converting the corn wastes (sticks and leaves), which amount to 9.000 tons annually into silage by providing shredders.
- Recycling vegetables wastes, especially potatoes, banger sugarcane, etc in making the silage.
- Utilizing farm wastes that can not be converted into fodder in composting.
- Providing 10 shredders to expand the experiment in other districts.

Project implementation agencies:

- Agriculture guiding departments in the governorate – NGOs – Agriculture cooperative associations.

7-9 Establishing open zoo on the road of Giza – Marine Oasis:

Problem description:

- The existing zoo located in the residential area and is visited in the holidays, which increases the traffic density and imposes pressure on the public utilities. The project shall release the traffic jam in the area and the pressures on the public utilities.

Project description and components:

- Selecting one site on the marine oasis road to establish the project.
- Developing the engineering and scientific designs to implement the project.
- Marketing the idea to donor agencies and businessmen to attract necessary funding sources.
- Tendering the project on applicants and receiving technical and financial offers.
- Examining the offers and selecting the best offer.
- Start implementing the project.

Project implementing agencies:

- Governorate – Ministry of Environment – Ministry of Water Resources and Irrigation – Tourism Ministry – Agriculture Ministry.

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Summary of Giza environmental issues

Environmental projects	Procedures – Projects - Programs
First: Solid wastes: - No landfill at the governorate level	**Proposed projects:** Establishing 2 landfills for solid wastes, one in the northern part and the other in the southern part of the governorate
- Lack of a system for collecting, transporting and sorting of solid waste	**First: procedures:** o Expanding in assigning the solid wastes collection, transportation and sorting to local private companies **Second: proposed projects:** To integrate the solid wastes collection and disposal system, it proposed to: 1- Establish solid wastes recycling factories (glass, plastic, paper). 2- Establish factories to produce compost from organic wastes
- Shortage of resources, equipment, and funding of the General Authority for Cleaning and Beautification made it unable to cover the areas outside the jurisdiction of the foreign companies	**Procedures:** o Supporting the poorest villages (17 in Oseem, Menshat el Kanater, and marine oasis) with necessary equipment (17 tractor with trailers) to upgrade solid wastes management. These needs were identified in coordination with Ministry of Environment.
- Big solid wastes accumulations in Brageel, Ard el Lewa'a and Moatamadyia as well as pigs farms inside the residential areas.	**Procedures:** Removing the accumulations in coordination with the governorate, EEAA and armed forces to list the historical accumulations. - Relocating pigs farms outside the residential areas. -Extend the work scope of the General Authority of Cleaning and Beautification to the markaz and cities near Giza city.
- Lack of an integrated system for transporting and landfilling of hazard wastes (resulting form hospitals, clinics, etc).	**First: Procedures:** -Enforcing existing laws and legislations of handling hazard wastes and make it obligatory for hospitals and medical clinics and centers, so as to sort hazard medical wastes in colored bags and to contract competent companies or agencies to collect, transport and safe disposal of hazard medical wastes, either by incineration or sterilization and then landfilling. **Second: Proposed projects:** -Establishing company for hazard wastes collection, transporting, and safe disposal of

	medical and hazard wastes
- Lack of economic system for safe disposal of agro wastes instead of open burning.	**Proposed projects:** - Producing some environmental products from palm trees wastes (branches, leaves, etc).
Second: Potable water: - Deterioration of some internal networks of water distribution in some areas	**Procedures:** - Replacing and renovating the old networks through Greater Cairo Water Utility and developing a regular maintenance plan.
- No regular cleaning of the water tanks on the roofs of the buildings	**First: Legislations:** - Issuing a decree forming a joint committee from Health Directorate, EMU in the governorate and Water Company to be responsible for the regular inspection on water tanks on the roofs of the buildings to ensure they are not polluted. **Second: Proposed projects:** - Establishing competent company for cleaning water tanks on the buildings roofs.
- Pollution of groundwater due to its near location from wastewater. Pollution takes place if the groundwater is near form the deteriorated wastewater networks or due to citizens establishing of non isolated trenches that leak the wastewater into the ground water.	**Proposed projects:** -Establishing clean potable water plants that take the water from artisan water wells nearby the Nile River to ensure it is not polluted.
- Lack of clean potable water in some populated areas.	**Proposed Projects:** **-Establishing potable water plants and networks to provide clean potable water to deprived areas as per the State plan to supply all deprived areas with clean potable water by the end of 2009**
Third: Sanitary Drainage: - Disposing the final discharge into Zahawy drain, which in turn disposes into Rasheed Branch of the Nile River. This affects the governorates of Delta (due to the lack of final treatment by Abu Rawash wastewater plant).	**Proposed Projects:** **-Utilizing treated wastewater of Abu Rawash plant in irrigating the timber trees of 6 October city and the proposed timber trees forest on km 52 of Cairo/Alex desert Road.**
- Lack of wastewater treatment plant of Warrak Island.	**Proposed Projects:** **-Solid wastes and wastewater treatment project**
- Wastewater service is not covering the populated areas. This endangers the waterways and the groundwater.	**Proposed projects:** - Establishing wastewater treatment plants and networks for al deprived areas as per the State

