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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 Behira Governorate.

We are keen to highlight the contributions of beneficiaries' working groups who participated in developing Behira 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 / Mohamed Said Sharawi, Behira Governor, whose personal participation and kind support contributed a lot in developing the Environmental Action Plan of Behira 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 Behira 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 Behira governorate to develop its Environmental Action Plan.

Special thank you also goes to General Engineer/ Sayed Abdul Aziz Shehata, Behira 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

Environmental protection became one of the work priorities in Local Management Units, especially with the expansion in industrial and service projects that may some times affect the environment and its different components. This necessitates the importance of good planning to lay down a joint vision between the Ministry of Environment and the Governorate to mitigate the negative impacts of all polluting activities.

On preparing the implementation plan of the Environmental Action in the governorate, it was taken into consideration to identify accurately the nature of the environmental problems and the working teams which shall implement the environmental treatment plans in all fields. The Plan also put the work priorities in order according to the urgent needs of each problem and proposed the ways of funding, implementation and follow up.

So, work methods and mechanisms are varied according to the problem nature, scope, and target.

Finally, I would like to mention that the success of this Plan depends not only on what executive bodies shall do, but also on the serious contribution and true awareness of citizens who shall be the first participants in implementing the Environmental Action Plan, as they are the beneficiaries of having a clean environment as a basic human right and is a must that can not be ignored.
Also, NGOs, are required to work jointly with governmental bodies to promote the environmental awareness and highlight key problems that help spreading out pollution.

I'm confident that governmental initiatives shall be responded by all partners, in light of what we all notice of significant progress in the previous plans to manage the environmental problems. I'm also full of hope that we shall use this official effort to reach better conditions of clean and healthy environment.

Behira Governor

General/ Mohamed Sayed Sharawi

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1. Introduction

1.1 Background

The Egyptian Ministry of State for Environmental Affairs (MSEA), the Governorate of Beheira (GoB), in collaboration with the DANIDA (Environment Sectoral Support Project- Governorate Environmental Departments Support Component), has prepared the 2007 Environmental Profile (EP) for the Governorate of Beheira. (GoB) This GoB/EP included a description of the major environmental resources and problems at the Governorate. This EP served as a nucleus for setting up the Governorate's Environmental Action Plan (EAP) in order to develop the programs and projects required to solve the major environmental problems in the GoB according to said EP.

The GOB/EP has summarized the major environmental problems at the governorate as follows:

1- **Lack of wastewater services in most villages and some towns at the Governorate**. This consequently leads to polluting the waterways due to discharging the scavenged wastewater within deprived villages as well as discharging untreated effluents collected from some villages and towns. Pollution of waterways leads to direct health hazards due to citizens' dependence on waterways in washing and disinfection utensils, in addition to hazards to potable water stations' outlets and deteriorated quality of irrigation water.

2- **Accumulation of solid wastes**. This is due to lack of solid waste management service in most governorate villages and towns, and a severe shortage in transport and collection equipment. In addition, the governorate also lacks any landfills for dumping wastes. Solid wastes are actually dumped in open dumpsites causing several negative environmental impacts. Similarly, there is also another lack of any hazardous medical wastes sorting and management services in most medical institutions at the governorate.

3- **Potable water supply problem**. The governorate includes some areas that are deprived from this service, and hence citizens in those areas resort to unsafe potable water sources.

4- **Industrial Pollution**. Major textile factories in Kafr El Dawwar discharge untreated industrial wastewater into agricultural drains. Also, brick-making factories, smelters, and coal kilns release gaseous emissions that pollute the air.

5- **Lack of environmental education and awareness**. This leads to several environmental problems such as burning of agricultural wastes and overuse of pesticides.

6- **Siltation of Rashid Harbor.** Protection barriers at the harbor area causes sedimentations that narrows and shallows harbor width due to deepened bottom levels, which impedes fishing boats from moving between the Nile and the sea.

7- **Shore erosion**. Global pollution/warming problems have caused the erosion of vast areas on Rashid coastland

Figure 1.1 Administrative Borders of Beheira Governorate (GOB)

Based on the prioritized environmental problems, the Governor of Beheira issued Decree No. 606 of 2007, by virtue of which six workgroups were formed to develop the five-year environmental action plan (EAP) for the governorate 2008-2013. Each workgroup was composed of representatives of official authorities concerned with each prioritized environmental problem. These workgroups represented the wastewater, potable water, solid waste management, industry, tourism, and environmental mass media sectors. Each workgroup identified both priorities and milestones for the aforementioned five-year plan. In addition, each workgroup also identified a series of projects to achieve the milestones stated in this plan. Some of these projects are already included in the state plan for the concerned sectors (such as the wastewater and potable water sectors) as well as some profitable investment projects, which can be assigned to the private sector, while other projects can be implemented through NGOs and donor agencies.

The workgroups have covered all prioritized EP environmental problems except for the Rashid harbor siltation problem, that just required sustainable disinfection of the harbor (which necessitated allocating an estimated budget within the plan appropriated budget in Chapter VIII) and the shore erosion problem, which was a bigger problem far beyond local GoB efforts since it is related to global climatic changes.

Among the advantages of the detailed EAP stated in the forthcoming chapters, is the fact that it emanated from the GoB Headquarters, as the plan is prepared by the employees of the Governorate's developmental and service sectors. Hence, identifying the priorities and the projects have actually emanated from tangible facts.

1.2 Objectives of EAP

-Identify the major environmental problems inside each sector
-Determine the priorities of action and targets throughout the plan duration
-Identify the projects that serve EAP objectives while focusing on prioritized projects
-Determine the recommended plan financing, implementation, and monitoring mechanisms.

1.3 EAP Components

The GoB/EAP was classified into six sector plans covering the fields of wastewater, potable water, solid waste management, industry, tourism, and environmental mass media. Individual sector plan included a general background about the actual situation per relevant sector, then an account of the accomplishments achieved in each sector in terms of improving environmental management and pollution prevention. This was followed by reviewing the major environmental problems related to the sector concerned, its causes, and impacts, in addition to setting the specific objectives to be implemented during the five-year plan and the support required for implementation. These objectives must then be translated into specific projects with estimated budgets and setting up priorities for these projects.

EAP Development Participants

Annex (1) lists names of the six workgroups members who participated in developing the EAP.

2. Wastewater Sector Plan

2.1 General Background

The wastewater problem is considered a major prioritized environmental problem nationwide, especially that the expansion in establishing infrastructure of potable water supply projects is accompanied by a corresponding expansion in the infrastructure of wastewater projects. Environmental problems of wastewater can be divided into two main sections. The first problem is the lack of safe service for discharging wastewater from residential units, causing wastewater overflow, which consequently leads to spread of diseases, odors, and health hazards. The second problem is the hazardous impact of untreated wastewater collection and untreated effluents discharge into waterways. Hence, the wastewater problem is a major environmental issue identified in the GoB/EP.

On the urban governorate level, the wastewater service is available in most cities/towns including Damanhour, Abou-Hommus, Kafr El-Dawwar. El-Mahmoudeya, Housh Eissa, Itay El-Baroud, Al-Rahmaneya, Shoubrakhit, Kom Hamada, Edko, Rashid, Abu El-Matameer, and Al-Delingat. Meanwhile, there is a total lack of service in some major towns such as Badr, while the service is under construction in the city of Wadi El-Natroun. Most wastewater systems in cities terminate in the wastewater treatment plants, as the governorate includes 14 WWTPs with a total capacity [(1)] of about 330,000 m^3/day as indicated in Table 2.1. It is noticeable that some WWTPs mentioned in Table 2.1 are not operating in their full capacity due to the fact that the wastewater system is not connected to all areas as planned to provide service by these plants (such as Al-Mahmoudeya, Abu El-Matameer, and Kafr El-Dawwar). Meanwhile some WWTPs receive effluents above its design capacities as in the case of the city of Kafr El-Dawwar, as currently the WWTP expansion project is assigned to a specialized company.

(1) The Table source is derived from the environmental profile data for the city of Damanhour (2006), noting that some plants that were under construction just then, were finalized when the plan is being developed in 2008.

Table 2.1 Urban WWTPs and Their Discharging Capacities

WWTP Name	Maximum Capacity for treated Effluents (m^3/day)	Drain Receiving Treated Effluents	Terminal Estuary of Recipient Drain
Damanhour	150,000	Al-Khairy	Edko Lake
Mansheyet El-Horreya	12,000	Al Hessa	Edko Lake
Shoubrakhit	4,000	Shoubrakhit	Edko Lake
Al-Rahmaneya	10,000	Al-Rahmaneya Expansion	Edko Lake
Al-Delingat	10,000	Al-Delingat Extension	Edko Lake
Kafr El-Dawwar	25,000	Al-Nashoody	Mediterranean Sea
El-Mahmoudeya	25,000	Al-Atf	Edko Lake
Abu Hommos	8,000	Abu Hommos	Mediterranean Sea
Abu El-Matameer	10,000	Al-Atf	Edko Lake
Rashid	20,000	Al-Kharag	Edko Lake
Edko	20,000	Al-Boseili	Edko Lake
Kom Hamada	10,000	Kom Hamada	Edko Lake
Housh Eissa	20,000	Sidi Issa	Edko Lake
Etay El-Baroud	10,000	Itay El-Gharbi	Edko Lake

On the rural governorate level, the status of wastewater service is even worse than the rural areas. With the exception of some villages (indicated in Table 2.2), the wastewater service is totally unavailable in other governorate villages. Governorate villages currently depend on rather primitive or non-technical means such as discharging liquid wastes either within the soil through trenches or non-technically designed septic tanks, collecting these wastes in gravity lines established by self-initiated efforts driving the effluents finally to be discharged into the nearest agricultural drain or canal without receiving any treatment.

The random discharge system inside the soil or onto the drains resulted in severe soil pollution and groundwater, in addition to raising the groundwater levels and salinity. This random system has also resulted in emergence of still polluted lakes in various lower lands within the urban boundaries of the governorate.

Table 2.2 Wastewater Services in Rural Areas

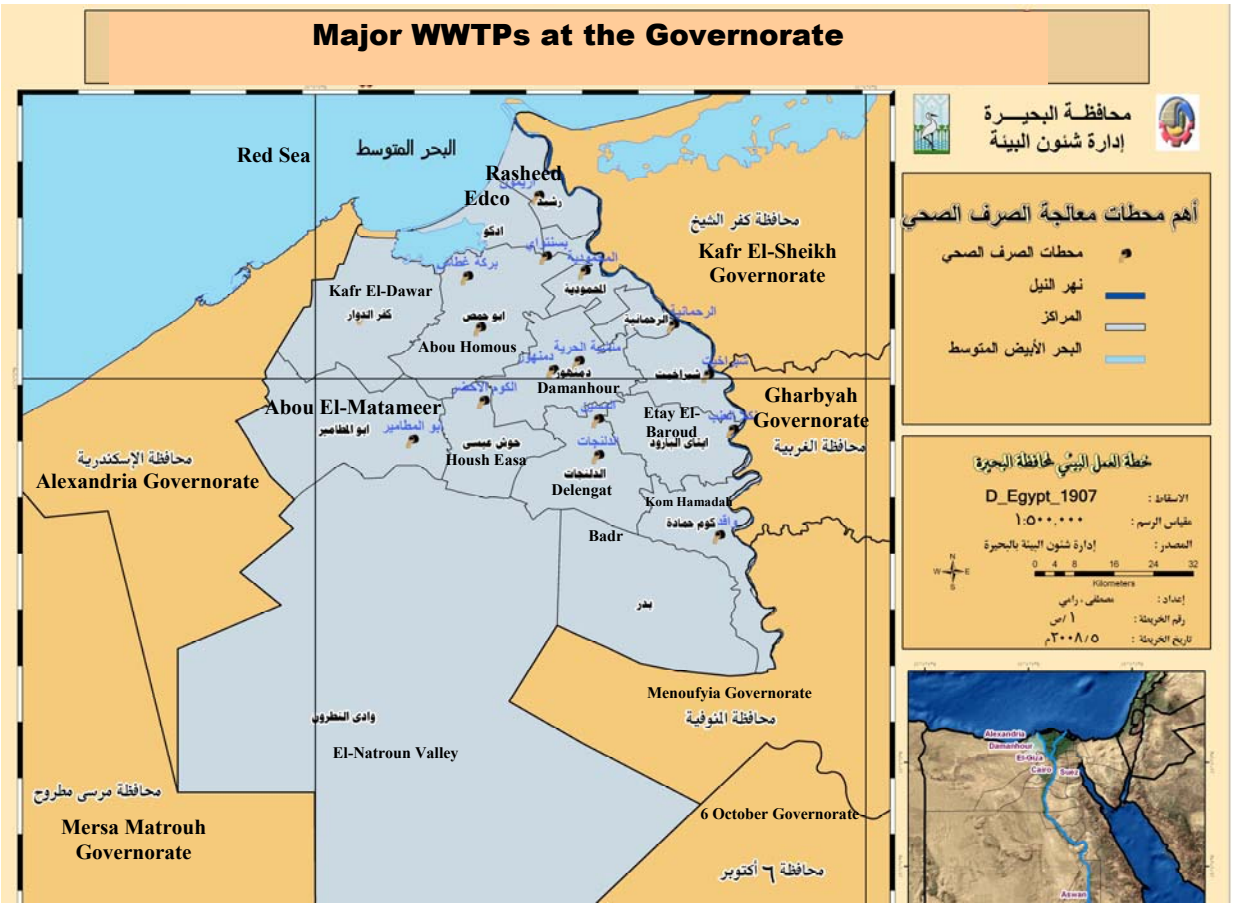
Village Name	Maximum Capacity for Treated Effluents (m^3/day)	Drain Receiving Treated Effluents	Terminal Estuary of Recipient Drain
Arimon, Al-Mahmoudeya District	2,000	Al-Bably	Mediterranean
Al-Kom Al-Akhdar, Housh Issa District	2,000	Gabares Al-Gharby	Mediterranean
Nekla El-Einab, Itay El-Baroud District	3,000	El-Amir	Edko Lake
Waqed (Kom Hamada District)	3,400	Tahrir 13	Al-Nobareya Canal
Basantway, Abu Hommos District	10,000	Al-Ghizlan Branch	Edko Lake
Berket Ghattas, Abu Hommos District	10,000	Breisaq	Edko Lake
El-Maseen, Al Delingat District	5,100	Al-Bahey	Edko Lake
Antoniadis, Abu Hommos District	--	--	--
Sanhoor, Damanhour District	--	--	--
Demetyouh, Damanhour District	--	--	--
Aflaqah, Damanhour District	--	--	--
Al-Magd, Al-Rahmaneyah District	--	--	--
Shobra Rees, Shoubrakhit District	--	--	--

In addition, the following rural wastewater projects were finalized:

Village Name	District	WWT Receiving Effluent
Shobra Rees village	Shoubrakhit	Shoubrakhit WWTP
Mostanad village	Shoubrakhit	Shoubrakhit WWTP
Berket Ghattas village	Abu Hommos	On an independent plant (10,000 m3/day)
Basantway village	Abu Hommos	On an independent plant (10,000 m3/day)
Al-Aba'adeyah village	Damanhour	Damanhour WWTP
Bani Hilal village	Damanhour	Mansheyet Al-Horreya WWTP

Village Name	District	WWT Receiving Effluent
Al-Kom Al-Akhdar village	Housh Issa	Onto an independent station (12,000 m^3/day)
Fazara village	Al-Mahmoudeyah	Onto an independent station (12,000 m^3/day)
Al-Kom Al-Akhdar village	Kafr El-Dawwar	Onto an independent station (12,000 m^3/day)

Figure 2.1 Major WWTPs at the Governorate



The wastewater problem started to aggravate (especially in rural Egypt), resulting in negative impacts on the environment due to supplying potable water without providing a wastewater system for disposal of this consumed water. On reviewing the data about the quantities of potable water supplied to the governorate residents, estimated at about 700,000 m^3/day (as indicated in Potable Water Sector Action Plan, Chapter III), and the maximum capacity of the currently operating WWTPs at the governorate (indicated at Table 2.1 and 2.2), it can be concluded that about 50% of wastewater is discharged into the soil, groundwater, and surface waterways without treatment [(1)].

Amidst the high population increase in rural areas, the increased quantities of water discharged into domestic wastewater trenches resulted in the emergence of the problematic raised filtrated water levels, formation of ponds and swamps in lower lands, which in turn posed threatened to cause the collapse of residences and deterioration of public health levels, with the spread of infectious and endemic diseases among residents. The local authorities on the rural, urban, and district levels have started to find solutions to this problem, either through residents' self-initiated efforts or in collaboration with donor agencies program. A number of villages, located throughout nationwide governorates were selected to establish wastewater

service projects therein. This initiative shall serve as a nucleus or a model to be adopted in similar villages. This constituted a problem because GoB hosts several villages, where wastewater projects necessitate high funding rates that are not available due to limited financial resources. Accordingly, a sound techno-economic solution to this problem requires setting up a strategic planning for the potable water and wastewater sectors that must fully consider the socio-economic changes and develop a cost effective policy for utilizing available resources. In this regard, the concept of establishing collective wastewater service projects is currently under study. This concept depends on communizing the geographically adjacent villages in a collective wastewater project whose components would be selected in conformity with the served number of population, geographical location, and selecting the most appropriate wastewater treatment and disposal methodologies. GoB, being a major governorate nationwide, has taken the initiative towards sectoral planning of infrastructure projects.

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(1) Assuming that 80% of potable water is discharged into wastewater

2.2 Accomplishments during the Past Five Years

2.2.1 Decrees and Procedures

During the past five years, several decrees and procedures have been adopted in support of governorate wastewater service projects. In addition to the decree on establishing the Holding Company for Potable Water and Wastewater and its affiliate companies nationwide in 2004 (including Beheira Holding Co. For Potable Water and Wastewater), it was decided to apply collection of a surcharge fee worth 50% on the water bill in return for the wastewater service at serviced areas on the governorate level in order to cover the service operation costs. Other ministerial decrees were taken allocating budgets for the implementation of wastewater projects in rural and urban governorate areas with a total cost of LE 350 million, as indicated in Table 2.3.

Table 2.3 List of Ministerial Decrees at GoB (wastewater service) Included in the Past State Five Year Plan

Serial No	Project Name	Project No	Year	Value in Decree	Status of Implementation
1	Al-Maa'deyah WW Project (Edko)	40	2002	10	Preparations in progress to start implementation
2	Sidi Ghazi WW Project (Kafr El-Dawwar)	34	2002	25	In progress
3	Sharnoob WW Project (Damanhour)	101	2002	20	In progress
4	Al-Sawwaf WW Project (Kom Hamada)	94	2003	20	In progress
5	Al-Nagila WW Project (Kom Hamada)	87	2003	20	In progress
6	WW Project (Demetyouh)	126	2003	2	Handed Over and Operating

Serial No	Project Name	Project No	Year	Value in Decree	Status of Implementation
7	Wadi El-Natroun WW Project	135	2003	50	In progress
8	Sinbada and Sirinbay WW Projects (Al-Mahmoudeya)	16	2004	25	In progress
9	Mahalet Bishr and Mahalet Sa WW Project (Shoubrakheet)	26	2004	15	In progress
10	Kherbeta and Kafr Boulin WW Project (Kom Hamada)	109	2004	30	In progress
11	Dayroot WW project (Al-Mahmoudeya)	23	2005	9	In progress
12	Breem WW Project (Kom Hamada)	19	2005	9	In progress
13	Tiba Village and Ezbet Gad WW Project (Al-Delingat)	4	2005	16	In progress
14	Kom El-Tarfayah Extension WW Project (Kafr El-Dawwar)	99	2004	5	In progress
15	Al-Wafaeya WW Project (Al-Delingat)	87	2005	40	In progress
16	Abu Samada Lahmir and Mansheyet Abu Wafia WW Project (Al-Delingat)	96	2005	18	In progress
17	Qleishan WW Project (Itay El-Baroud)	65	2005	20	In progress
18	Al-Haganeya and Kafr Santees WW Project (Damanhour)	127	2005	15	In progress
Total				350	

2.2.2 Technical and Administrative Support

In addition to implementing the projects listed in Table 2.3, the Rural Construction and Development Agency of the Ministry of Local Governance, in collaboration with the United States Agency for International Development (USAID), have implemented several projects during the past five years, as indicated in Table 2.4 below. The GoB has also supported the Wastewater sector at the local administrative units with equipment and scavenging vehicles.

Moreover, on the international cooperation plane, a twining agreement has been signed between the Beheira Potable Water and Wastewater Co. and The Wastewater Co. in Amsterdam (Netherlands) aimed at improving the WW system in GoB. During 2003 -2005, technical support was provided to the following four WW projects:

-Improve the WW system in Sanhour village

-Establish and educational program to improve and organize the WW system in Damanhour city

-Sludge in Damanhour WW Treatment Plants

-Organize WW in rural villages

2.2.3 Implemented Projects

In addition to the projects in progress as per the State Plan 2002-2007, a number of projects have been implemented in the GoB villages through the Rural Construction and Development Agency as indicated in Table 2.4.

