

**New Valley
Governorate
EMU**



**State Ministry of
Environment
EEAA**



Environmental action Plan

New Valley Governorate

May 2008

Acknowledgement

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

We are keen to highlight the contributions of beneficiaries' working groups who participated in developing New Valley 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 / Ahmed Mokhtar Salama, Governor of New Valley, whose personal participation and kind support contributed a lot in developing the Environmental Action Plan of New Valley 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 New Valley Governorate which shall contribute significantly in solving the environmental problems and improving the different eco systems, in addition to protecting the natural resources and achieving the sustainable development.

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

Special thank you also goes to General / Ahmed Mokhtar Salama, Governor of New Valley, 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

In the light of the increased global concern of environmental problems and the importance of achieving sound environmental management of natural resources through the concept of overall and sustainable development, the New Valley Governorate gave extreme concern to the environmental issues in line with the urban, industrial, and agricultural expansion. The governorate has developed the Environmental Profile to identify environmental issues and problems. Also, the Environmental Action Plan was developed to find out the most suitable solutions to mitigate such problems to save the public health on one hand and to protect the natural resources from the negative impacts of the development on the other hand and to activate the concept of sustainable development that can achieve economic development to meet the current needs and make balance between it and the requirements of the future and the coming generations.

The Environmental Action Plan is distinguished by its realistic nature resulted from the ongoing coordination with all the competent agencies and consultation with citizens in all the cities and villages of the governorate and knowing their views about their priorities and needs for the coming five years. Also, the desired objectives and required procedures came within the framework of the strategic development plan of the governorate until 2027.

Appreciation goes to all dedicated efforts that contributed in developing this plan, and I do hope that it shall achieve its desired goals to keep the environment always clean and pure and to improve the living conditions of the citizens and to secure better future for our coming generations.

New Valley Governor

General/ Ahmed Mokhtar

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1. Governorate in brief according to the environmental profile

1-1 Location and administrative boundaries:

The New Valley Governorate is located on the south western part of the country, and shares the international borders of Libya to the west and Sudan to the south. As for its internal boundaries, it shares the borders with the governorates of El Menia, Giza and Marsa Matrooh on the north and Assiut, Suhag, Qena and Aswan on the east.

The governorate is divided up administratively into 4 markazs (figure 1) which comprise 4 cities, 37 local units and 164 villages in which approximately 187 thousand persons live. Water resources are considered the main factor for the distribution of the urban markazs, as well as the availability of arable soil. Further, roads and transportation is considered the main factor for the urban activation and development of the markazs and their sustainability.



Figure 1: New Valley Governorate

Administrative boards of Al-Wadi Al-Gadid Governorate



وزارة الدولة لشئون البيئة
جهاز شئون البيئة

1-2 Natural and geographical features:

Area:

The New Valley Governorate is considered the biggest governorate in the country in terms of area, which amounts to approximately 440098 km², representing approximately 43.6% of the total area of the country.

Climate:

The New Valley climate is dry desert climate, and the most important factors may be illustrated as follows:

- Rainfall is almost scarce throughout the year, not exceeding 4 mm/year
- Average annual temperature is 23 degree Celsius.
- Average relative annual humidity is 35.5%
- Average annual wind speed is 6 km/hour.

1-3 Population and growth rate:

The number of the New Valley Governorate's population is 187256 persons, according to the results of the general census for 2006. Further, the population growth amounted to 2.23%, while population density per total area is one person per 2.35 km².

1.4 Population future forecasts:

It is expected that the number of population will amount to approximately 567.2 thousand persons by 2027. Table (1) illustrates forecasted development in the number of population in the governorate.

Table (1) Development of the number of population in the New Valley Governorate (1996-2027)¹

Year	1996	2006	2011	2016	2021	2027
Number of population (thousand)	141.7	187.3	236.6	309.3	413.9	567.2

¹ Strategic Economic Study for Developing the New Valley up to 2027 – Assiut University 2006