	plan to cover all deprived areas.
- Disposing untreated wastewater from 15 May plant unto Al Saff canal, which irrigates 40.000 feddans. This pollutes the irrigation water and the subsequent cultivations.	**Procedures:** - Studying the utilization of wastewater from 15 May plant in forestation. **Proposed projects:** - Utilizing wastewater from 15 May plant in irrigating timber trees proposed forest in Al Saff area on 16.000 feddans. A study is underway for planting Gatrova trees by South Korean company to produce biodiesel.
Fourth: Industrial pollution: - Spread of small activities polluting the environment (2700 workshops) and causing noise inside the residential areas. - Spread of smelters inside the residential areas which pollutes the air despite stressing the issue of complying with the environmental requirements and developing an environmental register for each smelter (establishing a remote area to relocate the smelters on Fayoum road is underway.	**Proposed procedures and legislations:** - Issuing obligatory decrees for local units not to grant permanent licenses for irritating activities inside the residential areas, but make it temporary until the relocation to Craftsmen City on Fayoum road. - Forming joint committees to inspect smelters and workshops to ensure they are complied with environmental requirements. - Relocate smelters (41) and workshops (2700) outside the residential area to the said city immediately after finishing the infrastructure and preparing it to receive such activities.
- Big number of clay bricks factories running on mazot, which pollutes the environment in Saff, Ayatt, Badrashain, and Menshat el Kanater markazs.	**Procedures:** - Industrial facilities in the governorate to comply with the environmental requirements. - Implementing a plan of regular inspection of the industrial facilities. **Proposed projects:** - Upgrading 311 clay bricks factories in Arab Abu Saed and Saff areas to run on natural gas instead of mazot. Natural Gas Company shall implement the internal and external connections for the factories. The cost shall be recovered from natural gas consumption bills later on.
- Lack of assigned areas for coal producing units and potteries in compliance with the environment, which endangers this industry and pollutes the environment.	**Proposed legislations and projects:** - Issuing obligatory decrees to commit the coal producing nits to comply with the environmental requirements and upgrade their burning systems. - Implementing a modern upgraded model of coal manufacturing units.
Fifth: Industrial capacities: - Lack of infrastructure (sanitary drainage and industrial wastewater drainage) of some industrial zones as in Abu Rawash, Arab Abu Saed, and Attfeeh.	**Proposed projects:** - Establishing a model for industrial wastewater treatment plant in Abu Rawash industrial zone. - Expanding wastewater network in Abu Rawash industrial zone on 1404 feddans.

Sixth: Environmental Awareness: -Lack of environmental public awareness, especially in rural and populated areas which increases the volume of the problems.	**Procedures:** - Developing and implementing public awareness plan in cooperation with competent authorities (Ministry of Environment – Education Directorate – Social Solidarity Ministry – Youth and Sports Directorate)
Seventh: Environmental education: - Educational curriculums do not handle the environmental problems and how to mange them.	**Proposal:** - Developing curriculums for environmental awareness to be integrated in the education curriculums in the basic education stage.
Eight: Other projects:	• Upgrading thermal bricks factories to run on natural gas. • Establishing a factory to produce chimney filters in Abu Rawash industrial zone. • Upgrading meat slaughterhouses in the governorate. • Forestation of the roofs of the residential and governmental buildings. • Establishing poultry slaughterhouses to freeze and sell poultry. • Establishing open zoo on the road of the marine oasis. • Utilizing methane gas generated from Shubrament landfill. • Establishing vehicles engines tune-up and emission testing stations. • Producing electrical vehicles and running them in the monuments areas in the governorate.