Table 2.4 WW Projects Implemented in GoB Villages

District	Village	Projects Design Specifications	Implementation Status	Executing Agency
Al-Mahmoudeya	Arimon	Gravity lines grid centrifugal line, Lift stations, Treatment Plants	Finalized	Rural Construction and Development Agency
Al-Delingat	Al-Messin	Gravity lines grid centrifugal line, Lift stations, Treatment Plants	Finalized	Rural Construction and Development Agency
Al-Rahmaneya	Al-Magd	Gravity lines grid centrifugal line, Lift stations, Treatment Plants	Finalized	Rural Construction and Development Agency
Damanhour	Sanhour	WW	Finalized	Rural Construction and Development Agency
Damanhour	Iflaqah	Gravity lines grid centrifugal line, Lift stations connected to Mansheyet al-Horreya in Damanhour	Finalized	USAID

District	Village	Projects Design Specifications	Implementation Status	Executing Agency
Kom Hamada	Waqid	Gravity lines grid centrifugal line, Lift station, oxidization ponds	Finalized	USAID
Itay El-Baroud	Nikla El-Einab	Gravity lines grid centrifugal line, Lift station, oxidization ponds	Finalized	USAID
Shoubrakheet	Laqanah	Gravity lines grid centrifugal line, Lift stations, Treatment Plant	To Be Soon Finalized	Rural Construction and Development Agency
Kom Hamada	Biban	Gravity lines grid centrifugal line, Lift stations, Treatment Plant	To Be Soon Finalized	Rural Construction and Development Agency

2.3 Current Conditions: Problems and Causes

Table 2.5 Current Conditions: Problems and Causes

Current Conditions	Major Problems and Negative Impacts of Current Conditions	Major Causes of Problem	Current Plans and Programs to Handle Current Conditions
Some cities/towns and most villages of GoB lack WW service	-Polluted soil and groundwater used as a source for potable water, because some non-serviced governorate towns and villages depend on septic tanks and open–bottom trenches for disposal of WW -Polluted canals, drains, and lakes due to due to dumping of scavenged wastewater therein -Overflowed wastewater from trenches due to rising groundwater levels, leading to spread of diseases, bad odors and insects	-Lack of wastewater service supply in some governorate towns and most villages due to shortage of adequate financial allocations to cover GoB by 100% -Lack of a collective strategy that obliges citizens who are deprived of the WW service to use impermeable reservoirs and lack of adequate number of scavenging vehicles -Inadequate supervision by the local administrative units over scavenging and safe disposal of WW -Difficulty of implementing WW Projects due to the narrow street width inside villages and possible rifts may occur ion buildings during implementation works (because most of the buildings have surface foundations), and due to the unsystematic implementation of other utilities (Electricity, telecommunications, water supply), and due to the difficulty in obtaining the licenses required for implementation (roads, irrigation, drainage, etc)	-Some WW service projects were listed on the plan for implementation -Oblige city councils to apply buildings regulations, confirming the necessary issuance of buildings pre-construction licenses and under engineering supervision according to applicable housing laws -Oblige city councils to fully coordinate with all concerned agencies to expedite issuance of all the required licenses thereof and remove all constraints

Current Conditions	Major Problems and Negative Impacts of Current Conditions	Major Causes of Problem	Current Plans and Programs to Deal with Current Conditions
Collection and direct discharge of untreated WW from some areas onto canals/waterways and drains	-Polluted of waterways resulting from direct discharge of untreated WW effluents, leading to the spread of diseases, bad odors, and the deteriorated quality of irrigation water, in addition to the negative impacts on potable water stations	-Citizens are illegally extending gravity lines incompatible with specifications and without treatment units	-Some WW service projects were listed in the plan for implementation -Attempts to implement some WW projects in villages
Incompatibility of the results of analyzing WW samples taken from the final outlets of currently operating treatment plants	-Polluted of waterways resulting from direct discharge of untreated WW effluents, leading to the spread of diseases, bad odors, and the deteriorated quality of irrigation water, in addition to the negative impacts on potable water stations	-Inefficiency of current treatment processes because of the huge quantities of wastewater collected beyond the design capacities of some treatment plants -Outmoded operation of some treatment plants that became incompatible with the currently increasing WW quantities -Negligence by concerned authorities to undertake the required maintenance for stations/plants	-Handing over some WW plants to the Potable Water and Wastewater Co., while activating the company's role in carrying out maintenance works and quality control

2.4 Vision and Objectives

Extending the scope of WW service and cover new areas (especially the villages located near the currently existing treatment plants), expediting the completion of currently executed urban and rural WW projects in coordination with local councils, and expediting the issuance of the required licenses, and enforcing the engineering supervision over the construction of WW systems to prevent its negative impacts on the integrity of buildings.

Developing solutions for the problem of the wastewater trenches used currently at the deprived governorate villages, in order to prevent wastewater leakage into the soil or the groundwater, and to prevent also discharging the scavenged effluents onto canals/waterways and drains.

Starting earnest works of upgrading and rehabilitation of the worn out WW utilities handed over recently to the Potable Water and Wastewater Co., and reactivating the principles of Quality control/Quality assurance (QA/QC), safety precautions, and occupational health standards in operating these utilities, while monitoring the quality of treated effluents.

Maximizing the benefits from WW either from the treated effluents or the sludge resulting from the treatment plants.

2.5 Targets and Required Actions

Table 2.6 Targets and Required Actions

Main Target	Targets for the next Five Years to Achieve Main Target	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Extend the scope of WW services	-Complete all the pending WW projects at the GoB -Implement WW projects in villages located near existing treatment plants -	-Develop a conceptual framework for means of allocating the required financial appropriations required to complete the pending WW projects -Issue all the decrees and procedures that are capable of removing all the obstacles that impede the implementation of WW projects at the governorate towns/cities -Study the potential connection of villages around towns to the WW system
Develop solutions to the problem of existing trenches in deprived areas	-Use impermeable tanks/reservoirs (instead of the open-bottom ones) in new buildings, and tighten insulation of open-bottom tanks in ecologically sensitive areas -Use scavenging vehicles to transport wastewater from villages according to a time schedule, in order to prevent overflow of trenches on one hand and ensure their safe scavenging on the other hand	-Issue a decree to prevent licensing the new buildings in deprived areas in case of lack of engineering design of discharge trenches with the construction and layout drawings -Study the ecologically sensitive areas (such as water withdrawal from shallow wells) and oblige landlords with carrying out the environmental impact assessments by tightening the insulation of WW and providing them with technical and financial support -Study the systems for periodical evacuation of wastewater, while monitoring the compliance of establishment owners/landlords and owners of scavenging vehicles, as well as expedite the issuance of decrees from the GoB or local councils to activate these systems -Tighten control over licensing scavenging vehicles, and oblige vehicle owners to hold documents to indicate they have unloaded wastes in pumping stations and WW plants, while controlling these documents by the local units and environment offices

Main Target	Targets for the next Five Years to Achieve Main Target	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Upgrade the performance of WW Utility	-Develop operation and monitoring programs for the performance of existing WW treatment plants, while conducting technical modifications to enhance the treatment efficiency and update worn out equipment -Develop a plan for cooperation with competent agencies to train technicians for the WW plants and Operation and Maintenance (O&M) staff -Develop a competent training program to raise the environmental and professional awareness of station/plant staff members	-Allocate part of the Potable Water and Wastewater Co. Budget for covering the costs of operation, QA/QC, and training -Study the technical conditions of existing WW treatment plants, develop programs for their performance upgrading, and ensure financial allocations to implement these programs -Develop a sustainable program for training technicians -Develop self-monitoring systems for the final effluents of WW treatment plants, activate enforcement of Law 48/1982 on discharging WW onto water ways -Activate the enforcement of the provisions of Law 4/94 and its executive regulations concerning work environment
Upgrade System of reusing treated WW and resulting sludge in agriculture	-Cultivate wood forests in the desert hinterland that depend in irrigation on safe treated wastewater -Apply economic treatment of sludge to ensure it is safely used in cultivation	-Conduct feasibility studies to rehabilitate some treatment plants for reusing the treated wastewater and the resulting sludge in cultivating trees in the desert hinterland of the governorate, and ensure the allocation of financial appropriations required for this purpose in case said studies proved feasible -Develop a cooperation protocol between the Agriculture Directorate and the EEAA to use the treated WW in planting trees.

2.6 List of Proposed and Planned Projects

Table 2.7 Table of Proposed Projects, Projects Included in the Plan and the Projects Related to the Villages Located Within five KM from WW Plants Over Waterways (*)

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
WW Treatment Plant Project for Al-Garadat Village, Abu Hommous District	Local Administrative Units	Local Administrative Unit-DANIDA Consultant	LE 2.0 million	One year	Donor agencies, Rural Construction and Development Agency
WW Treatment Plant Project for Al-Zamarnah Village, Damanhour District	Local Administrative Units	Local Administrative Unit-DANIDA Consultant	LE 2.0 million	One year	Donor agencies, Rural Construction and Development Agency
WW Treatment Plant Project for Nikla Village, Shoubrakheet District	Local Administrative Units	Local Administrative Unit-DANIDA Consultant	LE 2.0 million	One year	Donor agencies, Rural Construction and Development Agency
WW Trenches Scavenging Management Project in Deprived Areas	Rural Construction and Development Agency	NGOs	LE 3.0 million	Two years	Donor agencies, Rural Construction and Development Agency
WW Treatment Efficiency Upgrading Project	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 5.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Project for Reusing Treated Effluents and Resulting Sludge in Agriculture	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

* Proposed funding is approximately estimated during plan development and is modifiable during implementation

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift up stations, Gravity lines, Centrifugal network- northeast Edko City	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift up stations, Gravity lines, Centrifugal network- northwest Edko City	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift up stations, Gravity lines, Centrifugal network- Mansheyet El-Amal, Edko District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up Station connected to the WW system, Al-Nashw, Itay El-Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to the System and Lift Up Station at Berqama village, Itay El Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to the System at Fraolo Village, Itay El-Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Construction of Trench in Kafr Mosaeid village, Itay El-Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 6.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Connection to the WW System at Amleet Village, Itay El-Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Construction of a trench in Saft Khaled village, Itay El-Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 6.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
WW Treatment Plant and Gravity Lines at Saft El Horreya, Itay El Baroud District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 12.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Sewer lines extension and connection of Al-Magd station, Al Magd village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to city Station, Izbet Erfan, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up Station and connection to city station, Mahalet Dawoud Village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 12.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up Station and connection to city station, Mahalet Dawoud Village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 12.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to city station at Kafr Ghoneim Village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up Station and Connection to Izbet Al Magd and affiliates, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 12.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Sewer Lines Extension and Connection to Al Magd Station at AlKafr Al Gadid Village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to city Station at Isbet El Labban village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Connection to city Station at Isbet Adham village, Al Rahmaneya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Nasrallah Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Kom Seif Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Izbet Mazhar Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abu Youssef Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Saaeydah and Al Wakeel Sedki Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Sidi Eisa Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Nakhla Al Bahareyah Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Nakhla Al Qebleyah Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Eisa Shbeid Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Ashra Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Khamseen Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Hussein Mohamed Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Bridan Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abd El Malek Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Youssef Abu Shleil Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Disanah Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Zont Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Yousef El Banna Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Barseeq Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Habib Hindi Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Haroon Wa Moussa Nagi Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Makhyoun Al Bahareyah Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abu El Gazar and Abu Reheim Villages to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Amr El ABd And Al Qattaei Villages to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Zarka Al Menoufi Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abdallah Al Goweila Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Leithy and Abu Gamil Villages to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abu Kabareih and Haroun Villages to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Sahaly El Balad and Hamdy Basha Villages to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Damasna Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Sahaly El Qarawy Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Zaki Affandy Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Ishaq Abdallah Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Makhyoun Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Herfah Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Ghabah Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Metwalli Bey Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Wekeel Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Bank Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Ganab Village to be connected to Besentway Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Daghesh Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Bayoumi Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Mordosonos Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Gimyan Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Sifr Al Kobra Village to be connected to Abu Hommos City Station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Centrifugal lines, and Lift Up Stations at Abbas Sayed Ahmed Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Centrifugal lines, and Lift Up Stations at Al Gammalah Village to be connected to Berket Ghattas Station, Abu Hommos District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Baldo Village to be connected to Kom El Tarfayah Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Izbet Khatbi Village to be connected to Kom El Tarfayah Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line at Fayed Village to be connected to Kom El Tarfayah Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Zalat El Kobrah and Soghra Villages to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Al Attar Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Khalil and Hindawi Villages to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line at Shoukry Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Lotfy Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Hemeira Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Khattab Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line at Marei and Kom Ashou Villages to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Golyan Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Al Teras Al Gorn Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Kom El Berka Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line at Mohsen Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Izbet Marei Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Al Wastaneya Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line at Rafla Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line at Al Gheryani Village to be connected to Zalat Area Station, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Fakhoura Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Kazzaz Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Sira Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Bawadi Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Faransawi Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Keryon Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at King Osman Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Beida Al Balad Village , Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Sabaghy El Beida Compound , Al Beida Co., Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Menasha Village., Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Al Hadrah Village., Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Deif Village, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, Lift Up Station and Centrifugal line and treatment plant at Neibar village, Kafr El Dawwar District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Kombo Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Mansheyet Al Attal Village (Torono), to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Breish Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Dweidar Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Lotfi Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Abu Bakr Ghoneim Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Lidya Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al Koshk Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Habib Village., to be connected to Lidya village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Sidi Okba Village., to be connected to Fazara village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Arab Village., to be connected to Fazara village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Shafeie El Labban Village., to be connected to Fazara village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Hamada Sarhan Village., to be connected to Fazara village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Kafr Nikla Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Eisaweyah Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Zeezenya Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Al-Qashlan Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Zeinab Hassan Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Dawadrah Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Sharaf Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Al-Zoheiry Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Zerefdaki Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Sinderina Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al-Bank Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Antoine Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Saber Al-Aqari Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Hamad Menesi Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Idris Menesi Village., to be connected to Arimon village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Abdel Meguid Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al Qasr Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Zeietar Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Al Saayda Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Izbet Adham (alqattawee) Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Al Khayat Village (Al-Nayyal)., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Mohamed Abdel Aal Village (Al-Nayyal)., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Al Wakeel Village., to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Izbet Erfan village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Abu Selim village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Awad Kishk Village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Hamada Sarhan village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines, and Lift Up Station at Disya Village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Izbet Galal Village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Kafr El Rahmaneya Village to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines, and Lift Up Station at Barakat and Al Sharm Villages to be connected to Serenbai village station, Al Mahmoudeya District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines and Lift Up Station at Al-Naqa and Dabnon Villages to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Nessim Village to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Al-Sharaqwa Village to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines at Izbet El Makhazen, Sidi Hamad, and Al Safeeh Villages to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 7.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines at Izbet El Khoraymat, and Abu Abdallah Villages to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 7.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines at Abu Seif and Rashwan Hamdy Villages to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 7.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines at Public Hospital Housing Compound, Yakan and Kobri Itay Villages to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 7.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines at Izbet El Sofragui Village to be connected to Delingat City station.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 7.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Abu Massoud Village to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Al Hosseini, Abu Ghazara, and Farghali Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines and Lift Up Station at Hemeida and Beltagui Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Metwalli and Abdel Salam Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Al Shennaweyah, Khalil and Mabrouk Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Al Saaeyda, Al Sharnoobi and Al Sherif Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines and Lift Up Station at Mokhtar, Abu Rakik, and Rahim Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Izbet Helmi and Al Hindawi Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Izbet Al Dahlan, Al Daeiki, and Abu Regaae Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity Lines and Lift Up Station at Al Awama, Rashidah, Al-Hageen and Al-Kedwa Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity Lines and Lift Up Station at Izbet Abdel Karim Moussa and Youssef Abdel Nabi Villages to be connected to Al-Messin Village station, Delingat District.	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Sewer lines, Gravity lines, and centrifugal lines at Borg Rashid Village to be connected to the main treatment plant in Rashid City	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Sewer lines, Gravity lines, and centrifugal lines at AL Gedyah Village to be connected to the main treatment plant in Rashid City	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, and centrifugal lines, and Lift Up station at Oreen Village , Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet Hamdy and Omar Fadel Areas affiliated to Oren Village, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, Lift Up station, and Treatment Plant at Abu Bidra village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, Lift Up station, and Treatment Plant at Izbet Abbas village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, Lift Up station, and Treatment Plant at Abu Yehia village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, Lift Up station, and Treatment Plant at Mahalet Nasr village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, Lift Up station, and Treatment plant at Izbet Al Saeid village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, Lift Up station, and Treatment plant at Bishara Hanna village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, Lift Up station, and Treatment Plant at Laqqana Extension village affiliated to Laqqana, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Kafr Osman village affiliated to Mahlet Bishr, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, and Lift Up station at Youssef Kamal village affiliated to Mahlet Bishr, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet Abu Atteya village affiliated to Mahlet Bishr, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Al Regbayah village affiliated to Mahlet Bishr, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet El-Kahwagui village affiliated to Al Ridan, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, and Lift Up station at Izbet El-Shandidi village affiliated to Al Ridan, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet Mohsen Al-Sharqeya village affiliated to Al Ridan, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet Al-Kharadli village affiliated to Al Ridan, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Izbet Al Baradei village affiliated to Al Ridan, Shoubrakhit District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, and Lift Up station at Al-Naqeidi village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 25.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Saft Al-Einab village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 30.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Saft Al-Balakos village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 20.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Kherbeta village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 20.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Kheneiza and Zawyet Khneiza villages to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, and Lift Up station at Kafr Zeyada village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Al Hadein village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 20.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Maliha village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 10.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Dimetyouh village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 25.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Kafr Dimetyouh village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 25.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Gravity lines, centrifugal lines, and Lift Up station at Mansheyet Mehanna village to be connected to Kom Hamada city station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 12.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Al-Zafaran village to be connected to Waqid village station, kom Hamada District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 20.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Kafr Al Ais village to be connected to Waqid village station, kom Hamada District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 25.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Gravity lines, centrifugal lines, and Lift Up station at Mansheyet Amin Ismail village to be connected to Waqid village station, kom Hamada District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 15.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Al Islah village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Shaltot village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Abu Risha village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al-Zabit village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Awad Imara village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Saadallah village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Riko village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Al Qarnein village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Ali Al-Sheikh village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Settah village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Asharah (10) village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Talatatashar (13) village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Ferhash village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Zweil village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Abouseif village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Naiem village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Brinsisa village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Kanon village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Mihrez village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Abdel Qader village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Khalifa Koreitem (Al Sisi) village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Habib village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Brinsisa AL kibleya village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Abqaein village to be connected to Hosh Issa City station	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Kom El Boos village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Lotf-Allah village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al-Asakrah village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Al-Asakrah village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al-Akreesha Al Gadida village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Matossyan village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Bokrato village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Saad Qassem village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Hemida Hamad village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Mohamed Qoreitam village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet El-Adawee village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Mohamed Qoreitam village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Balbaa village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Lasheen village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Mansheyet Khayyat village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Maroon village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Guindi village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Qarafesya village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Al Faransaweya village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Faransaweya village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al Tesataahar (19) village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Hafs village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet Al-Islah Al-Gadidah village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

Project	Competent Authority	Proposed Implementing Agency	Proposed Funding	Timeline	Financing Agency
Lift Up station at Izbet Keryet El Asab village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet El Warsha village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet El Sarboot Al-Gharbeya village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater
Lift Up station at Izbet El Omrana village to be connected to Al Kom Al Akhdar village station, Hosh Issa District	General Authority for Potable Water and Wastewater	General Authority for Potable Water and Wastewater	LE 9.0 million	One Year	Donor agencies, General Authority for Potable Water and Wastewater

2.7 Description of Priority Projects and/or Programs

2.7.1 WW Project at Al-Garadat Village , Abu Hommos District

The wastewater problem in Al-Garadat village has an ecological dimension, due to the high increase of domestic effluents resulting from the consumption of increasing population. Local citizens have installed some WW connections that are incompliant to technical specifications. This resulted in a rising groundwater level at the village, and thus negatively affecting potable water sources and the public health.

Project Advantages:

-End the problem of groundwater pollution and protect potable water sources

-Reduce the groundwater to its normal levels

-Improve public health conditions

Project Components:

-Centrifugal Line

-Lift up Unit

-Treatment Unit

Executing Agencies

DANIDA Project Consultant

Execution Costs

LE 2.0 million approx.

2.7.2 WW Project at Al Zamarnah Village, Damanhour District

The wastewater problem in Al-Zamarnah village has an ecological dimension, due to the high increase of domestic effluents resulting from the consumption of increasing population. Local citizens have installed some WW connections that are incompliant to technical specifications. This resulted in a rising groundwater level at the village, and thus negatively affecting potable water sources and the public health.

Project Advantages:

-End the problem of groundwater pollution and protect potable water sources

-Reduce the groundwater to its normal levels

-Improve public health conditions

Project Components:

-Centrifugal Line

-Lift up Unit

-Treatment Unit

Executing Agencies

DANIDA Project Consultant

Execution Costs

LE 2.0 million approx.