1.5 Economic condition:

- Human Development Report – Egypt 2005 indicates that the average per capita share of the gross domestic product in the New Valley Governorate amounted to 6295.6 pounds, and ranks in the 12th position on the level of governorates in terms of domestic product.
- Agriculture is the dominating sector and comprises approximately 60% of the manpower. Cultivated area amounts to approximately 130 thousand acres, which rely completely on underground water
- In the industry field, the governorate established two industrial areas to motivate industrial development under the framework of the governorate's efforts to achieve comprehensive development in all development fields. To encourage industrial development in these areas, the lands were allocated to investors at nominal prices, while providing all the required utilities and services.
- The mining activity is focused in Abu Tartour area, where phosphate is extracted and exported through Safaga port on the Red Sea. There are many mineral raw materials which have not been exploited yet.
- The tourism and industry sectors are witnessing remarkable growth, especially following the governorate's efforts in the field of facilitating investment procedures, under the umbrella of the State's plan to increase investment opportunities and provide employment opportunities.
- In the investment field, the establishment of 385 investment projects of a total cost of 1980 million pounds was sanctioned. 96 of these projects are industrial, 239 are agricultural projects, 21 are tourism projects and 29 are service projects. In fact, 221 various projects were established and operated, which provided 4890 employment opportunities.

1.6 Natural protectorates:

The New Valley Governorate is rich in natural components, thanks to the governorate's location in a desert area which enjoys attractive geological features that contributed in the intensity of the biological diversity in the governorate. The New Valley Governorate has two natural protectorates as follows:

(1) White Desert Protectorate:

This is a desert area located on the northern part of Farafra Oasis, occupying an area of 3010 km². It was declared as a natural protectorate through the decree of the prime minister No. 1220 of year 2002. The area includes a plant cover and a number of land animals threatened with extinction such as the white gazelle and bighorn. Further, the area is attractive as its visitor enjoys the beauty of the nature, sand dunes, and the geological formations of the shining white lime stones.

2. Big Gulf Protectorate:

Comprises the Big Gulf Protectorate, situated over an area of 48.5km², consisting of Nubian sandy rocks, old volcanic vents, mountain areas, deep narrow valleys, chains of the Great Sand sea, extending longitudinally from the north to the south. The area contains the rare glass silica, which may be exploited economically. Further, the area is full of rare types of animals and plants, in addition to the presence of significant tourism monuments such as the remains of the Stone Age in the Green Land Valley, the Yacht Valley, and engravings on the stones in the Soda Valley. The Big Gulf was declared as a natural protectorate according to the decree of the Prime Minister No.10 of year 2007.

1.7 Utilities

1.7.1 Supply of potable water

Approximately 167 thousand cubic meter of potable water is produced daily through 111 wells and 53 purification plants. The number of subscribers in the potable water services amounted to 55735 subscriber in 2005. The Human Development Report for 2005 indicates that the percentage of households receiving secure water in the New Valley Governorate amounts to 97.8% of the total households in the governorate, which they receive through general water grids for residential installations. This percentage varies between the urban and rural areas, as it amounts to 99.2% in the cities and 97.6% in the rural areas.

1.7.2 Sanitary drainage

There are 14 plants for the treatment of wastewater with a total capacity of 88.920 m³/day. The number of subscribers in the sanitary drainage services in the governorate amounts to 53226 subscribers. The Human Development Report for 2005 indicates that the percentage of the households which enjoy sanitary drainage services amounts to 98.5% of the total families in the governorate (drainage pits or sanitary drainage grids).

1.7.3 Electricity

The total electric energy consumed in 205 amounted to approximately 2490 million (KW/hour) and the number of subscribers in the household electricity connection services amounted to 53494 subscriber. The Human Development Report for 2005 indicates that the percentage of households which received electricity amounted to 99.1% of the total population in the governorate.

1.7.4 Roads

The total paved roads amounted to 3437 km and the total dusty roads are 428 km.

1.7.5 Health

- There are 11 hospitals with 744 beds capacities, 30 health units and 67 family planning centers.
- The average life span is 70.7 years, according to the Human Development Report for 2005.
- Child mortality rate below the age of 5 years amounted to 21.3%

1.7.6 Education

- There are 274 pre-university education schools and 6663 teachers offering educational services to 40273 students, of whom 19079 are females, i.e. 47.4% of the total. The percentage of the population with secondary certificates or higher degree amounts to 59.92% of the total age group from 18 to 23 years.
- The governorate has one faculty which is the Faculty of Education – Assuit University. Currently, the faculties of agriculture and veterinary medicine are under construction.