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Summary of Environmental Action Plan Projects and the proposed funding methods

Funding methods	Projects
It is proposed to assign the landfill set up to a competent company then it shall manage the landfill and collect solid wastes fees and also utilizing the methane gas.	**First: solid wastes** - Establishing 2 landfills for solid wastes, one in the northern part and the other in the southern part of the governorate
It is proposed that the private sector shall fund this project.	-Establishing recycling solid wastes factories (glass – plastic – paper).
It is proposed that the funds come from private sector, General Authority of Cleaning and Beautification, NGOs	- Establishing a factory to produce compost from organic wastes.
It is proposed that the private sector shall fund this project.	-Establishing a company to collect, transport, and dispose medical and hazard wastes safely
It is proposed that the private sector shall fund this project.	-Utilizing methane gas generated from Shubrament landfill
Governmental funding (Potable Water Company) within the State plan to provide clean potable water	**Second: Potable water:** - Establishing a competent company to clean water tanks on the buildings' roofs
Governmental funding (Potable Water Company) within the State plan to provide clean potable water	- Establishing clean potable water plants that take the water from artisan water wells nearby the Nile River to ensure it is not polluted.
Governmental funding (Potable Water Company) within the State plan to provide clean potable water	- Establishing potable water plants and networks to provide clean potable water to deprived areas as per the State plan to supply all deprived areas with clean potable water by the end of 2009
- Private sector. - Ministry of Housing (New urban communities' authority – Wastewater Company) in cooperation with Ministry of Environment.	**Third: Wastewater:** -Utilizing treated wastewater of Abu Rawash plant in irrigating the timber trees of 6 October city and the proposed timber trees forest on km 52 of Cairo/Alex desert Road.
- Private sector. - Ministry of Housing (New urban communities' authority – Wastewater Company) in cooperation with Ministry of Environment.	- Utilizing wastewater from 15 May plant in irrigating timber trees proposed forest in Al Saff area on 16.000 feddans. It is proposed to plant it with Gatrova trees.
Governmental funding (from wastewater company) within the State	- Establishing wastewater treatment plants and networks for al deprived areas as per the

plan.	State plan to cover all deprived areas by the end of 2009.

- Governmental funding. - Foreign funding in coordination with Ministry of International Cooperation through the Economic Aids Program for Egypt.	**Fourth: Industrial pollution** -Relocate smelters (41) and workshops (2700) outside the residential area to the said city immediately after finishing the infrastructure and preparing it to receive such activities.
-Governmental funding (Ministry of Petroleum + Ministry of Environment) + private sector.	-Upgrading 311 clay bricks factories in Arab Abu Saed and Saff areas to run on natural gas instead of mazot.
-Private sector (coal manufacturers through loans fro EPF	- Establishing a modern model for coal manufacturing units
-Private sector (factories owners).	-Upgrading thermal bricks factories in Atfeeh makaz and city to run on natural gas
-Private sector + self finance.	-Establishing a factory to produce chimney filters.
-Private sector (factories owners) + governmental finance (Abu Rawash industrial zone).	**Fifth: Industrial capacities:** - -Establishing a model for industrial wastewater treatment plant in Abu Rawash industrial zone.
- Governmental funding in coordination with Ministry of International Cooperation through the Economic Aids Program for Egypt. - Governmental funding . Industrial Modernization and Development Program	-Expanding wastewater network in Abu Rawash industrial zone on 1404 feddans.
Private sector.	- Establishing vehicles engines tune-up and emission testing stations.
Private sector	- Producing electrical vehicles and running them in the monuments areas in the governorate.
Private sector from the amount of selling the land of Monieb slaughterhouse.	**Sixth: Agriculture and animal production:** -Upgrading meat slaughterhouses in the governorate. .
Governmental funding (SFD + national banks)	-Utilizing wastes of palm trees in producing some environmental products.
Governmental funding (SFD + national banks)	-Forestation of residential and governmental buildings' roofs.
Governmental funding + private sector	-Establishing poultry slaughterhouses and freeze sell them.
Vet Directorate + EEAA	- Safe disposal of meat and poultry slaughterhouses wastes.
Vet Directorate + EEAA	Safe disposal of slaughterhouses executions.

Vet Directorate	–Establishing temporary sheep slaughterhouses in Giza city.
-Giza Agriculture Directorate - NGOs	- Utilizing agro wastes.

Participants of developing Environmental action Plan

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4- Salah Mohamed Ahmed El Sherif	**EMU Manager**
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