2.7.3 WW Project at Geziret Nikla Village, Shoubrakheet District

The wastewater problem in Geziret Nikla Village has an ecological dimension, due to the high increase of domestic effluents resulting from the consumption of increasing population. Local citizens have installed some WW connections that are incompliant to technical specifications. This resulted in a rising groundwater level at the village, and thus negatively affecting potable water sources and the public health.

Project Advantages:

-End the problem of groundwater pollution and protect potable water sources

-Reduce the groundwater to its normal levels

-Improve public health conditions

Project Components:

-Centrifugal Line

-Lift up Unit

-Treatment Unit

Executing Agencies

DANIDA Project Consultant

Execution Costs

LE 2.0 million approx.

2.7.4 WW Trenches Pollution Control Project

Residential units in deprived villages depend on trenches that collect wastewater that are scavenged later periodically. These trenches are usually designed as open-bottomed reservoirs to leak the collected liquid wastes into the subsequent soil levels, in an attempt to reduce the scavenging costs. Scavenged wastes are usually disposed of in waterways, resulting in the deterioration of water quality. Although this system reduces costs burdened by residents, yet the ecological deterioration has its higher costs at the expense of those residents in terms of deterioration of public health and potable water quality. Hence, this project is aimed at promoting the environmental and economic benefits that will result from the sound management of trench scavenging.

Project Advantages:

-Provide guidance about the environmental, health, social and economic benefits resulting from the sound management of scavenging trenches.

-Improve health conditions of residents

-End groundwater pollution

-Reduce groundwater to its normal levels

-Improve surface water quality

Project Components

-Modify the scavenged reservoirs to be more impermeable and tightly insulated

-Provide an adequate number of efficient scavenging trucks

-Set up a periodical time schedule for scavenging the trenches/reservoirs systematically and defining the route for scavenging trucks to the nearest WW plant

-Document and monitor the procedures of scavenging and unloading to prevent any violations

-Monitor and follow up the extent of improvement in environmental quality especially as regards groundwater, potable water and public health conditions

-Provide public awareness and education, and spreading the positive results

-Prepare feasibility studies, engineering designs, and supervising project implementation

Executing Agencies

Donor agencies- NGOs

Project Execution Costs

LE 3.0 million

2.7.5 WW Treatment Plant Efficiency Upgrading Project

The results of analyzing final effluent discharge of some existing WW treatment plants indicated that it is totally noncompliant with the standard specifications of Law 48/1982, due to the obsolete stations that are overburdened beyond its design capacity, lack of periodical maintenance, and/or lack of required training and equipment. Discharging this noncompliant effluent onto waterways results in polluting and deteriorating the quality of these waterways. Hence, among the advantages of this project is to develop a model for updating and operating WW treatment plants according to standardized technical specifications.

Project Advantages:

-End surface water pollution resulting from discharging noncompliant effluents

-Provide a model for the sound technical standards to ensure efficient operation of WW plants

-Provide an example to ensure sustainable sources of financing the efficient operation of WWTP

Project Components:

-Evaluate efficiency and develop specifications for upgrading WWTPs

-Upgrade outdated equipment and develop a periodical maintenance program thereof

-Train plant/station staff members on various technical aspects of operation

-Study mechanisms to finance operation costs

-Develop feasibility studies and engineering designs, in addition to supervising implementation

Executing Agencies

Donor agencies- General Organization for Sanitary Drainage

Project Execution Costs

LE 5.0 million

2.7.6 Project for Reusing Treated WW Effluents and Sludge in Agriculture

Treated wastewater effluents can be efficiently reused in irrigating unfruitful ornamental green areas such as mid isles on highways or wood trees, which would achieve several environmental advantages in terms of soil stabilization, increased green areas, and utilize sources of water in the desert hinterland areas. In addition, following the safe treatment of sludge, it can be used as organic fertilizers, and thus could generate profits for the Potable Water and Wastewater Co. that would support in covering utility operation costs.

Project Advantages

-Utilize water sources

-Increase green areas

-Generate profits

Project Components

-Upgrade treatment processes to ensure treated wastewater's compliance with the standards of Law 93/1962 for water used in irrigation

-Construct a lift up station, centrifugal line and irrigation system

-Cultivate forests and /or green areas

-Construct units to provide upgraded treatment of sludge

-Create a system for monitoring treated wastewater and resulting sludge

-Prepare feasibility studies, engineering designs and supervising implementation

Executing Agencies

Donor agencies- General Organization for Sanitary Drainage

Project Execution Costs

LE 10.0 million

3. Potable Water Sector Plan

3.1 Background

Several areas in GoB remained deprived from the potable water supply service especially amidst the increasing population that reached four million citizens in 1996, while quantities of potable water supplied were only 243,000 m^3/d. This has resulted in reducing per capita average share to 85 L/capita/day, which constituted 38% of target per capita share. As a result of the deteriorating conditions of potable water, Task Order No. 87 of 1991 was issued on rehabilitation, upgrading and expansion of Damanhour and Shoubrakhit el Tcheeky stations to raise their productive capacities from 400 L/sec to 800 L/sec. The main goal was to meet the requirements of service areas in the districts of Damanhour and Shoubrakhit. However, these deteriorating conditions remained unchanged due to delayed implementation of aforementioned projects. In addition to the planned expansion of Damanhour and Shoubrakhit stations, the National Organization (NOPWASD) plan (1997-2002), amended in 2002-2007 (as well as State Plan to supply service to 240 villages) included the implementation of some water projects through construction of new stations and introducing expansions in existing stations, with a total capacity of 369,000 cubic meters/day. Despite the lapse of more than 15 years as regards some of these projects (such as Shoubrakit and Damanhour stations) and more than 10 years as regards the projects included in NOPWASD 1997/2002-2002/2007 plan, yet to date no new capacities were added by virtue of these projects which received approval from Ministry of planning and included in five year plans.

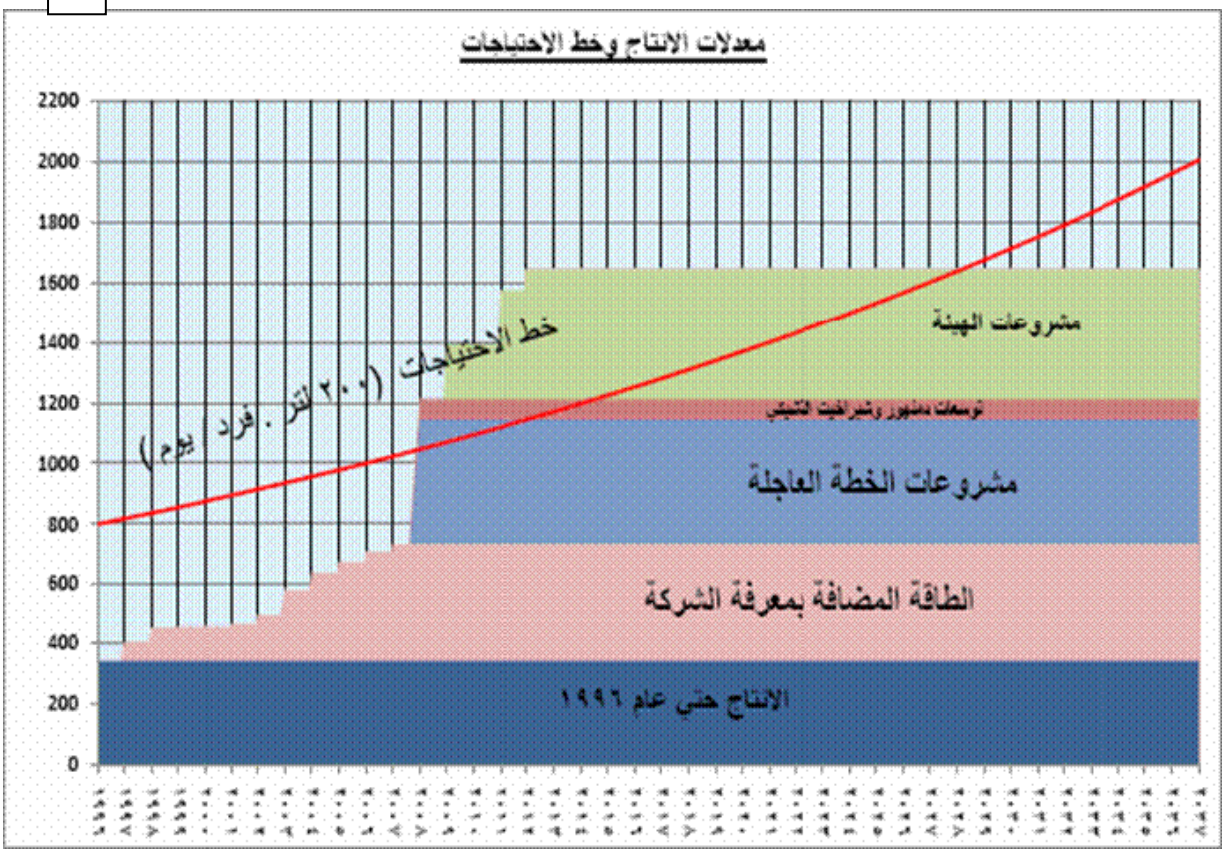
The Beheira Water Company has adopted self-initiated efforts and employed its technical capacities (excluding its financial capabilities), and in collaboration with some foreign agencies (Amsterdam Water Company), to add new productive capacities for the eight existing stations and managed to create a modern scientific approach in treating iron and manganese in groundwater for 27 operations at the GoB south districts (Otay El-Baroud, Kom Hamada, Al-Delingat, Badr). This initiative

resulted in increasing the productive capacity by 57%. This was achieved in addition to Beheira Water Company's efforts in improving the networks performance through reducing losses to 25%. This was reflected in increasing per capita share to 140 L/capita/day, and was further reflected in supplying water to more than 4000 estates and housing compounds in rural and urban governorate areas. Figure 3.1 shows production rates since 1996 and the increases introduced by Beheira Water Company, in addition to NOPWASD planned increases and the State emergency plan.

Currently, the number of households receiving potable water supply service in GoB reaches about 87.7% of the total families in the governorate, meaning that about 12.3% of households receive their requirements of potable water from unsecured sources. It is noteworthy that 100% of households in the cities of Damanhour and Kafr El Dawwar receive safe water supply, while 80.8% of households only receive this safe service in the remaining urban areas of GoB receive, including Rashid city which receives the least rates.

Figure 3.1

Planned Potable Water Production Rates and Requirements Line Based on Providing 200 L/capita/day



As for GoB rural areas, the number of households deprived from the service is increasing. A major problem facing water supply connections into villages is represented in breaking the pipelines when scavengers are disinfection waterways with many bridges, canals, and drains, in addition to continuous power disconnection in these areas. The issue is further aggravated in urban areas with the problems of basin maintenance and fees collection from government departments.

In addition to the quantitative problems in supplying potable water and the areas deprived from this service (especially in rural villages as stated above), there is also a qualitative problem concerned with the quality of potable water stations sources. Results of monitoring River Nile and canal waters that serve as inlet sources for potable water stations indicated that 12 out of 14 samples collected in 2006 are noncompliant with the standards of Law 48/1982. This is mainly attributed t the pollution of surface water with agricultural drainage and wastewater (as indicated in Chapter II of the plan). Samples of produced potable water are collected and compared to the standards and specs stated in Minister of Health Decree 108/1995. Results of samples taken during 2004 and 2005 indicated that total samples were compliant with the regulations of the Law and more than 85% of noncompliant samples became compliant after follow up procedures.

Production costs per cubic meter of water reached 58 piaster, while it is supplied for domestic/household consumption at 32 piaster per cubic meter. As for the economic consumption (investment), it is supplied at 1.25 piaster per cubic meter.

3.2 Accomplishments in the Past Five Years

3.2.1 Decrees and Procedures

In 2004, Presidential Decree 135 of 2004 was issued on establishing the Holding Company for Potable Water and Wastewater and its affiliate companies nationwide (including Beheira Potable Water and Wastewater Company). Said Company's competences include treatment, transport, distribution, and selling of potable water. Beheira Potable Water and Wastewater Co. is considered a leading water company in Egypt as confirmed by foreign cooperators.

3.2.2 Technical and Administrative Support

After the Company's establishment decree in 2004, the following procedures were adopted in terms of providing technical and financial support to the Company:

-Increase the budget allocated for the Potable Water sector after issuing the Company's establishment decree

-Support the central laboratory of the Potable Water and Wastewater Company with up-to-date scientific equipment used in analyzing water. Another subsidiary laboratory was established in each of the Company's governorate-wide branches

-Form the Higher Committee for Monitoring Governorate Potable Water under the chairmanship of Beheira Governor, in order to report on the status of potable water, resulting from the activities of the Main Committee and subcommittees.

-Provide the Main Committee with the required vehicles for taking samples throughout the Governorate in order to conduct the chemical analyses needed to decide on the status of sample compliance with the standardized specifications

On the international cooperation level, the following procedures were adopted:

-Signed a twinning agreement between Beheira Water Company and Amsterdam Water Company aimed at exchanging technical and scientific expertise between both sides. In Phase II of the project, (from early 2002 to late 2004), technical support and

operational technology were provided in stations and distribution networks, in addition to assessing the environmental impacts for the treatment processes.

-Initiate cooperation between the International Organization for Family and Community Development and Beheira Water Company under a program entitled "The National Campaign for Environmental Awareness and Ideal Usage of Water"

-Initiate cooperation with the Italian side through the project for upgrading the potable water supply systems at Beheira governorate, which included two experimental zones in the city of Damanhour.

3.2.3 Implemented Projects

Through its self initiated efforts, and in collaboration with the Amsterdam Water Company, the Beheira Water Company has implemented several projects that helped to increase the production capacity of potable water through increasing the capacities of major treatment plants, filters, and reducing pipeline losses as follows:

Major Plants Expansions

This was applied through studying the current situation within these plants and means to upgrade its performance according to the conclusions by said studies.

Rehabilitation works covered pipelines, measuring devices, control systems, chemical injections, renovation of pumps, transformers and other mechanical and electrical equipment, in addition to upgrading civil, hydraulic facilities, and renovation of laboratories. Table 3.1 indicates the increases achieved in the capacities of the major eight plants at the governorate.

Table 1.3 Accomplishments in Major Plant Expansions

Name of Plant	Capacity before Upgrading (m3/day)	Capacity after Upgrading(m 3/day)	Upgrading Works Summary
Damanhour El Tchiky	35,000	35,000	Construct new filters, introduce a ground reservoir and clarifiers, which helped to increase the plant capacity despite the suspension of three old filters
Damanhour 4	50,000	100,000	Install a pilot plant, modify rates of alum and chlorine injection, enhance the efficiency of sedimentation by installing trident pipelines, and modify rates of filter washing and irrigation system
Abu Hommos	63,000	126,000	Rehabilitation of pipelines, installation of measuring and control devices, chemicals injection, mechanical and electrical works
Kafr El Dawwar El Tchiky	34,000	68,000	Install measuring and control devices for filters, chemical injections, upgrade and rehabilitate civil establishments
Kafr El Dawwar 4	43,000	68,000	Install pumps, adjust sedimentation basins, and rates of drawing scum, from basins
Shoubrakhit El Tchiky	35,000	52,000	Install new filters, improve filters performance, install wash water extraction units from scavenged basins
Edfina	43,000	86,000	Enhance the efficiency of sedimentation by installing trident pipelines, modify the amount of alum, modify irrigation system, and execute a main line for the cities of Rashid and Edko
Alnobareya	43,000	53,000	Modify control system of raw water pumps and clarifiers, and enhance filtering pumps

Minor Plant Expansions

The Company enhanced the efficiency of shift operated rapid filtering stations, by adopting the following procedures:

-Redistribute some of these stations/plants to work on permanent canals

-Upgrade stations intakes and construct trenches to draw raw water pumps in order to ensure its operational stability

-Rehabilitate and upgrade treatment phases through improving additives, chemical mixings, replacing the worn out plastic boards in sedimentation basins with Lamella plates to improve the sedimentation process and increase basin efficiency.
As for merged filtering stations, the Company has constructed merged stations in the areas of Sheikh Zayed, Sinbada, Kom El Nasr, Mansheyet Nassar, Janaklis, and Ras El Teraa with a total capacity of 47,000 m3/day.

As for groundwater supply upon which southern Beheira governorate depends, the Beheira water Company, through foreign and local agencies cooperation, has managed to upgrade the productive capacities of artesian wells to reach 38 million m^3/year, with an increase representing 57% despite reducing the number of productive wells. All artesian wells sites have been rehabilitated by applying the BURMAN method to remove iron and manganese, which is considered a cost effective method in comparison to well known traditional methods.

Systems Expansions

A Basic system network has been executed at 115 m long and varied diameters to transfer the effluent of these stations into subsidiary networks inside the villages and districts of the governorate. Annex 3 lists connection works executed in the villages of the governorate.

Works In Progress:

A series of projects were included within the State Plan 2002-2007, yet were never completed during said period. Other pending water supply projects for 46 villages in Beheira were also included (within context of State plan to extend water supply services to 240 villages). These projects are aimed at enhancing water pressures and increase per capita share as well as face the challenge of population increase within the next decade. Table 3.2 shows a list of these projects.

Table 2.3 Potable Water Projects Included Within NOPWASD Plan 2002-2007

Plant/Station Name	Number of Population	Station Design Capacity	Areas Served by Station/Plant
Shoubrakhit El-Tchiky Expansion	300,000	From 600 L/sec To 800 L/sec	Shoubrakhit District and City
Damanhour El-Tchiky Expansion	700,000	From 400 L/sec To 800 L/sec	Damanhour District and City
Badr	160,000	800 L/sec	Badr District and City
Edfina expansion (already finalized)	400,000	From 500 L/sec To 1000 L/sec	Rashid and Edko Districts
Al Nobareya expansion	650,000	From 600 L/sec To 1400 L/sec	Abu El-Matamir, Housh Issa, and Wadi El Natroun Districts
Al-Mahmoudeya	250,000	600 L/sec	Al-Mahmoudeya District and City
Al-Delingat	330,000	700 L/sec	Al-Delingat District and City
Abu Hommos Expansion	450,000	From 1400 L/sec To 1800 L/sec	Abu Hommos District and City
Kafr El Dawwar Expansion	900,000	From 500 L/sec To 1000 L/sec	Kafr El-Dawwar District and City
Itay El Baroud	400,000	400 L/sec	Itay El-Baroud District and City
Kom Hamada	400,000	400 L/sec	Kom Hamada District and City
Supplying Service to 46 villages within Project To Supply Service to 240 villages	158,000	600 L/sec	Deprived villages included within the 240 Villages Project

3.3 Current Conditions: Problems and Causes

Table 3.3 Current Conditions: Problems and Causes

Current Plans and Programs to Handle Current Conditions	Major Causes of Problem	Major Problems and Negative Impacts of Current Conditions	Current Conditions
About 12% of governorate population still do not receive safe water, and other groups of population do not receive service systematically	-Citizens use Ethiopian pumps to have access to potable water that lacks standard specs, resulting in negative public health impacts, and spreading diseases and epidemics	-Breaking pipelines when scavenging trucks starts disinfection works -Existence of several bridges, canals, and drains -Sustainable power failure in deprived areas	-Execution of delayed five year plan projects -Execution of water supply projects in 46 villages for a total number of 158,000 citizens included in the State-planned 240 Village Project
Lack of a general scheme to upgrade the traditional methods used in potable water treatment	-Use traditional methods in treatment of potable water, and these methods are too insufficient to eliminate many pollutants. Also the chlorine used in treatments is considered a main cause of water pollution resulting in several reactions causing the emergence of halogenated methane compounds, and halogenated acetic acid, which are carcinogenic compounds if reacted with some organic compounds in water	-Lack of financial allocations for covering expenses of scientific researches on upgrading potable water treatment methodologies -Lack of a main strategy for cooperation with scientific research agencies to benefit from potable water sector upgrading researches and studies	-Currently no specific program exists to develop a general scheme technologies applied in potable water treatment
Continuous urban development expands over some operations	-Spread of WW trenches near the operation wells results in potable water pollution, especially in areas deprived of WW	-Leakage of WW to groundwater -New and poorly planned urban expansion must be studied to avoid hazardous impacts on	Company has established fences around operations to stop the urban development crawling over operation fields

	service, causing negative impacts in the results of bacteriological analysis of water. Mostly samples are noncompliant with specs and diseases are spreading	vital adjacent establishments such as water stations	
Worn out distribution systems in some areas	-High losses in water amounts, the reiterated water disconnection periods to carry out system repairs, and weakness of household water supply -Potable water polluted with WW or leaking groundwater via cracks in worn out pipelines during water supply disconnection and repair periods, which negatively affects the results of sample bacteriological or chemical analysis	Outdated and disregarded distribution systems results in destroying its tolerance for high water pressures, leading to some outbursts in lines of these networks	Rehabilitation of worn out water systems and replace asbestos pipelines according to Company's financial viability
Depletion of some groundwater wells	-A clean potable water supply crisis emerges especially in governorate villages that mainly depend on groundwater as a primary drinking water source. This results in residents resorting to other means to get water such as Ethiopian pumps whose water lacks the required potable water standards, and consequently there	-Improper methods of extracting water from wells -Nature of soil in which the well is located -Siltation and clogging of wells	-Construct eight wells to support areas of weak water pressure. These shift-operated wells are aimed at improving service targeted to 200,000 individuals at a cost of almost LE 1.2 million

	is a spread of diseases related to water pollution		
Improper uses of Potable Water	Wasting large quantities of clean potable water in unspecified purposes, which negatively affects the remaining water quantities	-Lack of public awareness due to lack of sustainable awareness campaigns confirming the value and importance of potable water	-Coordination between Governorate Environment Department, local administrative units, and Beheira Water Company to carry out public awareness campaigns to educate citizens on the importance of preserving water
Increase Salinity levels in some processes	-Invalidity of well waters for drinking purposes or industrial usage	-Nature of groundwater well in the area	Up-to-date treatment methods were applied to handle the high salinity levels of iron and manganese for 27 processes at the districts of southern Beheira (Itay El Bartoud, Kom Hamada, Al-Delingat), Badr), which helped in increasing groundwater productivity
Lack of coordination between Ministry of Irrigation and Water Company	-Increased burdens on the potable water treatment phases at stations located on main canals	-Disregarding and breaching agricultural drain water mixture standards, which results in producing improper raw water	-Commitment and abidance on the part of Ministry of Irrigation to agricultural drain water mixing ratios