2. Environmental Action Plan for the Governorate as a Strategic Framework

2.1 Introduction and definition of the environmental action plan

This document presents the profile of the environmental action plan for the New Valley Governorate, which lays down the basis for works and projects to enhance the quality of life for the residents of the New Valley Governorate, through outlining a number of environmental strategies and projects of local priority, which will result in real enhancements for the environment and general health. Further, the plan aims at protecting the environment against the negative environmental effects which may accompany current and future development works. Therefore, the plan acts to integrate social, economic and environmental dimensions for the purpose of achieving sustainable development.

The plan proposes a number of solutions which agree with the five year national plan for socio-economic development (2007-2012), especially in terms of providing sufficient sanitary drainage utilities for all the urban markazs. Further, the environmental action plan also addresses priority issues set forth under the national plan for environmental work issued in 1992 for fields such as managing solid wastes, use of water and lands. The said procedures in the plan also contribute in fulfilling Egypt's obligations according to international protocols, especially the 21st century agenda passed by Rio conference and the millennium development plans.

During the preparation of the environmental action plan, the environmental profile of the New Valley Governorate was issued, which defines the environmental conditions and priority issues.

2.2 Why do we need an environmental action plan?

The environmental action plan of the governorate aims at supporting the environmental planning and management system through a scientific system in order to lay down an integrated vision to outline priority environmental issues and their management method. The success of the implementation of the environmental action plan guarantees the governorate for improved dealing with issues such as follows:

1. Achieving comprehensive and sustainable development, including providing the infrastructure, supply and management of environmental services (potable water – sanitary drainage – solid wastes and facing the damage of crawling sands)
2. Protection of natural resources from the negative effects of development.

3. Conserving the social components and features of the residents

Through the implementation of the governorate environmental plan, the following objectives may be achieved:

1. A healthy environment including clean water, clean air, arable soil and secure food.
2. Providing adequate income for the citizens through comprehensive development, preventing the deterioration of the environmental systems and controlling the depletion of natural resources available in the governorate.
3. Conserving cultural and historical resources.
4. Creating a well informed society which participates in all aspects of development

2-3 How was the plan prepared?

Five taskforces were formed covering these priority issues which have been defined through the governorate environmental profile as follows:

- Sanitary drainage taskforce
- Potable water taskforce
- Solid, agricultural and medical wastes management taskforce
- Protection of natural resources and facing the crawling of sand dunes taskforce
- Media, training and environmental awareness taskforce

A coordinator was appointed for each taskforce from the governorate environmental office. The formation of each taskforce included the various categories of the society, such as government and executives in the various sectors- private societies- private sector. Annex No.1 illustrates the formation of the taskforces which contributed in preparing the plan.

3. Future vision of the New Valley Governorate for 2012

The environmental action plan laid down a future vision for the New Valley Governorate up to 2012, through which the following could be achieved:

First: sustained economic growth

The economic growth in the governorate shall continue, relying on agriculture, land reclamation in Darb Al Arbeen, Dakha, east al Ouinat and Farafra. It is expected as well that environmental tourism will contribute in upgrading the economic growth rates with the increase in the number of tourists.

Second: conservation of unique environmental systems

Conservation of the land environmental systems in the natural protectorates (White Desert and Big Gulf), as well as new development areas such as Darb Al Arbeen, east Ouinat south Valley. Terms are being laid down to ensure development management without harming the safety of the natural environment.

Third: integrated development and management

Achieving integrated development to boost cooperation between the executive bodies in the governorate, the private sector and private societies, as well as encourage the expansion in supplying social and environmental services without harming the environment and citizens

Fourth: Promoting awareness

Raising the environmental awareness among residents of the governorate and achieving comprehensive understanding of the various environmental and natural resources, and the best means for using the land environment and its resources.

4. Environmental Issues and Priorities

General Background

The aim of the environmental action plan is to respond to the environmental issues and problems in the governorate and prepare a practical plan for environmental work in which members of the society from all sectors and levels contribute in preparing and feel it is a true response to their own needs.

The environmental action plan is:

- A sound mechanism relying on community participation to determine work priorities.
- A planning tool which gathers between the various groups of beneficiaries and their views.
- A means for defining sound practices in environmental planning.
- A mechanism of communication for raising environmental awareness and education
- A strategic document which illustrates the governorate's developmental role

4-1 Environmental action plan field research

Consulting with the citizens is considered as one of the main components of the environmental action plan. Through this, there was confirmation that all the categories are given the opportunity to express their priorities and views in connection with the environment and environmental services. Despite the concentration of environmental consultations on environmental related topics, nevertheless they established a method based on participation and integration of the various categories of the society.