3.4 Vision and Objectives

-Supply potable water to deprived areas, and increasing water pressure in areas suffering from unsystematic service

-Improve potable water quality through protecting groundwater processes against transgressions, upgrade the efficiency of monitoring, and update treatment methods applied

-Reducing potable water losses resulting from misuse and low public awareness, and reduce potable water losses in distribution networks

-Upgrade the standard operating procedures of potable water utility and apply technical, administrative, and economic systems to increase operation efficiency and cope with the rapidly developing technologies

3.5 Targets and Required Actions

Table 3.4 Targets and Required Actions

Main Target	Targets for the next Five Years to Achieve Main Target	Decrees, Procedures, Institutional Work, Required Projects and Programs to Achieve Target
Supply potable water to deprived areas	-Implement water network extension projects to deprived areas, upgrade and expand the capacities of existing stations/plants -Develop the required plans to construct fixed filtering stations in deprived areas -	-Ensure the required financial appropriations and organizational structure
Improve potable water quality	-End transgressions over the fields of groundwater processes -End the chemical and /or bacteriological noncompliant groundwater processes and supply their areas respectively from nearby filters -Upgrade efficiency of the Higher Committee for Potable Water to follow up and review the results of analysis adequately -Activate the participation of concerned authorities such as Health Directorate and Environment Department in supervising the process of washing and disinfection water reservoirs, sedimentation tanks/basins, and networks	-Issue the decrees related on removing transgressions from the fields of groundwater wells -Ensure sustainable coordination between the concerned authorities to monitor the status of sedimentation tanks/basins and water reservoirs
Reduce potable water Losses	-Carry out awareness campaigns to educate citizens on the importance of preserving water	-Ensure sustainable cooperation between the Water Company, the local administrative units, NGOs, and institutions -Ensure the financial appropriations required for the awareness campaigns and identify the role of each agency/authority in the process of awareness

Main Target	Targets for the next Five Years to Achieve Main Target	Decrees, Procedures, Institutional Work, Required Projects and Programs to Achieve Target
Upgrade the standard operating procedures of potable water utilities and cope with rapidly developing technologies	-Develop the plans and programs capable of enabling the Company to achieve a distinguished service provision to be reflected in the satisfaction of customers -Provide the most recent global technologies that support operation and maintenance at the Company, since O&M are the two main axes for the company's compliant qualitative and quantitative production of water -Support the economic performance standards doe all the potable water supply activities	-Dependence on decentralized management of the potable water Company -Coordination between the water Company and the research and scientific agencies -Ensure the financial allocations required for monitoring technological advancements in the water processing and conducting the scientific researches to improve the current conditions -Provide the financial allocation required for operation and developing the organizational and technical structure in charge of water sector

3.6 List of Proposed and Planned Projects

Table 3.5 Table of Proposed Projects, Projects Included in the Plan

Waterways(1)

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Produced Water Loss Reduction Project	Potable Water and WW Company	Potable Water and WW Company	LE 3.0 million	Two years	Donor agencies
Operation Efficiency Upgrading and Potable Water Quality Improvement Project	Potable Water and WW Company	Potable Water and WW Company	LE 3.0 million	Two years	Donor agencies
Plant Discharging 400 L/sec, Abis station-Kafr el Dawwar	Potable Water and WW Company	Potable Water and WW Company	LE 31.0 million	One year and 75% of works are completed, to be finalized 13/8/2008	Donor agencies
Plant Discharging 400 L/sec, Danshall station-Damanhour	Potable Water and WW Company	Potable Water and WW Company	LE 30.0 million	One year and 90% of works are completed, to be finalized 31/8/2008	Donor agencies
Plant Discharging 400 L/sec, Abis station-Kafr el Dawwar	Potable Water and WW Company	Potable Water and WW Company	LE 31.0 million	One year and 75% of works are completed, to be finalized 13/8/2008	Donor agencies

(1) These shall be added to the projects included in the State Plan 200-2007 previously listed in Table 3.2

Plant Discharging 600 L/sec, Al Harir Al Sinaei station-Kafr el Dawwar	Potable Water and WW Company	Potable Water and WW Company	LE 38.0 million	One year and 75% of works are completed, to be finalized 31/8/2008	Donor agencies
Plant Discharging 400 L/sec, Mansheyet Nassar station-Damanhour	Potable Water and WW Company	Potable Water and WW Company	LE 31.0 million	One year and 90% of works are completed, to be finalized 31/8/2008	Donor agencies
Traditional Station capacity 400 L/sec, Abu EL Mattamir station, Abu El Mattamir	Potable Water and WW Company	Potable Water and WW Company	LE 32.5 million	One year and 90% of works are completed, to be finalized 31/8/2008	Donor agencies
Traditional Station capacity 400 L/sec, Al Bostan station, Al -Delingat	Potable Water and WW Company	Potable Water and WW Company	LE 31.0 million	One year and 90% of works are completed, to be finalized 31/8/2008	Donor agencies
Traditional Plant Capacity 400 L/sec, West Itay El Baroud station	Potable Water and WW Company	Potable Water and WW Company	LE 31.0 million	One year and 50% of works are completed, to be finalized 31/8/2008	Donor agencies
Traditional Plant Capacity 600 L/sec, Kom Hamada station	Potable Water and WW Company	Potable Water and WW Company	LE 39.0 million	One year and 75% of works are completed, to be finalized 31/8/2008	Donor agencies

3.7 Description of Prioritized Projects and /or Programs

3.7.1 Produced Water Losses Reduction Project

Despite the fact that some areas are still deprived of systematic potable water supply service, yet a big portion of potable water produced in current treatment stations and groundwater processes are actually lost in the worn out and obsolete distribution networks. Also, a large portion of these waters are wastes due to improper behavioral patterns on the part of the citizens in dealing with water. The project is aimed at identifying the economic and environmental benefits achievable from minimizing the wasted losses of these produced waters via upgrading the distribution network in a model area to be implemented in line with a public awareness campaign of residents dwelling in same area.

Project Advantages:

-Reduce losses of produced potable water, and consequently, provide investments to increase water pressure, and reduce the production costs per cubic meter of water

-Protect distribution network from potential pollution

-Reduce water consumption levels

-Provide a model to be followed by other areas

Project Components:

-Monitor water loss spots in networks and upgrade them in project area

-Launch public awareness

-Monitor the amounts of water saved and the economic advantages resulting from documentation of procedures

Executing Agencies:

Donor agencies

Execution Costs

LE 3.0 million

3.7.2 Operation Efficiency Upgrading and Water Quality Improvement Project

Water supply utilities suffer from a severe shortage in financial allocations required for the sound management of water facilities. This is linked to the lack of the revenues needed for activating the decentralization of management and application of modern technologies for water monitoring and treatment, so that there is high quality water produced with the minimum potential costs. Therefore, this proposed project is aimed at applying modern and cost effective technologies in one or more of treatment stations. By virtue of this project, the station water intake shall be protected against pollution amidst increasing operation efficiency of treatment phases. The project shall study the possible replacement of chlorine disinfection system in order to prevent the formation of halogenated compounds, and identify the resulting impact on operation economies.

Project Advantages:

-Improve the quality and safety of water received by the consumer

-Increase operation efficiency levels

Project Components:

-Select one treatment plant and diagnose its operational problems

-Develop systems to protect the station's water intake against pollution and increase treatment phases operating efficiency

-Develop a disinfection system instead of disinfection by chlorine, and monitor the new system economic and technical feasibility

-Develop an integrated quality assurance/quality control management system

Executing Agencies:

Donor agencies

Execution Costs:

LE 3.0 million

4. Solid Wastes Management Sector Plan

4.1 Background

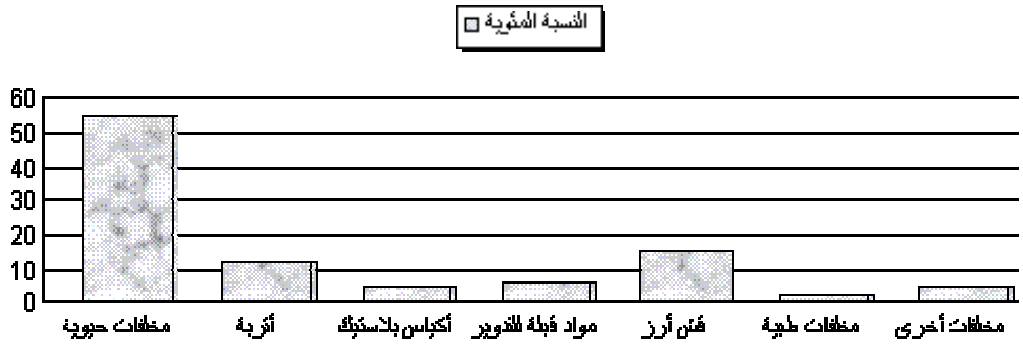
The process of collection, sound treatment and disposal of the increasing amounts of solid wastes is considered a daily challenge facing the governorate and the local administrative units at relevant districts. Uncontrolled disposal and burning of solid wastes represents a main environmental problem. Developing sound solid wastes management systems allover the governorate is considered a high priority. As the number of governorate population doubled recently, with the increased population density in urban areas, especially in big cities, and the changed consumption patterns in urban and rural areas alike, in addition to lack of awareness and solid wastes mismanagement, various pressures aggravated on the environment and public health due to the accumulation of solid wastes, which showed evidently its hazardous symptoms allover the governorate. The traditional solid waste management systems have proved unable to meet the requirements of all community brackets in terms of achieving an acceptable level of cleanliness, minimizing health and environmental hazards, and ensuring a civilized image for the governorate. Enormous amounts of wastes accumulate currently in the streets, random dumpsites spread in various vital areas, in addition to the open burning of wastes as a means of disposal, which became a major air pollution source in the governorate.

Large amounts of wastes have accumulated throughout the governorate during the past few years and just became pollution spots that constitute hazardous pressures on human health and environment. In 2004 (1) the quantity of accumulated wastes in GoB was estimated at 400,000 m^3, and still the final disposal of wastes is mostly done in open dumpsites or in places not specified or equipped for this purpose, since the governorate lacks a controlled landfill.

The rate of solid waste generation on the governorate level is estimated at 911 tons/day (according to 2006 estimates). The cities of Damanhour and Kafr El Dawwar represent the highest cities in the governorate in terms of waste generation, while the districts of Wadi el Natroun and Al Rahmaneya represent the least areas in this regard. Studying a random sample of wastes at the public dumpsites on the governorate level indicated that the wastes are composed of 55% of animal and organic wastes (55%), dust (12%), plastic bags (5%), recyclable wastes (6% in the form of paper, plastics, textiles), rice straw (15%), other wastes (5%) and medical wastes (2%), as shown in figure 4.1

(1) According to EEAA estimates

Figure 4.1 Ratios of Various Types of Solid Wastes According to a Random Sample Analysis



The waste collection in urban cities depend on gathering wastes in collection spots or containers to be later transported by tractors or trucks to 13 public dumpsites and three industrial facilities for producing organic wastes from garbage. Due to shortage of cleaning equipment, and the fact that many of the existing equipment are obsolete and almost depreciated due to lack of maintenance and rehabilitation (because of lack of financial allocations), thus the waste collection works are not sustainable, resulting in random accumulation of wastes in vacant spaces.

As for rural villages, there is no waste collection service in general except in some special cases in some villages that implemented solid waste collection and management programs as per its limited capacities, yet achieved high results in managing this system through the popular and executive authorities' cooperation. This was quite evident in the villages of Al Gharabawi in El Delingat, Al-Magd in Al Rahmaneya, Al Haganayah in Damanhour, Mustafa Agha in Abu Hommos, and Omar Makram in Badr. This encourages reiterating these initiatives in other governorate villages and attempting to enforce it in cities.

In addition, there is no general system for sorting the hazardous medical wastes at source. Currently, there are 15 incinerators for burning hazardous medical wastes at central government hospitals, and a shredder-disinfection unit in the National Medical Institute. The total capacity of these units is estimated at about 1000 kg/hr, since one incinerator is environmentally noncompliant.[2] No incinerators exist in the districts of Housh Issa, Al Rahmaneya, Wadi El-Natroun or Badr. Also, there is a lack of any environmental compliant vehicles/trucks (according to Law 4/94) to transfer hazardous medical wastes from generation spots to incinerators.[3] Except for the unofficial efforts by medical institutions to transfer its hazardous wastes using its own trucks or the local administration unit's trucks into the existing incinerators, most of the medical institutions dispose of their hazardous wastes randomly with normal solid wastes, resulting I severe environmental and health hazards.

4.2 Accomplishments in the Past Five Years

4.2.1 Decrees and Procedures

Governor of Beheira Decree 452 of 2006 was issued on activating the enforcement of collecting fees in return of utilized activities and lands inside the GoB boundaries on monthly basis according to the provisions of Law 10/2005. The issuance of this decree resulted in increased collection of cleaning fees, which helped in increasing the rates of waste collection from residences. In addition, sites were located for two landfills over an area of about 70 feddans each at the cities of Wadi El Natroun and Markaz Badr (District) an area of three feddans was allocated at the Tal Naqala in Abu Hommos to establish a garbage recycling facility.

(2) Till the time of preparing this environmental Profile in 2006, the incinerators installed in the Central Kom Hamada Hospital, Central Rashid Hospital, and five general clinics in Kafr El Dawwar were not operating yet

(3) Excluding one vehicle that has recently entered service in Damanhour District

4.2.2 Technical and Administrative Support

A general scheme has been planned including a comprehensive concept for a long term solid waste management program in the governorate. Accordingly, the GoB has purchased 50 medium-sized trucks to facilitate the process of collecting wastes from narrow streets and contribute to raining the collection ad transport efficiency. Support was also provided to NGOs collecting and sorting garbage in urban and rural governorate areas, in order to implement a number of projects in the field of solid wastes management indicated in the following paragraph.

4.2.3 Executed Projects

During the past five years, the following solid waste management projects were executed:

-A garbage recycling facility was inaugurated in Edko city at a capacity of 10 tons/hr, in addition to two other facilities in the village of Hafs at the city of Damanhour, and the village of Sidi Ghazi at the city of Kafr El Dawwar.

-Two hazardous medical waste incinerators were established for the two districts of Damanahour and Edko during 2007, in order to contribute in disposal of hazardous medical wastes and through collaboration of government hospitals.

-An equipped truck for hazardous medical waste collection and transfer from private clinics and hospitals to incinerators has started operating.

-A solid waste collection project started operation at the villages of Al Gharabwi, Al Magd, and Omar Makram, in collaboration with NGOs and local administrative units, through which wastes are collected, sorted and organic wastes are transferred into organic fertilizers, and non-recyclables are transferred to public dumpsites affiliated to the local units.

Works in Progress

The following projects are currently in progress:

-Preparations to establish a solid waste recycling facility at Kom Hamada village are underway to serve the cities of Kom Hamada, Al Delingat, Itay El Baroud at a capacity of 10 tons/hr at a cost estimated at about LE 6.0 million

-Coordination is underway with the Ministry of Local Development to enhance the efficiency of the garbage recycling facilities at the cities of Damanhour and Kafr El Dawwar, as these facilities have lately witnessed a state of inefficiency due to the emergence of heavy equipment problems and the carrying belts at the facilities

-Coordination is underway with some NGOs to apply the experiment of garbage sorting at source, and transferring the non-recyclables to dumpsites.

4.3 Current Conditions: Problems and Causes

Table 4.1 Current Conditions: Problems and Causes

Current Conditions	Major Negative Problems and Impacts from Current Conditions	Major Problem Causes	Current Plans and Programs To Handle Current Conditions
Solid waste collection is not applied in all GoB rural and urban areas	-Citizens in several rural and urban areas dump their wastes in open vacant spaces or on the banks of waterways, resulting in pollution of soil, surface water and groundwater	-Inadequacy and deterioration of waste collection equipment -Shortage in solid waste collectors who prefer in other attractive jobs -Shortage in financial allocations and lack of any self financing mechanism in solid waste management	-Prepare an integrated solid waste management plan at the governorate and searching for financing mechanisms thereof.
-Disposal of wastes in random uncontrolled dumpsites, and the accumulation of wastes in cities and villages	-Smoke emissions resulting from garbage spontaneous combustion and the consequent impacts on the adjacent agricultural areas and schools -Spread if rodents and insects at dumpsites and accumulation piles. -Spread of the waste-sorting phenomenon, especially among children -Negative impact on the GoB public image	-Improper burial of wastes prevents spontaneous combustion -Negligence on the part of GoB Health Department to disinfect dumpsites -Random dumping of wastes due to lack of awareness -Lack of proper and environmentally friendly spaces Lack of financial allocations to establish fences and for purchasing and maintenance of equipment	Establish environmentally compliant landfills and dumpsites
Lack of public awareness, especially solid waste workers	-Irresponsible behaviors on the part of the residents result in spread and accumulation of solid wastes and its environmental problems -Solid waste workers are exposed to health and environmental hazards	-Shortage of public awareness campaigns on the best practices in solid waste management, and the lack of proper alternatives -Lack of uniform and personal protection equipment for workers	-Provide the required support for awareness

Current Conditions	Major Negative Problems and Impacts from Current Conditions	Major Problem Causes	Current Plans and Programs To Handle Current Conditions
Burning agriculture wastes in fields	-Emissions of hazardous smoke that pollutes the ambient environment	-Lack of public awareness on the part of farmers despite gaining potential benefits from this type of wastes -Lack of alternatives before farmers to benefit from these wastes	-Provide the required equipment for straw compaction on the governorate level
-Incomplete recycling of wastes	-Inadequate capacity of facilities to accommodate all incoming wastes	-Reiterated facility breakdowns along with infrequent power failure, and the produced fertilizers does not adequately cover facility operation costs	-Provide financial support to enhance the efficiency of facilities and support equipment
-Hazardous medical wastes mixed with normal municipal wastes	-Spread of infections in waste storage areas and in public dumpsites	-Lack of hazardous wastes collection and treatment equipment according to environmental law	-Conduct a principle study on Districts' required incinerators

4.4 Vision and Objectives

-Enhance solid waste collection efficiencies and cover deprived areas
-Ensure the proper facilities for safe disposal of solid wastes
-Compost the biggest quantity of domestic and agricultural wastes by changing it to organic fertilizers
-Provide safe mechanisms for hazardous medical wastes treatment and disposal
-Increase the environmental awareness by sound management of solid wastes

4.5 Targets and Required Actions

Table 4.2 Targets and Required Actions [4]

Main Target	Targets for the next Five Years to Achieve Main Goal	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
-Upgrade the efficiency of solid waste and covering deprived areas for the first time	-Detailed evaluation of the current conditions of solid waste management on the governorate level -Enhance the efficiency of solid waste equipment including loaders and vehicles	-Update the solid waste management plan and design its utilities at the governorate -Increase the financial allocations in support of solid waste management programs
Provide proper methodologies for safe disposal of solid wastes	-Provide safe landfills to accommodate the wastes generated by the governorate	-Allocate funds and lands on the desert hinterland for the construction of controlled landfills according an integrated system for the GoB
Compost the biggest quantities of domestic and agricultural wastes into organic fertilizers	-Waste recycling facilities shall accommodate and manufacture all the quantities resulting from wastes -Collect and transfer huge quantities of agricultural wastes to fertilizers or fodders manufacturers	-Enhance the efficiency of currently operating facilities, and establish similar facilities in deprived areas -Launch programs and projects to collect the proper agricultural wastes
Ensure safe methods for hazardous medical wastes treatment and disposal	-Provide a system for collection, transfer, treatment, and disposal of hazardous medical wastes in the governorate.	Allocate funds to finance the system and develop a system for collecting service surcharges from medical institutions to finance operating costs
Raise public awareness on sound management of solid wastes	-Launch awareness campaigns in support of governorate endeavors on the sound management of solid wastes and preserving the cleanliness of urban and rural areas.	Allocate funds for the media campaign and coordinate between various concerned authorities to achieve the objectives of these media campaigns (5)

(4) Projects were studied in more details within the Environmental Awareness Plan in Chapter VII

4.6 List of Proposed and Planned Projects

Table 4.3 Table of Proposed Projects, Projects Included in the Plan (5)

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Develop and implement an integrated full-phased solid waste management plan	Local Administrative Units, GoB	Specialized Company	LE 5.0 million	One year	Donor agencies
Solid waste management in Wadi El Natroun, an intermediary station to serve the districts of Damanhour, Abu Hommos, Iray el Baroud	Local Administrative Units, GoB	Specialized Company	LE 30.0 million	One year	Donor agencies EEAA
Solid waste landfill in Badr, an intermediary station to serve the districts of Al-Delingat, Kom Hamada, Abu El Mattamir	Local Administrative Units, GoB	Specialized Company	LE 30.0 million	One year	Donor agencies EEAA
Waste recycling facility at Kom Hamada	Local Administrative Units, GoB	Specialized Company	LE 7.0 million	One year	Donor agencies, EEAA, Ministry of Local Development
Integrated Hazardous Medical wastes Management in governorate including safe collection, transfer and incineration	Health Affairs Directorate	Health Affairs Directorate	LE 10.0 million	Two years	Donor agencies, Ministry of Health and Population

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Agricultural wastes collection and utilization project	Local Administrative units, Agriculture Directorate, Governorate	Specialized company	LE 5.0 million	Two years	Private sector investors

4.7 Description of Priority Projects and/or Programs

4.7.1 Develop an Integrated Solid Waste Management Plan for the Governorate Including Engineering and Economic Studies, and Implement Projects to Enhance Waste Collection Efficiency

It is highly important to prepare an economic study and an integrated engineering design for the utility concerned with collecting, transferring, sorting, recycling, and final disposal of solid wastes generated from the whole governorate, to ensure taking all the technical and economic aspects into consideration, ensure integration between various utilities, and coordinated efforts in a standard plan for solid wastes management. Since implementing all projects to be included in the plan involves high budgets, thus some projects were suggested to increase the efficiency of solid waste collection within this project's activities, provided that the budgets of the remaining planned projects shall be divided to secure said budgets from various financing agencies.

Project Advantages:
-Develop an integrated concept for the requirements of sound solid waste management at the governorate
-Cover new areas with the waste collection service
-Implement projects as model for planned projects

Project Components:
-An integrated solid waste management plan that includes feasibility study
-Execute a number of waste collection and sorting projects as prioritized in the plan

Executing Agencies
Donor Agencies

Execution Costs:
LE 5.0 million

4.7.2 Solid Waste Landfill at Wadi El Natroun District

The problem of solid waste disposal using safe and environmentally friendly method constitutes the most important challenge that faces local administrative units on the governorate level, as these units face the issue of the daily mounting quantities of wastes, in addition to the rejected non-recyclable items from the garbage recycling facilities. An area of 70 feddans was allocated to establish this landfill. The designing and operation of this landfill comes within the context of the GoB integrated solid waste management.

Project Advantages:

Safe and environmentally friendly disposal of solid wastes according to GoB Environmental Management Plan

Project Components

-Establish, operate and supply the equipment for the landfill
-Intermediary station

Executing Agency

Ministry of Local Development, in collaboration with EEAA

Execution Costs

LE 30.0 million

4.7.3 Solid Waste Landfill at Badr District

The problem of solid waste disposal using safe and environmentally friendly method constitutes the most important challenge that faces local administrative units on the governorate level, as these units face the issue of the daily mounting quantities of wastes, in addition to the rejected non-recyclable items from the garbage recycling facilities. An area of 70 feddans was allocated to establish this landfill. The designing and operation of this landfill comes within the context of the GoB integrated solid waste management.

Project Advantages:

Safe and environmentally friendly disposal of solid wastes according to GoB Environmental Management Plan

Project Components

-Establish, operate and supply the equipment for the landfill
-Intermediary station

Executing Agency

Ministry of Local Development, in collaboration with EEAA

Execution Costs

LE 30.0 million

4.7.4 Integrated Hazardous Medical Waste Management Project

Most medical care institutions do not include any safe hazardous medical infectious wastes management methodology. Therefore, it is a dire necessity to establish a hazardous medical wastes collection system, provided that such wastes are safely transported to incinerators located at the GoB, while installing new incinerators to accommodate the hazardous medical wastes generated in the governorate. According to a conceptual study by the Health Affairs Department, the districts of Badr and Housh Issa must have the priority as both lack any incinerators while there are 190 medical facility in Housh Issa District that generate around 70.0 kg/day and 123 medical facilities in Badr District that generate about 60 Kg/day. This system is supported by the medical care institutions' compliance with Environment Law 4/94 which requires sorting the hazardous wastes at source while documenting the procedures of transporting and treatment of these wastes in a safe manner.

Project Advantages:

Safe and environmentally friendly disposal of solid wastes according to GoB Environmental Management Plan

Project Components

-Establish and operate new incinerators to accommodate wastes
-Provide equipped trucks to transport wastes according to Environment Law
-Train medical institutions staff members on sorting wastes at source and provide the required tools for this purpose
-Develop a system for collecting a service surcharge to finance long term project operation

Executing Agency

Donor Agencies, Health Affairs Directorate

Execution Costs

LE 10.0 million

4.7.5 Agricultural Wastes Collection and Utilization Project

Agricultural wastes cause a twofold environmental problem, first: the irresponsible behavior on the part of farmers by burning these wastes in fields to evacuate the land in preparation for the next cultivation season, resulting in gaseous emissions that pollute the ambient air. Second, these wastes can be used to produce organic fertilizers, fodders, or bio-fuel. Farmers are burning these wastes because they don't have feasible alternatives to dispose of such wastes in a environmentally safe manner. Hence, the project is aimed at collection and compaction of these wastes inside fields, to be later transported to organic fertilizers and/or animal fodders manufacturers.

Project Advantages:

-Minimize air pollution resulting from burning of agricultural and green wastes
-Recover and recycle agricultural wastes

Project Components:

-Purchase equipment to compact and transport agricultural wastes from fields
-Prepare manufacturing lines to produce organic fertilizers, fodders or any other relevant economic products according to the outputs of an economic feasibility study
-Assign or rent the processes of waste collection and manufacturing line to a specialized private sector company and provide the required support to ensure the project's success

Executing Agency

A Private Sector company

Execution Costs

LE 5.0 million

5. Industry Sector Plan
5.1 Background

The governorate hosts 8130 registered industrial facilities accommodating about 72,000 workers according to the 2005 Human Development Report of Beheira Governorate. These industrial facilities are mostly affiliated to the sectors of food, textiles and weaving, dying industries, basic metallurgic industries, wood industries, cotton spinning, chemical manufacturing, smelters, brick making factories, and industries based on fishing and fish processing in coastal areas.

Most industrial facilities in the GoB are scattered near the residential areas, resulting in the arousal of many environmental problems concerned with air pollution, noise, and hazardous wastes management. With the exception of the Textile Manufacturing Complex in Kafr El Dawwar and the Petroleum Industries Complex in Edko, there is currently no industrial zones in the governorate. It is planned to establish and complete five industrial zones in the governorate as follows:

The industrial zone in Wadi El Natroun. An area of about 2,200 m^2 in west Wadi El Natroun including 252 land plots was allocated for industrial activities. Although water and WW services were not yet supplied, yet it is expected that installing the infrastructure for power supply, telecommunications, water, and WW shall be completed during the next few years.

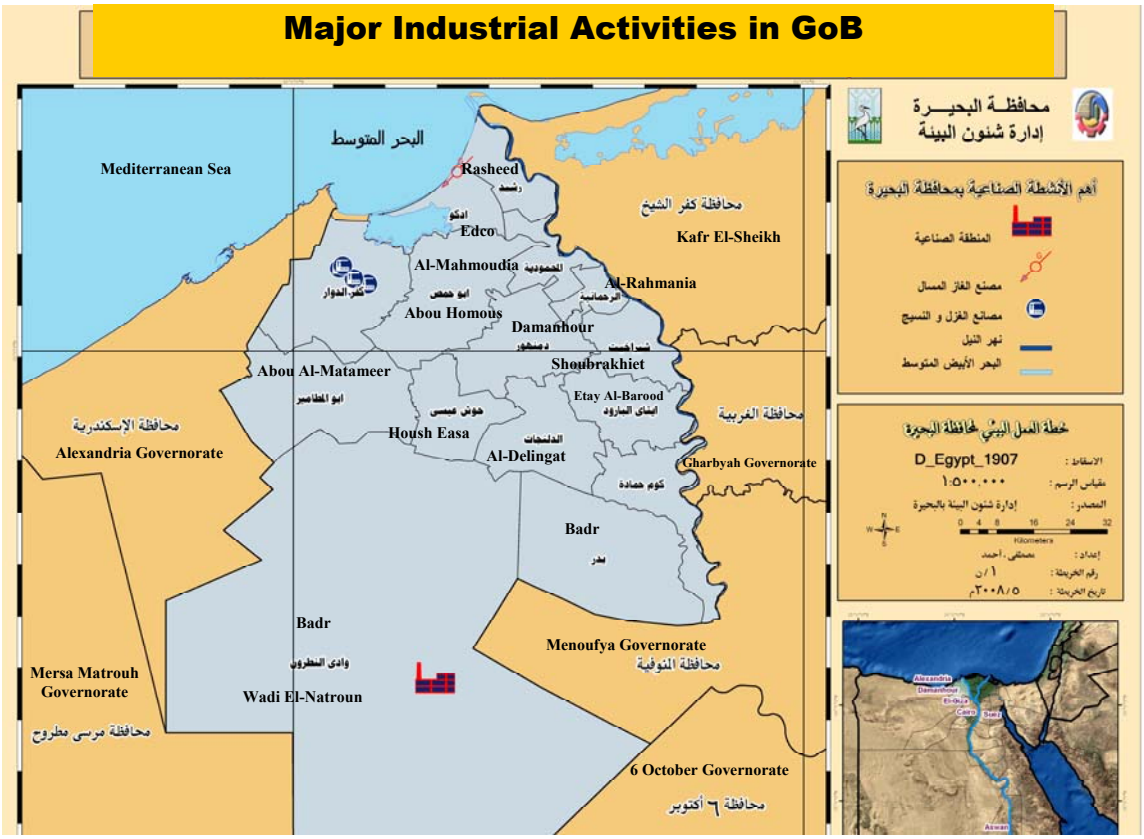
The industrial zone in Edko. An area of 150 feddans at Kom Mayyah was specified to relocate about 590 licensed industrial facilities, plus about 440 soon-to-be licensed facilities. These facilities are currently located inside the residential areas, and most of which are noisy activities such as mechanical textile factories, welding, plumbing, car varnishing, carpentry, tile workshops and rice whitening factories.

The Industrial zone in Kafr El Dawwar. An area of 10 feddans was allocated at the area of Adat Sidi Ghazi to relocate the noisy workshops and industrial facilities (and the newly established ones) to outside the residential areas. This industrial zone was planned to accommodate 556 workshops according to three different models. The Environmental Impact Assessment was developed for this zone was prepared and approved in 2003, yet implementation did not start to date of developing the plan.

The Industrial Zone in the City of Damanhour. An area in Al Taranah was specified to relocate 27 smelters currently existing inside the residential area and are using coke resulting in air pollution problems. It is also planned to relocate the noisy workshops from Damanhour city to this new industrial zone. An EIA was conducted for this zone in 1999, yet the project was not implemented to date of plan preparation.

The industry sector in the governorate is related to some environmental problems such as the hazardous impacts of industrial facilities, workshops, smelters, and noisy activities on the citizens, in addition to the problem of WW disposal, and air pollution related to the brick and charcoal kilns

Figure 5.1 Major Industrial Activities in GoB



As for the industrial wastewater problem, the major Spinning and Weaving Industrial Facilities in Kafr El-Dawwar (Miser Co. for Artificial Silk and Miser Al Beida Dyers, and Miser Co. for Elite Spinning and Weaving) are discharging their industrial wastewater directly on the Al Ameyya Drai, leading to Abu Kir gulf. This results in transferring the problems of these effluents to outside the GoB borders heading to Alexandria, where relatively small scale 145 dairy processing facilities exist [5] inside the governorate districts and are not permitted to discharge its industrial WW effluents (containing whey) on the WW systems because it contains high organic load that is totally noncompliant with the permissible limits according to Law 93/1962. Hence, these facilities collect the whey in trenches that are later scavenged and discharges onto the waterways, resulting in direct and hazardous impacts on water quality.

Moreover, Beheira is among the major governorates nationwide that includes lots of brick factories, estimated at 145 factories distributed among various governorate districts (Rashid, Al-Mahmoudeya, Al Rahmaneya, Shoubrakhit, Edko, Kom Hamada, Housh Issa, Damanhour, and Wadi El Natroun). This is one of the major environmental polluting industries due to its gaseous emissions especially the

carbonic pollutants and lead emissions resulting from mazot combustion) and causes hazardous impacts on the surrounding agricultural lands and citizens.

The GoB also hosts about 102 coal kilns distributed among various locations and districts in Beheira. Its production capacity varies according to operation levels which differs from one kiln to another. The clusters of coal kilns in the districts of Edko, Kafr El Dawwar, and Al-Delingat constitute sources of air pollution in the surrounding areas and adjacent crops, which highlights the urgent need to upgrade this industry to remediate the resulting pollution.

(5) Average production capacity per facility is 120 tons per season

5.2 Accomplishments in the past five years

5.2.1 Decrees and Procedures

In 2007, the Governor of Beheira issued a decree prohibiting the discharge of milk whey directly into the waterways, especially canals, and forcing industrial facilities to establish reservoirs according to the applicable specifications and secure training for workers at organic fertilizers on means to introducing the milk whey into the production process, since no practical solutions of economic value were found to date to reuse whey.

5.2.2 Technical and Administrative Support

-Conducted an EIA in 2003 to establish an industrial zone in Kafr EL Dawwar district
-The EEAA/Alexandria Branch has determined the specific requirements for the kilns operating to produce charcoal as per the standards of the Egyptian General Organization, and these requirements are detailed in Annex IV

5.2.3 Executed Projects

-In implementation of Governor of Beheira Decree No. 451 of 1999 on closing all governorate underdeveloped brick factories, these factories started operating using modern technology, which resulted in reduced emissions, after they have been using incomplete combustion of mazot fuel, which resulted in emitting pollutants that were noncompliant to the applicable environmental laws and regulations.
-Establish a database for industrial facilities in collaboration with the Information Center
-Remove the environmentally noncompliant pottery kilns within the Governorate borders, pending its obligatory compliance with modern technology by complete combustion of solar as a fuel.
-Rehabilitation of a pesticide manufacturing facility in Kafr El Dawwar city, as this facility constituted in the past an environmental problem represented in the noncompliant gaseous emissions and WW> The facility also introduced the self-monitoring system by using the most updated laboratory for measuring pollution levels in wastewater effluents.
-Upgrade the bakeries operation system in the cities of Damanhour and Kafr El Dawwar by using natural gas as a fuel instead of solar and mazot. Bakeries using mazot or recovered oil are closed

5.3 Current Conditions: Problems and Causes

Table 5.3 Current Conditions: Problems and Causes

Current Conditions	Major Negative Problems and Impacts from Current Conditions	Major Problem Causes	Current Plans and Programs To Handle Current Conditions
Spread of noisy and disturbing industrial facilities inside the residential areas	-Emissions of ambient air pollutants (especially from smelters) that affect citizens -Noise and disturbing activities negatively affect citizens	-Spreading urbanization around the industrial facilities -Lack of any planned areas for workshops -Lack of equipped industrial facilities outside the residential area	-Construct and equip five industrial zones
Usage of primitive heaters in coal kilns	-Gaseous emissions that pollute the residential areas and agricultural lands -Negative impact on kiln workers	Combustion of mazot in primitive heaters	-Apply Kiln upgrading program
Polluting emissions from brick factories	- Gaseous emissions that pollute the residential areas and agricultural lands	Combustion of mazot in primitive heaters	Natural gas supply and upgrading brick factories
Pollution of waterways	-Discharging untreated industrial WW effluents resulting from dairy processing facilities -Discharging untreated industrial WW effluents resulting from textile manufacturers in Kafr El Dawwar	-Negligence to treat industrial WW (milk whey) -Lack of textile factory industrial WW treatment units	-Develop economic mechanism for potential benefiting from whey -Establish Treatment units in textiles manufacturing facilities

5.4 Vision and Objectives

-Establish industrial zones to evacuate the residential areas from polluting industries and noisy activities

-Improve air quality through obliging the majority of facilities to comply with the standards stipulated by Law 4/1994 on the permissible limits for pollutants in gaseous emissions

-Improve the quality of surface water by obliging the majority of industrial facilities to comply with the standards of Law 48 of 1982 concerning the maximum permissible limits of pollutants in the industrial WW effluents discharged onto the Nile, canals, and drains.

5.5 Targets and Required Actions

Table 2.6 Targets and Required Actions

Main Target	Targets for the next Five Years to Achieve Main Target	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Establish more industrial zones	-Reduce the environmental problems resulting from the industrial facilities operations within residential areas -	-Issue a decree by the Industrial Development Authority
Ensure Compliance of the biggest number of facilities with gaseous emissions standards	-Upgrade 102 coal kilns -Supply natural gas to 145 clayey brick factories (especially 51 factories in Kom Hamada	-Activate compliance with provisions of Law 4/94 -Ensure financial allocations for natural gas connections
Ensure compliance of the biggest number of industrial facilities with WW effluent pollutant limits	-The three basic facilities in Kafr El Dawwar shall install WW treatment plants -145 dairy processing facilities shall is sort ad safely dispose of milk whey	-Support Kafr El Dawwar industrial facilities through guiding it to proper financing organizations -Support establishing of milk whey collection program and its acceptability in current treatment plants in return for service fees

5.6 List of Proposed and Planned Projects

Table 5.3 Table of Proposed Projects, Projects Included in the Plan and the

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Upgrade coal kilns	Local Administrative Units	A specialized company	LE 9.5 million (LE 90,000 per kiln)	Three months	Donor agencies, EEAA
Industrial WW Treatment Facility of Miser Co. for Artificial Silk	Company	A specialized company	LE 3.0 million	One year	Donor agencies, Company
Industrial WW Treatment Facility of Miser Co. for Al Beida Dyers	Company	A specialized company	LE 8.0 million	One year	Donor agencies, Company
Industrial WW Treatment Facility of Miser Co. for Elite Spinning and Weaving	Holding Natural Gas Company	National gas company	LE 134.0 million (including LE 43 million for the first priority district in Kom Hamada)	One year	Holding Natural Gas Company
Establish industrial zone in Kafr El Dawwar	Local administrative unit	Local administrative unit	LE 5.0 million	One year	Donor agencies, EEAA
Establish industrial zone in Damanhour	Local administrative unit	Local administrative unit	LE 5.0 million	One year	Donor agencies, EEAA
Establish industrial zone in Edko	Local administrative unit	Local administrative unit	LE 5.0 million	One year	Donor agencies, EEAA
Establish industrial zone in Boseili desert	Local administrative unit	Local administrative unit	LE 5.0 million	One year	Donor agencies, EEAA
Complete industrial zone in wadi el-Natroun	Local administrative unit	Local administrative unit	LE 5.0 million	One year	Donor agencies, EEAA
Milk Whey Collection and Utilization Project	Local administrative unit	A private sector company	LE 3.0 million	One year	Private sector investors

5.7 Description of Priority Projects and/or Programs
5.7.1 Upgrading Coal Kilns

The coal kilns represent an environmental problem that exists broadly in the governorate due to its polluting gaseous emissions (due to the primitive heaters used) which in turn causes hazardous impacts on the residential areas and surrounding cultivated crops. The EEAA/Alexandria branch has issued the approved technical specifications for the upgraded kilns to reduce its gaseous emissions. The project depends on applying these specifications while operating an incomplete combustion system of used agricultural wastes through using solar or gas as a fuel, and benefiting from the resulting gases in increasing the combustion rates.

Project Advantages:
-Coal Kilns compliance with the technical specifications of EEAA and requirements of Law 4/94
-Achieving a higher efficiency in combustion , and consequently saving in fuel consumption

Project Components
-Upgrading coal kilns
-Monitor and document project advantages

Executing Agencies
EEAA in collaboration with a specialized agency and a donor agency

Execution Costs:
LE 9.5 million (to be financed by beneficiaries)

5.7.2 Establish Industrial Zone in Damanhour

The existence of various types of industrial workshops and cast iron smelters inside the residential areas of Damanhour city represents an environmental challenge that faces the city and district of Damanhour. This necessitates transferring these workshops to outside the residential areas by establishing an industrial zone over a proper area at Damanhour city provided it takes into consideration the anticipated expansions.

Project Advantages

-Minimize the impacts of gaseous emissions from smelters on the urban residential areas

-Minimize the impacts of noisy and disturbing workshops and activities on the urban residential areas

Project Components:

-Design and plan the industrial zone

-Connect the infrastructure of water, WW, power and telecommunications

Executing Agencies

EEAA, in collaboration with the local administrative unit and donor agencies

Execution Costs:

LE 5.0 million

5.7.3 Establish Industrial Zone in Kafr EL Dawwar

The existence of various types of industrial workshops and cast iron smelters inside the residential areas of Kafr El Dawwar city represents an environmental challenge that faces the city and district of Kafr El Dawwar. This necessitates transferring these workshops to outside the residential areas by establishing an industrial zone over a proper area at Kafr El Dawwar city provided it takes into consideration the anticipated expansions.

Project Advantages

-Minimize the impacts of gaseous emissions from smelters on the urban residential areas

Project Components:

-Design and plan the industrial zone

-Connect the infrastructure of water, WW, power and telecommunications

Executing Agencies

EEAA, in collaboration with the local administrative unit and donor agencies

Execution Costs:

LE 5.0 million

5.7.4 Project of Natural Gas Connection to Brick Factories

The clayey brick factories may be considered a major source of air pollution in GoB, as the increasing emissions containing carbonic pollutants and lead particulates resulting from mazot combustion causes hazards to the surrounding cultivated lands and citizens in nearby residents. The National Gas Co. (NATGAS) has conducted an initial survey on 145 brick factories at the GoB districts, where GoB is divided into nine areas. Priority of natural gas connection was given to the Kom Hamada area because it hosts many adjacent factories.

Project Advantages:

-Minimize air pollution resulting from combustion of mazot fuel at bricks factory
-Assist factories in compliance with the provisions and standards of Law 4/94
-Achieve a higher efficiency for the combustion process and save mazot

Project Components

-Establish main gas supply pipelines
-Establish pressure reduction stations
-Establish internal connections at factories and transform heaters/ovens

Executing Agency:

Holding Natural Gas Co.

Execution Costs:

LE 43 million

5.7.5 Milk Whey Collection and Utilization Project

Governorate of Beheira includes 145 small scale dairy processing facilities, as the average production rate per facility may reach 120 tons/season. Mostly these facilities cannot establish industrial WW treatment units and remove the organic loads resulting from the discharged whey. In addition, these facilities are not allowed to discharge its industrial effluents over the WW system (in service provided areas). Normally, these facilities will scavenge its trenches containing industrial effluents to be disposed of in waterways, resulting in pollution of these waterways. A case study conducted in Damietta has proved the success of using milk whey as a direct animal fodder provided that the whey is sorted at source with high efficiency and use it fresh on same day, or preserve it by cooling, pasteurization, or adding safe preserving substances thereto. Hence the project concept depends on a private sector company involvement through providing equipped trucks to transport and preserve the whey cool till it reaches the animal farms (which may be same farms that provide the dairy processing facilities with raw milk), while costs are recovered from the dairy processing facilities and farms. In case the whey is not efficiently preserved, the normal WW scavenging vehicles can transport the whey to WW treatment plants in return for a service fee to be paid by the owners of the dairy processing facilities, in addition to a marginal profit for the transport company.

Project Advantages

-Minimize waterways pollution with milk whey
-Develop alternative for the dairy processing facilities to comply with the laws and regulations governing discharging of effluents on waterways and WW systems
-Use why as a by product
-Provide job opportunities and achieve an income

Project Components:

-Liquid carrier trucks with stainless steel containers and provided with coolers
-Normal liquid carrier trucks
-Whey quality detection devices
-Whey separation, storage, and preservation devices inside facilities
-Promotion campaigns for farm owners

Executing Agencies:

-Private sector companies to transport valid whey for animal use to the farms and transport the invalid whey to WW treatment plants
-Governorate support is essential for the project through providing loans or grants to facilities for whey preservation, and to tighten control procedures over these facilities after project execution to prevent disposal of whey in waterways

Execution Costs:

LE 3.0 million

6. Tourism Sector Plan

6.1 Background

The Governorate of Beheira is one of the ancient governorates in Egypt. In addition to what the GoB enjoys in cultural, agricultural, industrial, and natural wealth, the governorate includes several significant tourist sites such as the ancient hills (more than 180 hills), the Islamic monuments in Rashid city, the Coptic monuments in Wadi El Natroun and the Qalaya area , regarded as the origin of monasticism worldwide, the prehistoric sites in the village of Marmada Bani Salama, and the monuments that is dated back to the Ptolemaic epochs in Kom Gaieef village, in addition to the ecotourism resources in Wadi El Natroun and Yachts tourism in Rashid City.

A major environmental problem related to tourism sector is the deterioration of water quality in the ancient Gaieef Lake. It is noteworthy that the town of Kom Gaieef (Naqratees) has occupied a distinguished position in ancient Egyptian history and its relation with the Greeks. The Gaieef Lake is located in Al Nomeira village of Itay El Baroud District. After finding some monuments in its surroundings, the Archeology Authority in GoB has adopted procedures to minimize the developmental activities around the lake, which extends over an area of 24 feddans, and a water depth ranging from 1.5 to 2.0 m. In the past, the lake was a dust hill excavated in old times till it reached a depth ranging from 8 to 10 m. Water was spontaneously renewable through springs, which were clogged due to sedimentations for long periods of time, resulting in lake water inactivity, rising to adjacent land level. The Lake is surrounded by cultivated land, a residential area, as asphalt paved road, and Al-Howyta canal The lake water inactivity, mixed with wastewater (due to lack of any WW system and dependence on trench scavenging) has led to severe water quality deterioration, spread of bad odors, insects and diseases. The WW Research Institute studied the lake case in 2006, and samples taken revealed the deteriorated water quality and the organic pollution (represented in high Chemical Oxygen Demand -COD to 418 ppm, nitrates and phosphate). Amidst lake water inactivity, an artesian well was constructed affiliated to the Local Administration Unit to supply water to the lake. However, this remains insufficient for improving lake water quality. Also, other solutions represented in supplying water to the lake from Al-Howayta village and discharging its water from the nearby Al Noqrashi drain is an is an idea rejected by the Ministry of Irrigation, whose policy rejects supplying fresh water to lakes, swamps, cultivated lands. Meanwhile, backfilling of the lake is another idea rejected by the Archeology Authority.

Another environmental problem related to the tourism sector is the misusing of the natural saline water lakes centered in Wadi El Natroun lowlands. These lakes whose surface level is 23 m below sea level are a series of eight to nine lakes that are fed from the leaking Nile River waters in addition to limited rainfall. These are mainly as follows:

-Al Faseda Lake: Extends over an area of about 1.5 km^2, mostly dry in summer. Distinguished by its reddish bottom with minimal sodium carbonate level which is formed surrounding the lake edges

-Um El Rishah Lake: Water level is 21 m below sea level, extending over a surface area of about 2.9 km^2, and has nearly similar characteristics of Al Faseda Lake

-Al-Razinah: Over a surface area of about 1.0 Km^2, dry in summer

Al Hamrah and Abu Gabara Lakes: Forms one body during summer due to leaking inundating Nile River waters. Al-Hamrah lake is distinguished by a fresh water spring that flowing through it, which constitutes an excellent tourist attraction.

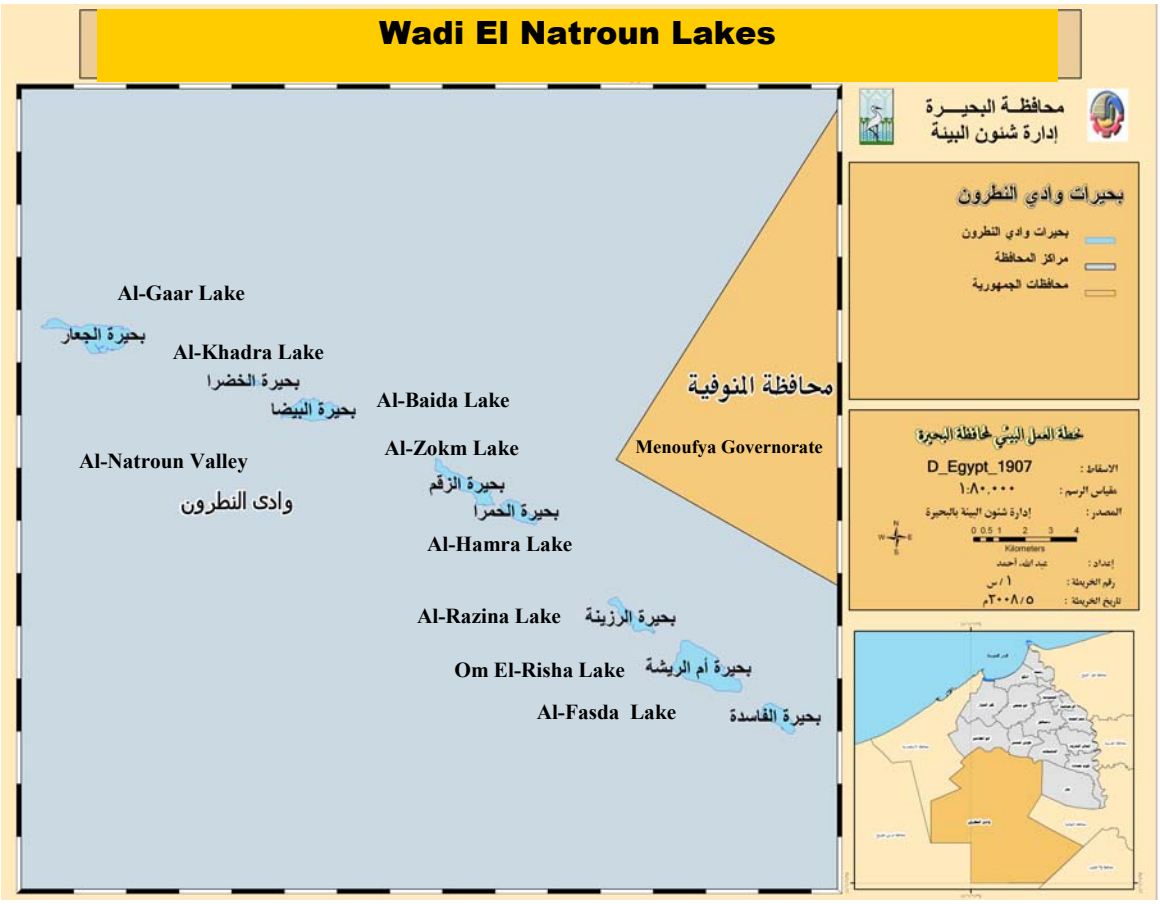
Al-Zaam Lake: Located in the center of the lowland, and contains deep sodium carbonate sediments (extends over an area of about 1.9 km^2)

Al-Beida Lake: The biggest lake in the valley (3.5 Km^2) contains a high salinity rate with a low rate of sodium carbonate

Al-Khadrah Lake: Greenish in color and dry in summer

Al Ga'ar Lake: A big lake (2 km^2) located in far north of the valley and is never dry

Figure 6.1 Wadi El Natroun Lakes



These varied changing multicolored lakes with its desert type mixed with the surrounding lowlands constitute a unique sight that creates tourist potentialities of unsurpassed and underutilized desert safari type. Due to lack of a WW service in villages surrounding these lakes, some of those villages discharge their WW effluents onto these lakes resulting in the deterioration of lake water quality. Moreover, the WW problem contributes to the hiking groundwater level, which results in supplying water to some lakes during summer and altering its natural characteristics. This area, as an attraction for many investors and land purchasers, may be exposed to changing its distinguished nature unless this situation is handled through setting up a development plan that considers the relative site environmental advantage and sensitivity, taking into account the model and rational utilization of available potentialities.

6.2 Accomplishments in the Past Five Years

6.2.1 Technical and Administrative Support

-WW Research Institute conducted a study about the water quality in Gaieef Lake and means to solve its environmental problems
-Develop a study on tourist development in Wadi El Natroun

6.2.2 Projects in Progress

-The Archeology Authority is carrying out excavation works to indicate the archeological significance of Gaieef Lake in order to benefit from the lake while discovering the archeological determinants for the recommended archeological solutions.

6.3 Current Conditions: Problems and Causes

Table 6.1 Current Conditions: Problems and Causes

Current Conditions	Major Negative Problems and Impacts from Current Conditions	Major Problem Causes	Current Plans and Programs To Handle Current Conditions
Pollution of Gaieef Lake	Gaseous emissions and insects spreading	Dumping wastes in lake Irregular wastewater effluent discharge	Upgrading and renovating the lake through introducing WW facilities Establish fish plantation at the lake
Misusing Lakes	Emergence of environmental problems at the lake	Some villages discharge their WW effluents onto the lakes Increased groundwater level results to flowing water into the lake during summer	A WW plant in Wadi El Natroun city is currently under construction while planning to reuse treated WW effluents in irrigating the cultivation of trees

6.4 Vision and Objectives

-Develop solutions for the environmental problems of Gaieef Lake while preserving the archeological value of the area
-Bestow the ecological dimension to the tourist development in Wadi El-Natroun to maintain the natural resources of the area

6.5 Targets and Required Actions

Table 6.2 Targets and Required Actions

Main Target	Targets for the next Five Years to Achieve Main Goal	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Upgrade Gaieef Lake	-Enhance Lake efficiency to overcome the environmental problems	-Sharing with the concerned authorities in lake remediation costs
Execute the tourist development plan for Wadi El Natroun, while preserving its environmental and natural characteristics	-Develop environmental guidelines related to the tourist development in the area	-Allocate the technical and financial support to prepare the environmental guidelines on tourist development

6.6 List of Proposed and Planned Projects

Table 6.3 Table of Proposed Projects, Projects Included in the Plan (10)

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Upgrade Gaieef Lake and refresh its waters by redirecting its inactive waters in pipelines with a 10" diameter towards the nearest drain, while operating the artesian well to compensate for the discharged inactive waters	Archaeology Authority	WW Department, Local Administrative Unit	LE 0.5 million	One year	Donor agencies
Develop an outline of an EIA of tourist development projects in Wadi El Natroun	Tourism Development Authority TDA	EEAA	LE 0.5 million	Six months	TDA-Donor agencies

6.7 Description of Prioritized Projects or Programs

6.7.1 Upgrading Gaieef Lake

The Gaieef Lake problem is one of the environmental problems existing within the administrative authority of the Itay El Baroud local administrative unit. The lake waters are inactive (due to the sediments clogging of the natural springs) and therefore needs refreshing. The WW Research Institute of the Ministry of Irrigation has conducted field studies to remediate the problem of lake water refreshment. It has been decided that the lake would be possibly connected to the nearby AL Noqrashi Drain via pipelines to discharge the stagnant waters from the lake.

Project Advantages:

-Minimize deterioration of Lake Water quality
-Minimize the impacts of bad odors, spreading insects and diseases on nearby villages
-Minimize the impact of water level on the adjacent agricultural lands

Project Components:

-Discharge pipeline with a 40 cm diameter extending 1,400 m from the lake to Al-Noqrashi Drain

Executing Agency:
EEAA, Local Administrative Unit, and WW Department

Execution Costs:
LE 500,000

6.7.2 Develop an EIA Outline for Tourist Development Projects in Wadi El-Natroun

Wadi El Natroun is distinguished by unique natural and environmental characteristics that empower the area as a tourist attraction in the future. In order to preserve the natural environment of the area, it is of high importance to develop environmental standards for the tourist developments in this area, while setting up proper determinants to protect environmentally sensitive zones, in addition to developing an outline to conduct the environmental impact assessment studies for tourist projects, besides ensuring environmental management and monitoring of these projects in the area.

Project Advantages:
-Preserving the natural and environmental characteristics for the area of Wadi El Natroun lakes

Project Components
-Study the environmentally sensitive sites in the area
-Review the available development plans and adding the ecological dimension thereto
-Identify the ecological determinants for the tourist developments in the area
-Develop an outline for the EIA, environmental management and monitoring in the area

Executing Agencies:
EEAA, TDA

Execution Costs:
LE 500,000

7-Environmental Communication Plan
7.1 Background

An essential factor that ensures sustainability of Environmental Action Plan (EAP) is the public environmental awareness whether for participant executives of EAP or those served. Ensuring public awareness among various sectors, organizations, categories, and community classes contributes to effective development and validates a major environmental action motive by preserving public health. The importance of environmental awareness emerged as basic pillar in rendering the sectoral plans a success (as indicated in aforementioned chapters).

There are several mass media organizations and communication channels through which the environmental awareness can be enhanced in GoB, including for example the Egyptian TV CH 5 of Alexandria, which covers the governorates of Alexandria, Beheira, and Marsa Matrouh, Alexandria Radio, Beheira Magazine, and other regional and local newspapers and magazines concerned with West Delta region in general and GoB in particular.

The public institutions, NGOs, mass communication centers, and the Agricultural Guidance Authority are exerting utmost efforts of great positive impacts on the environmental awareness level. The majority of these media campaigns focused on enhancing awareness levels in handling solid wastes, preserving water resources, safe disposal of WW, minimizing usage of agricultural pesticides and chemical fertilizers, and safeguarding public health, which are major environmental issues in Egyptian urban and rural areas nationwide. The majority of these campaigns depended on self finances from NGOs, and from some grants offered by governmental, international, or local agencies.

However, despite the environmental awareness endeavors exerted by government agencies, some institutions and NGOs, yet the extended GoB areas, numerous population, and variety of its habitats, coastal, agricultural, desert, industrial, urban, requires more effort and several other intensive environmental awareness campaigns, especially as the previous ones were focused in some villages only and didn't cover other awareness-lacking villages.

Major environmental problems of agricultural wastes, wastewater, and solid wastes are directly related to environmental awareness. Hence, such campaigns must focus on all these aspects, along with enhancing the environmental awareness of some community categories such as school and university students, youth hostels, clubs, farmers, which will lead to the disappearance of many negative behavioral patterns towards the environment.

7.2 Accomplishments in the Past Five Years:
7.2.1 Technical and Administrative Support

-Concluding a cooperation protocol between the State Ministry for Environmental Affairs and State Ministry for Local Development to support the environmental departments in local governorates nationwide, including the establishment of an environmental communication sections at these departments

-Participation of environmental department in organizing seminars and lectures on environmental awareness and protection

-Conducting press interviews in some local newspapers on environmental awareness and protecting the environment against pollution

-The environmental department conducted several interviews on Alexandria Radio tackling the major environmental problems in GoB

- The environmental department conducted several interviews on Egyptian Alexandria TV Channel tackling the major environmental awareness, environmental protection and status in GoB

-The environmental department participated in celebrating Global Water Day organized in Al-Hagganiah village of Damanhour District. This event, covered by Alexandria Radio Service, addressed the awareness on the necessity of preserving water. It is noteworthy that this Global Water Day event is celebrated for three years now in a GoB village, with the attendance of Governor, Governorate Secretary General (SG), and SG Assistant, which gives high impetus to these celebrations attended by governorate senior executives with popular community leaders.

-The Agricultural Directorate, through the agricultural guidance division, conducted environmental awareness programs to farmers especially on rationalized usage of pesticides and means to protect crops against rodents, especially rats during crop harvesting.

-The Community Development Association at Al-Gharabawi village was awarded the Arab League (AL) Environment Prize for NGOs in acknowledgement of the Association efforts in environmental awareness for the villagers.

--Supporting the NGOs to implement environmental awareness campaigns in GoB rural and urban areas.

-GoB contribution to organizing awareness campaigns for projects execution in GoB rural and urban areas and supporting the NGOs to implement environmental awareness campaigns

-The Nile Information Center in Damanhour (affiliated to Ministry of Information) conducted environmental awareness campaigns, offered training courses on environmental issues, and issued recommended solutions to some of these problems at community venues such as youth hostels, NGOs, schools, local units, agricultural associations and various clubs.

The Nile Center is supported by a conference hall equipped with audiovisual and videoconference facilities, as the center organizes quarterly one to three day seminars and symposia. These events are usually concluded by issuing a number of recommendations that tackle and seek to solve common individual problems after being highlighted before executive concerned officials for study and approval.

-Some public NGOs working in the environmental fields have formed a specialized consortium to organize and provide environmental awareness services to micro and small scale enterprisers, especially as regards considering the ecological dimension.

7.2.2 Executed Projects

-Implemented environmental awareness enhancement project for the Mustafa Agha village of Abu Hommos District in collaboration with communal and institutional creations project for Irrigation Management of Mediterranean countries.

-Environmental awareness campaigns at the villages of Al Hagganeya (Damanhour District), Al-Magd (Al Rahmaneya District), Al Gharabawi (Al-Delingat District), Omar Makram (Badr District), Kom EL Hasel (Damanhour District), Al Garradat (Abu Hommos District), and Al Moqleqa (Kafr El Dawwar District), which resulted in raising the environmental awareness among citizens. This was reflected in a significant improvement on the environmental status and a reduced environmental pollution level in those villages.

Environmental Awareness Initiatives in Progress:

-Continued awareness campaigns by NGOs and Nile Information Center
-Awareness campaigns through agricultural guidance to educate about the hazards of rice straw and cotton wood burning in the vast cultivated lands of GoB
-Awareness campaigns related to Bird Flu disease
-Awareness campaigns on the hazards o direct WW effluent discharge onto waterways
-Coordination proceeds between EEAA, Rural Construction and Development Agency to operate the environmentally friendly Village Cleanliness Project, where the village cleanliness is announced on a specified date through public awareness programs targeting villagers.

7.3 Current Conditions: Problems and Causes

Table 7.1 Current Conditions: Problems and Causes

Current Conditions	Major Negative Problems and Impacts from Current Conditions	Major Problem Causes	Current Plans and Programs To Handle Current Conditions
Poor public environmental awareness	-Spread environmentally hazardous negative behaviors such as unsafe disposal of all types of WW effluents onto waterways -Burning agricultural and green wastes onsite causing the black cloud phenomenon -Unsafe handling of varied types of wastes, resulting in the spread of infectious diseases	-The vastness of GoB land areas weakens the impact of awareness campaigns executed by various agencies to cover the governorate -Common illiteracy in the majority of governorate villages -Inadequate numbers of environmental awareness campaigns	-GoB Government sectors, NGOs, and environmental departments organize awareness seminars and campaigns in some areas -EEAA Information Department maximizes participation through the environmental awareness vehicle
Lack of Independent plan and integrated systems for environmental awareness	-Emphasis is placed on specific areas excluding others, and hence campaigns are reiterated more than once in same places -Negligence to focus sometimes on prioritized issues while emphasizing others -Impossibility to follow up and evaluate the current conditions, and testing whether the campaign is successful or not	-Lack of coordination between various sectors in different agencies and departments concerned with environmental awareness -Lack of an adequate independent budget allocated for environmental awareness	-Dependence on budgets of governorate departments and sectors to partially allocate funds for environmental awareness -Dependence on self initiated efforts and in some cases on donor agencies -Issuance of higher decrees concerning awareness campaigns, seminars and conferences
Negligence of public awareness for residents in village and hamlets	-Disregarding the traditional concepts of the Egyptian peasant and almost ignoring his/her role -Lack of any environmental campaigns in most villages and hamlets -Spread negative environmental behavior -Lack of any proper environmental or health care	-Agricultural guidance campaigns are focused mostly on crops while ignoring means to handle agricultural and green wastes -Lack of any awareness plans related to villages and hamlets	-Active NGOs participation to focus on some villages and affiliates and those requiring intensive environmental awareness -Introducing some villages in development plans to be changed into model villages -Encouraging some leaders to work on enhancing public environmental awareness

7.4 Vision and Objectives

-Upgrade public environmental awareness of all community categories, classes, and sectors, and drawing public attention toward environmental issues

-Develop coordinated environmental awareness plans with specified objectives in conformity with the environmental priorities relevant to various sectors

-Design awareness campaigns in a manner that delivers the information/ communication messages to target categories, and uses the appropriate mass media channels to assist in executing the plan

-Follow up and monitor environmental awareness campaigns and use these results in sustainable performance improvement

7.5 Targets and Required Actions

Table 7.2 Targets and Required Actions

Main Target	Targets for the next Five Years to Achieve Main Goal	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Upgrade public environmental awareness for all community categories, classes and sectors while attracting public attention to environmental issues	-Ensure public environmental awareness on the importance of environmental protection to be considered among the priorities of ordinary man -Assist the individuals on abdicating negative habits that negatively affect the environment such as burning the agricultural and solid wastes, discharging WW effluents onto waterways, etc -Ensure public awareness on mean to handle environmental problems and attempt to prevent its occurrence -Give the ordinary individual a role to play through participating in EAP after receiving his/her environmental awareness messages and being capable of sharing in providing environmental awareness to other community members	-Ensure the financial and moral support to NGOs and ensure coordination with its environmental awareness plans which may be incorporated into the plans of the environmental departments and other concerned directorates -Develop plans in which NGOs can play a major role to assist in upgrading the environmental awareness of the citizens
Develop coordinated environmental awareness plans with specified objectives in conformity with the environmental priorities relevant to various sectors	-Develop environmental awareness plans under the auspices of H.E Governor of Beheira, SG, or Assistant SG -Coordinate campaigns between the environmental department, directorates and sectors -Develop environmental awareness campaigns to make benefit from official holidays where a broad section of the community can be free -Coordinate with the Education departments and universities to develop environmental awareness plans for students order to create an environmentally aware generation -Focus on the major environmental issues at the governorate such as burning of agricultural wastes, handling solid wastes, and direct WW effluent discharge onto waterways	-Issue recommendations during the higher Environment Committee meetings to develop specialized and coordinated environmental plans in an attempt to attract community leaders to participate in EAP and share in environmental awareness initiatives -The Governor of Beheira shall issue directives on coordination and unification of attitudes in the fields of environmental awareness between various departments, directorates, NGOs and institutions -Ensure the financial support required for organizing and launching the environmental awareness plans and campaigns

Main Target	Targets for the next Five Years to Achieve Main Goal	Decrees, Procedures, Institutional Work, and Required Projects and Programs to Achieve Target
Design awareness campaigns in a manner that delivers the information/ communication messages to target categories, and uses the appropriate mass media channels to assist in executing the plan	-Develop modern and cost effective mechanisms to be used in environmental awareness -Develop the best possible means to deliver the environmental information to the individuals according to his cultural standards, traditions, and conventions -Utilize the successful concepts in cultural and social awareness and possible means to use it in environmental awareness -Focus during environmental campaigns on squatters, villages and hamlets using very simple environmental awareness tips taking the conventional rural traditions of peasants into consideration	-Provide financial support to develop environmental awareness mechanisms and instructional aides --Conduct the required studies to indicate the traditions and conventions in each district and the dominant culture thereof -Coordinate usage of environmental awareness tools and means between various directorates and departments
-Follow up and monitor environmental awareness campaigns and identify results	--Conduct periodical monitoring for places/areas in which environmental awareness campaigns were organized, and decide upon the success of plan -Identify the outcome of campaigns and focus on positive aspects and evade campaigns shortcomings -Create charts and diagrams if possible for the campaigns to measure its impact on citizens	-Develop questionnaires and work papers to indicate the status of public environmental awareness -Provide required capabilities to work on monitoring the status of awareness campaigns -Ensure the required financial support

7.6 List of Proposed and Planned Projects

Table 7.3 List of Proposed and Planned Projects (Included in the Plan)[11]

Project	Concerned Authority	Proposed Executing Agency	Proposed Funding	Timeline	Financing Agency
Awareness Campaign to communicate plan components	GoB, Local Administrative Units, Agriculture Directorate	NGOs, institutions, Nile Information Center, Waqf Directorate, Agriculture Directorate	LE 3.0 million	Three years	NGOs and Donor agencies
Campaigns to enhance environmental awareness for university and school students	University, Education departments	University, Education departments, in collaboration with GoB	LE 2.0 million	Four years	NGOs and Donor agencies
Campaigns to enhance environmental awareness for village and hamlet residents	GoB, Local Administrative Units, Agriculture Directorate	NGOs, institutions, Nile Information Center, Waqf Directorate, Agriculture Directorate	LE 3.0 million	Three years	NGOs and Donor agencies
Environmental awareness campaigns for industrial facility owners on cleaner production principles	GoB, EEAA branch	Specialized NGOs Union, in collaboration with GoB, EEAA Branch office	LE 500,000	Five years	Environmental Protection Fund and Donor agencies
Environmental awareness campaigns for government employees and decision makers	GoB and service directorates	Service directorates, Nile Information Center, in collaboration with GoB	LE 500,000	Five years	Environmental Protection Fund and Donor agencies

7.7 Description of Prioritized Projects and /or Programs

7.7.1 Launch Awareness Campaign to Communicate Plan Components

Receiving support from GoB residents to implement the EAP is considered a basic pillar that ensures the successful execution of this plan. Therefore, it is of vital importance to launch a propaganda campaign on all mass media channels to

communicate to all community sectors the main objectives and components of said plan. This would have a positive impact on upgrading the environmental awareness of the residents of cities, villages and residential compounds with the environmental issues in general and the plan's targeted environmental problems and the popular involvement required in particular.

Project Advantages:
-Upgrade the public environmental awareness of GoB residents
-Encourage community involvement in plan execution
-Monitor community feedback on plan execution

Project Components:
-Launch propaganda campaigns in newspapers, local radio stations and TV channels
-Organize public rallies and specialized seminars
-Placement of posters
-Form awareness teams/caravans
-Organize feedbacks

Executing Agencies:
NGOs, Nile Information Center, Waqf Directorate, agriculture Directorate and Donor Agencies

Execution Costs:
LE 3.0 million within three years

7.7.2 Environmental Awareness Campaigns Directed to School and University Students

The environmental awareness upgrading process for these categories constitutes a major importance, since school students, whose education is to reap the future fruits (and being the future decision makers), therefore upgrading their awareness will be transformed spontaneously to their families and their community surroundings.

Project Advantages:
-Ensure the sustainable validity of EAP through upgrading the awareness of youth
-Target other categories through the consequent role of students in spreading the environmental awareness among their families and other community members

Project Components:
Environmental awareness campaigns inside schools and universities

Executing Agencies:
University, Education Departments, in collaboration with GoB

Execution Costs:
LE 2.0 million within four years

7.7.3 Environmental Awareness Campaign Targeted to Villages and Hamlets

Villages and hamlets suffer from lack of environmental awareness due to the spreading illiteracy and the environmentally hazardous practices (such as burning the agricultural wastes, overuse of the hazardous chemical pesticides, and discharge of WW effluents onto waterways). Shortcomings of previously organized campaigns included underestimating and negligence of the peasantry traditional concepts required to convince him/her with the importance of correcting the environmental and health hazardous negative practices. Therefore it was important to design a special awareness campaign targeted to the residents of villages and hamlets, especially farmers.

Project Advantages:

-Upgrade the environmental awareness for a large community category
-Minimize environmentally hazardous habits and practices

Project Components:

Environmental Awareness Campaigns using proper mass communication/media channels

Executing Agencies:

NGOs, Nile Information Center, Waqf Directorate, agriculture Directorate and Donor Agencies

Execution Costs:

LE 3.0 million within three years

7.7.4 Awareness Campaign on Cleaner Production Benefits Targeted to Industrial Facility Owners

The application of cleaner production principles achieves s twofold advantage. On one hand, through the rationalized resource management like water, power and raw materials, achieving a higher efficiency for the production process, and consequently reduces production costs. Secondly, it reduces the amount of generated wastes at source. Hence, convincing industrial facility owners with these advantages achieves several environmental advantages.

Project Advantages:
-Upgrade the environmental awareness of industrial facilities' owners
-Encourage adoption of cleaner production principles

Project Components:
-Organize sectoral seminars to communicate success stories inside each industrial sector
-Provide on the Job Training to indicate the benefits of cleaner production

Executing Agencies:
Specialized NGOs Union, Gob, EEAA Regional Branch

Execution Costs:
LE 500,000 within five years

8. Plan Costs and Executive Mechanisms

8.1 Plan Costs and Funding Sources

The recommended projects included in EAPs for various sectors will cost LE 3,629.5[(12)]. Projects to connect the WW service to deprived areas and service improvement constitute 84% of this budget, while water supply service connection to deprived areas constitute 7%. Natural gas connection projects to clayey brick factories constitute 4%, while landfill construction projects for burial of solid wastes constitute about 2%, WW treatment projects constitute 1%, Industrial facilities relocation projects from residential areas to new industrial zones constitute 1%, and the remaining planned projects constitute 1% of the budget.

Some planned projects were given execution priority over others. The estimated costs of these projects reached about LE 188.0 million, as the majority of which are related to solid wastes (about 42%), natural gas connection to industries (about 23%), WW projects (about 13%), Integrated hazardous medical wastes management system, the establishment of two industrial zones, and the upgrading projects of coal kilns (about 55 each). A major project to start with is the propaganda, awareness and plan communication campaigns (as stated earlier in Ch. VII) in order to ensure solidarity of individuals efforts to achieve the plan objectives. Table 8.1 indicates a classification of planned and prioritized projects.

Financing mechanisms of these planned projects vary as detailed in the sex sectors plan. WW service, potable water and solid waste management (in addition to natural gas connection, projects of establishing industrial zones, environmental awareness programs, Gaieef lake upgrading, and Rashid harbor cleaning) are already listed on the State budget as well as on GOSD and local units budgets. In addition, the operation costs of these projects can be supported by service subscribers, taking into account the necessity of state subsidization of low income brackets in such support. Some of said projects can be financed by donor agencies for projects with no allocated funds on the state budget. Financing industrial sector and tourism development projects shall basically depend on facilities benefiting from these projects such as coal kiln upgrading, WW treatment, and Wadi El Natroun Tourism development guidelines projects. Some of these projects can be financed through private sector investments, along with providing support and facilitations from concerned government authorities (as detailed in sectoral plans) such as agricultural wastes collection and utilization projects, and milk whey collection and reuse projects.

Other projects can be funded through active NGOs (by virtue of which the costs can be recovered from subscribers) such as providing WW trench scavenging services, WW effluent discharge into existing Lift Up stations and treatment plants, and solid waste collection services from villages.

Table 8.1 Plan Costs

Sector	Type of Projects	Total Costs (LE Millions)	Prioritized Projects Costs (in LE millions)
WW	Connecting deprived village to existing or under construction WWTPs	3.041	-
	WW treatment projects , upgrading current stations, trench scavenging in deprived areas, and reusing treated effluents and sludge as agricultural fertilizers	24	24
Potable Water	Potable water treatment stations to serve the deprived areas or underserved areas	262.5	-
	Projects to reduce water losses and enhance operation efficiency	6.0	6.0
Solid waste management	Integrated solid waste management plan and executing some of its projects	5.0	5.0
	Landfills	60	60
	Garbage recycling facility	7.0	-
	Integrated hazardous medical wastes management	10.0	10.0
	Agricultural wastes collection and utilization project	5.0	5.0
Industry	Upgrading Coal Kilns	9.5	9.5
	Establish Industrial WW treatment plants and milk whey collection/treatment facilities	27.5	3.0
	Establish and complete industrial zones top relocate the industrial facilities outside the residential areas	25.0	10.0
	Natural gas connection lines to brick factories	134.0	43.0
Tourism	Upgrade Gaieef Lake	0.5	0.5
	Identify Environmental Determinants and Prepare an EIA outline for Wadi EL Natroun tourism development projects	0.5	0.5
Mass Media	Communication campaign for EAP	3.0	3.0
	Specialized awareness campaigns	6.0	5.5
Siltation/sedimentation of Rashid Harbor	Provide periodical cleaning equipment for the harbor	3.0	3.0
TOTAL		3,629.5	188.0

8.2 Implementation and Follow up Mechanisms

The Beheira Higher Committee for Environment was formed under the chairmanship of H.E the Governor, and with the members representing all authorities and organizations concerned with development and environment. Among the competences of the Higher Committee is reviewing and coordinating the plans and activities related to environmental protection. Hence, the higher committee shall be responsible for following up the implementation of planned projects through monitoring its members representing the agencies/authorities related to these projects.

Once the plan is endorsed by the committee, a time schedule must be developed to implement the planned projects, along with a timeline for providing the funding required for the needy projects. It is recommended to organize periodical biannual meetings (in addition to other meetings as necessary) in order to follow up the progress of the planned projects and issue the required decrees to ensure the plan is progressing as scheduled. It is also recommended that GoB Environmental Department would coordinate committee meetings and monitor the implementation of its decrees.

Annex I: Participants in Environmental Action Plan (EAP)

Participants in EAP of GoB:

Major General/ Mohamed Sayed Sharawi	Governor of Beheira
Major General/Mohamed Mahmud Taggudin	Assistant Secretary General Assistant Secretary General

WW Team:

1. Eng. Victoria Philip Hanna	General Manager for Planning and Follow Up at GoB
2. Eng. Waguida Ali Mawseli	Head of Rural Building and Development at GoB
3Eng.Romel Nessim Saad	General Manager of Behira WW Authority
4. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur"
5. Eng. Abdel Hamid Khidr	GoB Environment Affairs Department member

Solid, Hazardous Medical and Agricultural Waste Management Team

1. Dr. Youssry Mabrouk	GoB Health and Population Undersecretary
2. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur"
3. Eng. Azmy Mohamed El Kholi	GoB Environment Affairs Department member

Potable Water Supply Team

1. Eng, Yasseen Mansour	Representative of Beheria Water Company
2. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur"
3. Eng. Lobna Zakareya Deibis	GoB Environment Affairs Department member

Industrial Work Team

1. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur
2. Eng. Mustafa Ahmed Saleh	" GoB Environment Affairs Department member
3. Eng. Abdallah A. El Imam	GoB Environment Affairs Department member

Development and Tourism Environment Team:

1. Eng. Neima Ibrahim Selim	Beheira Archeological Department Manager
2. Eng. Abdel Ghani El Kholi	Environment Affairs Department Manager, Itay El –Baroud District
3. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur
4. Eng. Magdy Zakareya Deibis	GoB Environment Affairs Department Manager

Environmental Awareness and Education Team

1. Dr. Magdy Torab	Faculty of Arts Deputy for Environmental and Community Affairs
2. Mr. Abdel Badie Ibrahim Ebied	Information Center Manager- Damanhour
3. Eng.Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur
4. Eng. Magdy Zakareya Deibis	GoB Environment Affairs Department Manager

5. Sheikh Mohamed Ali	Waqf Directorate Representative at GoB
6. Eng. Abdallah A. El Imam	GoB Environment Affairs Department member

Teams Coordinators Group

1. Eng. Maher El-Sayed El-Adawi	GOSD Executive Officer
2. Eng. Adel Gaber Ibrahim	GoB Environment Affairs Department member
3. Eng. Abdel Fattah Abdel Ghani Khalifa	GoB Environment Affairs Department member
4. Eng. Eng. El Sayed Ahmed Khalil	Member of Rural Building and Development at GoB

Supervision and Review Team:

1. Eng. Ahmed Abdallah El Qadi	GoB Environment Affair s Department Manager "Rapporteur
2. Mr. Ahmed Abdel Rahim Abdel Qader	GoB Environment Affairs Department member
3. Mr. Ramy Mohamed Abdel Moneim Aabed	GoB Environment Affairs Department member

Support Team:

1. Ms. Al Bata'a Ali El Rasd	GoB Environment Affairs Department member
2. Ms. Nagat Shebl Abu Shadi	GoB Environment Affairs Department member
3. Iman Mohamed Abdel Moneim Deibis	GoB Environment Affairs Department member

Special Acknowledgements to
Dr. Hisham Abdel Halim WW Consutlant
2. GOSD

Annex II: Number of WW Scavenging Equipment Currently Available At the Governorate

District	Village	Scavenging Tractor	No. of Beneficiaries	Remarks
Damanhour	Sanhour	1	17609	
	Al Abaadeyah	1	36418	
	Sharnoub	1	25622	
	Iflaqa	1	28377	
	Zawyet Ghazal	1	28014	
	Nadiba	1	25850	
	Dasonis	1	31067	
Kafr El Dawwar	Al-Omaraa	1	26725	
	Zahra	1	33610	
	M. Bauline	1	33753	
	Sayed Ghazi	1	27223	
	Q. Abu Qir	1	31563	
	Izbet Defsho	1	29220	
	Kom El Berka	1	23566	
	Kom Asho	1	26442	
Al-Mahmoudeya	Kom El-Nasr	1	15602	
	Arimon	-	9905	
	Sirinbai	1	8781	
	Feehsa	1	1644	
	Dayroot	-	23871	
Edko	Al-Maadeya	1	10271	
	Dibono	1	7803	
	6 October	1	4882	
Housh Issa	El-Kardoud	1	6415	
	El-Kom El-Akhdar	1	21005	
Kom Hamada	Kafr Bauline	1	1627	
	Shabour	1	1578	
	Saft El Einab	1	15014	
	Al Toad	2	25994	

District	Village	Scavenging Tractor	No. of Beneficiaries	Remarks
	Al Negilah	1	14990	
	Waqid	1	10327	
	Kom Shereek	1	18157	
	Al Berigat	1	16196	
	Dast Al Ashraf	1	28524	
Itay El Baroud	El Dohreyah	1	12499	
	El Nabira	1	19485	
Itay El Baroud	Nikla El Einab	1	15838	
	Maaneya	1	18434	
	Saft El Horreyah	1	13434	
Wadi El Natroun	Bani Salama	1	1958	
	Al Hamrah	1	1974	
	Kafr Dawoud	-	1946	
Al-Rahmaneya	Al Magd	1	19806	
	Samakhrat	-	13001	
	Boyet	1	9477	
Al-Delingat	Kom Zamran	2	21403	
	Tibah	2	3046	
	Al Masseen	-	32517	
	Al Wafaeyah	1	20305	
Shoubrakhit	Laqqanah	1	23445	
	M. Bishr	1	19499	
	Oreen	1	10807	
	Al Reedan	1	20672	
Abu El Mattamir	Kom EL Farag	2	27736	
	Al Namreyah	1	33986	
	Zawyet Saqr	1	29608	
	Al Sharawi	1	6018	
	Al Saddeek	2	6550	
	El Naser	1	10709	

District	Village	Scavenging Tractor	No. of Beneficiaries	Remarks
Badr	Om Saber	1	6033	
	Al-Nagah	1	18322	
	Omar Makram	1	8529	
	Ahmed Orabi	1	3259	
	Baghdad	1	7775	
Abu Hommos	Gawad Hosny	1	24143	
	Kom El Qanater	1	27641	
	Bisentway	1	29430	
	Berket Ghattas	1	26724	
	Batorous	1	16620	
	M. Damsena	1	230787	
	Belaqtar	1	15386	
Rashid	Edfina	1	13809	
	M. El Amir	1	20443	

Annex III List of Water Connection Works to Villages from 2003 to 2008
List of Deprived Estates (Villages/hamlets) which Received Water Supply Service Connections 2003/2004

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	13	40	60	110	4941					150760
2	Housh Issa	30				9617	528				314910
3	Shoubrakhit	2				818					24540
4	Itay El Baroud	29				16423					492690
5	Abu Hommos	11	50	1080	810	5540	174			800	310200
6	Kafr El Dawwar	11				5059	140			1002	299050
7	Abu El Mattamir	32			320	18650					564300
8	Rashid	24				10748					322440
9	Edko	16				5195					155850
10	El Mahmoudeya	13				5877	600				206310
11	Al-Rahmaneya	15		60		5259					158370
12	Kom Hamada	15				16097	6697				817760
13	Al Delingat	14				10110	90				307800
14	South Tahrir	13				8245	4110				452850
15	Wadi El Natroun	11				6773	2330				319690
TOTAL		249	90	1200	1240	129352	14669	0	0	1802	4897520

List of Rehabilitation Works 2003/2004

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	26			60	10507	2681				450160
2	Housh Issa	-	-	-	-	-	-	-	-	-	-
3	Shoubrakhit	17	120	112	120	12553	8613				811000
4	Itay El Baroud	16				8505	4179	50			468100
5	Abu Hommos	28		180	260	10933	6820	500			714690
6	Kafr El Dawwar	34		1510	120	28054	8084	4835	100	1180	1825720
7	Abu El Mattamir	12				10847	7774	650	1450		925610
8	Rashid	9				2785	4520				309550
9	Edko	10				2358	5600	550			394740
10	El Mahmoudeya	19	360	200	800	9252	2042				396180
11	Al-Rahmaneya	15		500	1000	13176	2418	1062			621140
12	Kom Hamada	2				425					12750
13	Al Delingat	5		80	220	2776	900				132380
14	South Tahrir	-	-	-	-	-	-	-	-	-	-
15	Wadi El Natroun	-	-	-	-	-	-	-	-	-	-
TOTAL		193	480	2582	2580	112171	53631	7647	1550	1180	7062020

List of Completed Works 2003/2004

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	21			300	6703					205590
2	Housh Issa	7				3548					106440
3	Shoubrakhit	-	-	-	-	-	-	-	-	-	-
4	Itay El Baroud	13				7042	2133				317910
5	Abu Hommos	19	1555		410	6372					208195
6	Kafr El Dawwar	2				492					14760
7	Abu El Mattamir	6				2382					71460
8	Rashid	-	-	-	-	-	-	-	-	-	-
9	Edko	1				400					12000
10	El Mahmoudeya	1				792					23760
11	Al-Rahmaneya	-	-	-	-	-	-	-	-	-	-
12	Kom Hamada	2				1240					37200
13	Al Delingat	4				2254					67620
14	South Tahrir	10				6840					205200
15	Wadi El Natroun	1				400					12000
TOTAL		87	1555	-	710	38465	2133	-	-	-	1282135

List of Connection and Support Works 2003/2004

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	9				870	650				58600
2	Housh Issa	-	-	-	-	-	-	-	-	-	-
3	Shoubrakhit	-	-	-	-	-	-	-	-	-	-
4	Itay El Baroud	6				500	6218				325900
5	Abu Hommos	-	-	-	-	-	-	-	-	-	-
6	Kafr El Dawwar	12				1256	10810	4152			910340
7	Abu El Mattamir	16				1230	1600		7300		919900
8	Rashid	-	-	-	-	-	-	-	-	-	-
9	Edko	4				400	3303				177150
10	El Mahmoudeya	8				2210			2300		319300
11	Al-Rahmaneya	-	-	-	-	-	-	-	-	-	-
12	Kom Hamada	-	-	-	-	-	-	-	-	-	-
13	Al Delingat	3				880					26400
14	South Tahrir	13				1727	7420	4790			806010
15	Wadi El Natroun	1								1400	196000
TOTAL		72	-	-	-	9073	30001	8942	9600	1400	3739600

List of Water Supply Service Works Introduced to Deprived Villages (Rural Estates) 2004/2005

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	4				1155					46200
2	Housh Issa	10				10250					410000
3	Shoubrakhit	4				962					38480
4	Itay El Baroud	5				4648	510				216520
5	Abu Hommos	2				986					39440
6	Kafr El Dawwar	3				710					28400
7	Abu El Mattamir	0	0	0	0	0	0	0	0	0	0
8	Rashid	0	0	0	0	0	0	0	0	0	0
9	Edko	4				935		900			109400
10	El Mahmoudeya	17				3801					152040
11	Al-Rahmaneya	2				756					30240
12	Kom Hamada	16				10371					414840
13	Al Delingat	11				8314					332560
14	South Tahrir	8				7682	1553				400460
15	Wadi El Natroun	4				4290	1000				231600
TOTAL		90	0	0	0	54860	3063	900	0	0	2450180

List of Rehabilitation Works 2004/2005

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	10				4580	4720				466400
2	Housh Issa	2				973					38920
3	Shoubrakhit	8				11237	950				506480
4	Itay El Baroud	1				155	295				23900
5	Abu Hommos	24				15165	2905	4370	2550		1385500
6	Kafr El Dawwar	17				4777	6614	2630		542	863360
7	Abu El Mattamir	2				360	385				37500
8	Rashid	2				236					9440
9	Edko	9				1537	347	200			98300
10	El Mahmoudeya	6				2705	2220				241400
11	Al-Rahmaneya	2				761					30440
12	Kom Hamada	2				1000	46				42760
13	Al Delingat	1				180					7200
14	South Tahrir	0	0	0	0	0	0	0	0	0	0
15	Wadi El Natroun	0	0	0	0	0	0	0	0	0	0
TOTAL		86	0	0	0	43666	18482	7200	2550	542	3751600

List of Completed Works 2004/2005

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	6				2302					92080
2	Housh Issa	3				2013					80520
3	Shoubrakhit	0	0	0	0	0	0	0	0	0	0
4	Itay El Baroud	13				5561					222440
5	Abu Hommos	4				2130	500				115200
6	Kafr El Dawwar	2				700					28000
7	Abu El Mattamir	0	0	0	0	0	0	0	0	0	0
8	Rashid	0	0	0	0	0	0	0	0	0	0
9	Edko	0	0	0	0	0	0	0	0	0	0
10	El Mahmoudeya	0	0	0	0	0	0	0	0	0	0
11	Al-Rahmaneya	0	0	0	0	0	0	0	0	0	0
12	Kom Hamada	2				358					14320
13	Al Delingat	2				637					25480
14	South Tahrir	0	0	0	0	0	0	0	0	0	0
15	Wadi El Natroun	0	0	0	0	0	0	0	0	0	0
TOTAL		32	0	0	0	13701	500	0	0	0	578040

List of Connection and Support Works 2004/2005

Serial No.	Name of District	No. of Estates	Network Length (Linear meter)								Costs in LE
			P.V.C								
			1"	1.5"	2"	4"	6"	8"	10"	12"	
1	Damanhour	1				580					23200
2	Housh Issa	2					3456				207360
3	Shoubrakhit	0	0	0	0	0	0	0	0	0	0
4	Itay El Baroud	3				240	180				20400
5	Abu Hommos	4				1100	200				56000
6	Kafr El Dawwar	1				100					4000
7	Abu El Mattamir	4					900		4492		503200
8	Rashid	1	0	0	0	0	0	0	0	270	32400
9	Edko	2						1075			86000
10	El Mahmoudeya	3					1000	880			130400
11	Al-Rahmaneya	0	0	0	0	0	0	0	0	0	0
12	Kom Hamada	0	0	0	0	0	0	0	0	0	0
13	Al Delingat	0	0	0	0	0	0	0	0	0	0
14	South Tahrir	0	0	0	0	0	0	0	0	0	0
15	Wadi El Natroun	1						54			4320
TOTAL		22	0	0	0	2020	5736	2009	4492	270	1067280

List of Water Supply Service Connections 2005/2006

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	5	1.48	0.08
2	Housh Issa	24	14.56	0.73
3	Shoubrakhit	1	0.09	0.004
4	Itay El Baroud	10	6.86	0.34
5	Abu Hommos	1	0.20	0.01
6	Kafr El Dawwar	5	8.05	0.40
7	Abu El Mattamir	4	2.43	0.12
8	Rashid	4	2.32	0.12
9	Edko	-	0.00	0.00
10	El Mahmoudeya	13	4.07	0.20
11	Al-Rahmaneya	2	1.45	0.07
12	Kom Hamada	4	3.74	0.19
13	Al Delingat	3	0.83	0.04
14	South Tahrir	11	13.80	0.69
15	Wadi El Natroun	15	6.38	0.32
Total		102	66.3	3.3

List of Rehabilitation Works 2005/2006

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	21	17507	875350
2	Housh Issa	-	-	-
3	Shoubrakhit	7	1934	96700
4	Itay El Baroud	3	2455	122750
5	Abu Hommos	12	6103	305150
6	Kafr El Dawwar	20	19608	980400
7	Abu El Mattamir	9	10600	530000
8	Rashid	3	735	36750
9	Edko	2	507	25350
10	El Mahmoudeya	13	11762	588100
11	Al-Rahmaneya	14	8960	448000
12	Kom Hamada	-	-	-
13	Al Delingat	1	425	21250
14	South Tahrir	1	600	30000
15	Wadi El Natroun	3	1254	62700
Total		109	82450	4122500

List of Connections and Completion Works 2005/2006

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	4	1360	68000
2	Housh Issa	-	-	-
3	Shoubrakhit	-	-	-
4	Itay El Baroud	4	1090	54500
5	Abu Hommos	2	740	37000
6	Kafr El Dawwar	3	604	30200
7	Abu El Mattamir	3	4931	246550
8	Rashid	1	1620	81000
9	Edko	1	148	7400
10	El Mahmoudeya	-	-	-
11	Al-Rahmaneya	-	-	-
12	Kom Hamada	2	1136	56800
13	Al Delingat	2	1032	51600
14	South Tahrir	12	4979	248950
15	Wadi El Natroun	1	582	29100
Total		35	18222	911100

List of Connections and Support Works 2005/2006

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	26	6475	323750
2	Housh Issa	24	14557	727850
3	Shoubrakhit	12	1112	55600
4	Itay El Baroud	17	8861	443050
5	Abu Hommos	26	10247	512350
6	Kafr El Dawwar	16	8050	402500
7	Abu El Mattamir	14	4432	221600
8	Rashid	14	6315	315750
9	Edko	-	-	-
10	El Mahmoudeya	21	5067	253350
11	Al-Rahmaneya	12	3454	172700
12	Kom Hamada	13	4240	212000
13	Al Delingat	12	2120	106000
14	South Tahrir	14	13804	690200
15	Wadi El Natroun	15	6384	319200
Total		236	95118	4755900

List of Water Supply Service Connection Works 2006/2007

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	6	2.6	0.13
2	Housh Issa	19	14.3	0.715
3	Shoubrakhit	5	2.3	0.115
4	Itay El Baroud	21	8.4	0.42
5	Abu Hommos	5	3.3	0.165
6	Kafr El Dawwar	5	1.2	0.06
7	Abu El Mattamir	3	1.6	0.08
8	Rashid	4	1.2	0.06
9	Edko	7	2.5	0.125
10	El Mahmoudeya	2	2.2	0.11
11	Al-Rahmaneya	2	1.7	0.085
12	Kom Hamada	6	4.2	0.21
13	Al Delingat	40	22.6	1.13
14	South Tahrir	6	4.9	0.245
15	Wadi El Natroun	0	0	0
Total		131	73	3.65

List of Rehabilitation Works 2006/2007

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	24	15.2	0.32
2	Housh Issa	2	1.1	0.75
3	Shoubrakhit	10	3.1	0.21
4	Itay El Baroud	16	9.2	0.73
5	Abu Hommos	46	27.6	0.84
6	Kafr El Dawwar	15	14.1	0.82
7	Abu El Mattamir	16	15.4	0.77
8	Rashid	14	6	0.12
9	Edko	16	6.8	0.08
10	El Mahmoudeya	10	12.5	1.33
11	Al-Rahmaneya	4	4.2	0.08
12	Kom Hamada	1	0.2	0.08
13	Al Delingat	6	1	0.66
14	South Tahrir	6	2.6	0.15
15	Wadi El Natroun	1	0.2	0.19
Total		187	119.2	7.13

List of Connections, Completion Works, Installation of Wash Valves 2006/2007

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	13	10.9	0.150
2	Housh Issa	2	8.3	0.070
3	Shoubrakhit	11	8.6	0.090
4	Itay El Baroud	17	12	0.700
5	Abu Hommos	15	9.4	0.900
6	Kafr El Dawwar	23	14.6	0.800
7	Abu El Mattamir	26	23.06	1.400
8	Rashid	2	0.9	0.030
9	Edko	1	0.82	0.020
10	El Mahmoudeya	1	0.02	0.003
11	Al-Rahmaneya	0	0	0.000
12	Kom Hamada	2	6.7	0.090
13	Al Delingat	25	14.2	1.100
14	South Tahrir	10	8.9	1.180
15	Wadi El Natroun	9	8.6	1.300
Total		157	127	7.833

List of Water Supply Service Works Introduced to Deprived Villages (Rural Estates) 2006/2007

Serial	Name of District	Total No. of Estates	Network Length (Linear meter)			Costs in LE
			P.V.C			
			4"	6"	8"	
1	Damanhour	4	2420	0	0	121000
2	Housh Issa	24	17517	0	0	875850
3	Shoubrakhit	6	1971	0	0	98550
4	Itay El Baroud	19	8211	1785	0	517650
5	Abu Hommos	29	9199	0	0	459950
6	Kafr El Dawwar	6	1786	0	0	89300
7	Abu El Mattamir	22	15332	0	0	766600
8	Rashid	3	1660	0	0	83000
9	Edko	8	2524	0	0	126200
10	El Mahmoudeya	2	3800	0	0	190000
11	Al-Rahmaneya	3	2100	0	0	105000
12	Kom Hamada	6	3581	0	0	179050
13	Al Delingat	38	16260	243	0	827580
14	South Tahrir	4	4292	0	0	214600
15	Wadi El Natroun	0	0	0	0	0
TOTAL		174	90653	2028	0	4654330

List of Water Supply Service Works Introduced to Deprived Villages (Rural Estates) 2007/2008

Serial No.	Name of District	Total No. of Deprived of Rural Estates	Total Lengths Varied Diameters (KM)	Total Costs in LE Million
1	Damanhour	27	13.6	1.09
2	Housh Issa	25	11.2	0.90
3	Shoubrakhit	6	1.8	0.14
4	Itay El Baroud	17	8.7	0.70
5	Abu Hommos	7	2.3	0.18
6	Kafr El Dawwar	13	6.1	0.49
7	Abu El Mattamir	14	5.8	0.46
8	Rashid	4	1.3	0.10
9	Edko	2	0.92	0.07
10	El Mahmoudeya	6	1.8	0.14
11	Al-Rahmaneya	7	1.1	0.09
12	Kom Hamada	36	18.6	1.49
13	Al Delingat	28	13.1	1.05
14	South Tahrir	5	2.2	0.18
15	Wadi El Natroun	0	0	0.00
Total		197	88.5	7.08

ANNEX IV: Requirements Imposed by EEAA/Alexandria Office for Coal Kilns

The Following requirements shall be ensured at the Modernized Charcoal Kilns

-The general requirements for workshops and commercial shops shall be enforced
-A water supply source and a sanitary drainage outlet must be ensured for any number of workers, and according to regulations and specifications
-In case of applying natural drying of wood onsite, a specific space should be allocated for this purpose and should be surrounded with a fence
-Storage spaces must be allocated for raw materials of charcoal
-All machinery must be tightly closed and sealed to prevent any gas and smoke emissions
-The thickness of the Kiln steel walls (Charcoaling vessel and the insulated outer container) must be appropriately adequate to tolerate all the thermal and mechanical propensities according to the wood container capacity as follows:

- The minimum Kiln wall thickness must not be less 6 mm for a minimum capacity of $3m^3$
- The minimum Kiln wall thickness must not be less 8 mm for a maximum capacity of $3m^3$
- The outer container of the kiln must be thermally insulated in order to prevent heat leakage outside
- The vessel must be place in an outer container that is thermally insulated and supplied with one or more flame lightening source. Operation fuel must use either solar or natural gas
- Liquid or gaseous wastes resulting from the manufacturing process must be treated and disposed of according to the relevantly applicable environmental regulations and standards

The emissions resulting from the kiln during the charcoaling process must be compliant with the permissible limits stipulated by Law 4/94.

Participants of Developing the Environmental Action Plan

EMU:
1- Geologist: Magdy Zakaria Debis
2- Geologist: Abdullah Abdullah El Emam.
3- Geologist: Mustafa Ahmed Saleh
4- Engineer: Abdulhameed Youssef Khedr
5- Geologist: Luban Zakaria Debis
6- Engineer: Abdul Fattah Abdul Ghani Khalifa
7- Engineer: Adel Gaber Ibrahim
8- Ahmed Abdul Raheem Abdul Kader

Under the supervision of Geologist/ Ahmed Abdullah El Kadi, EMU Manager.

Also, RBO-EEAA, in addition to all directorates, agencies, and local units of cities, markaz participated in the plan as follows:

<u>Working Groups:</u>

- **Wastewater Group:**

1- Engineer/ Victoria Philippe Hanna
General Manager, Governorate Planning and Follow up
2- Engineer/ Wagida Aly Mosseli
Manager, Village Development Department, Governorate
3- Engineer/ Rommel Naseem Saad
General Manager, Sanitary Drainage Authority of Behira

- **Solid, hazard, and agriculture wastes management group:**

1- Dr. Yousseri Mabrouk
Deputy Minister, Health and Housing, Behira

- **Potable water supply group:**

1- Engineer/ Yasseen Mansour
Representative, Behira Water Company

- **Industry group:**

1- Engineer/ Mustafa Ahmed Saleh **Memer, Behira EMU**
2- Engineer/ Abdullah Abdullah El Emam **Memer, Behira EMU**

- **Eco Development group**

1- Engineer/ Nemma Ibraheem Selim
Manager, Behira Monuments Department
2- Abdulghani El Kholy
EMU Manager of Etai el-Barood markaz

- **Environmental awareness and information group:**

1- Dr. Magdy Torab
Deputy, Faculty of Arts, environment and community affairs
2- Abdulbadie Abraham Ebied
Manager, Information Center, Damanhour
3- Sheikh/ Mohamed Aly
Representative, Waqfs Directorate, Behira

- **Inter-group Coordinators group:**

1- Engineer/ Maher El Sayed El Adawy
Executive Manager, General Authority of Sanitary Drainage
2- Engineer/ El Sayed Ahmed Khaleel
Member, Village Development Department.

Under the supervision of:

General/ Mohamed Mahmoud Taj El Deen – Assistant Secretary General

ESP, DANIDA:

1- Mr. Anders Bjoernshave — **DANIDA Senior Consultant**
2- Mr. Kurt Terpgaard Jensen — **DANIDA Consultant**
3- Dr. Ali Abu Sedera
Secretary General of EEAA, Head of Branches Sector, Supervisor of ESP
4- Salah Mohamed Ahmed El Sherif — **EMU Manager**
5- Mr. Sami Mustafa Mazloum — **EMU, Environmental Profile and Action Plan Officer**
6- Dr. Tarek Genena — **EMU Consultant**

All under general supervision of:

Dr. Mawaheb Abu El Azem
CEO, EEAA