4-2 Categories of researched parties:

- Farmers
- Workers in the industrial sector
- Workers in the tourism sector
- Workers in the government sector
- Workers in the private sector
- (secondary / university) students

4-3 Field research results

4-3-1 Distribution of the number of researched categories in the urban and rural areas according to gender at the governorate markazs

Table (2) illustrates the distribution of questionnaire sample conducted in the governorate.

Table (2) distribution of questionnaire sample conducted in the governorate

	Urban			rural areas			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Kharga	١٠٧	٤٢	١٤٩	٦٧	٢٤	٩١	١٧٤	٦٦	٢٤٠
Paris	٢٢	١٨	٤٠	٢٢	٨	٣٠	٤٤	٢٦	٧٠
dakhla	٥٦	٢٤	٨٠	١٦٢	٧٧	٢٣٩	٢١٨	١٠١	٣١٩
Farafra	٢٩	١١	٤٠	٣٩	١٢	٥١	٦٨	٢٣	٩١
Total	٢١٤	٩٥	٣٠٩	٢٩٠	١٢١	٤١١	٥٠٤	٢١٦	٧٢٠

- Percentage of researched categories in urban areas : 42.9%
- Percentage of researched categories in the country side : 57.1%
- Percentage of researched males : 70%
- Percentage of researched females : 30%

Figure (2) illustrates the percentage of the distribution of questionnaire sample between urban areas, rural areas, males and females.

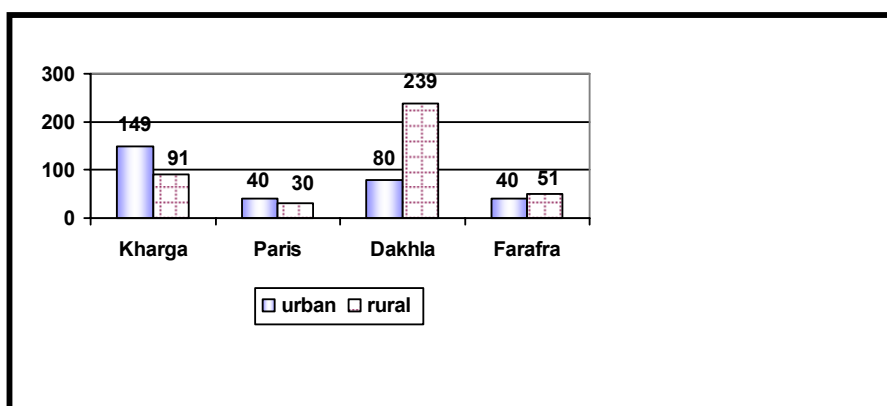


Figure (2) percentage of distribution of questionnaire sample between the urban and rural areas, males and females

4-3-2 Distribution of researched numbers according to academic qualifications in the urban areas and rural areas

Description	University degree	Medium qualification	Less than medium qualification	Student	Total
urban	88	123	69	29	309
rural areas	65	149	183	14	411
Total	153	272	252	43	720

- Percentage of researched category with high qualifications 21.3%
- Percentage of researched category with medium qualifications 37.8%
- Percentage of researched category with less than medium qualifications : 35%
- Percentage of researched category who are students 5.9%

4-3-3 Distribution of researched numbers according to occupation in urban areas and rural areas

Description	Agriculture	industrial	Tourism	government	private	student	Total
Urban	21	39	41	114	65	29	309
Rural areas	90	29	10	147	121	14	411
Total	111	68	51	261	186	43	720

Note:

Workers in the government sector are categories of employees in the various services directorates and local units, who have diversified opinions according to the fields of their job specializations. Workers in the private sector are categories of tradesmen and owners of commercial and service installations.

- Percentage of researched categories working in the agriculture field 15.4%
- Percentage of researched categories working in the industry field 9.4%
- Percentage of researched categories working in the tourism field 7.1%
- Percentage of researched categories working in the government sector 36.3%
- Percentage of researched categories working in the private sector 25.9%
- Percentage of researched categories who are students 5.9%

4-3-4 Priorities of citizens and their demands from the government at present:

The three main concerns as mentioned by the researched categories are unemployment (88%), health (45%) and sanitary drainage (35%). The other concerned included the following according to their order: agriculture, potable water, education, housing, roads, transport, environment, tourism and solid wastes. Table (3) illustrates distribution of priorities as set forth under the field research.

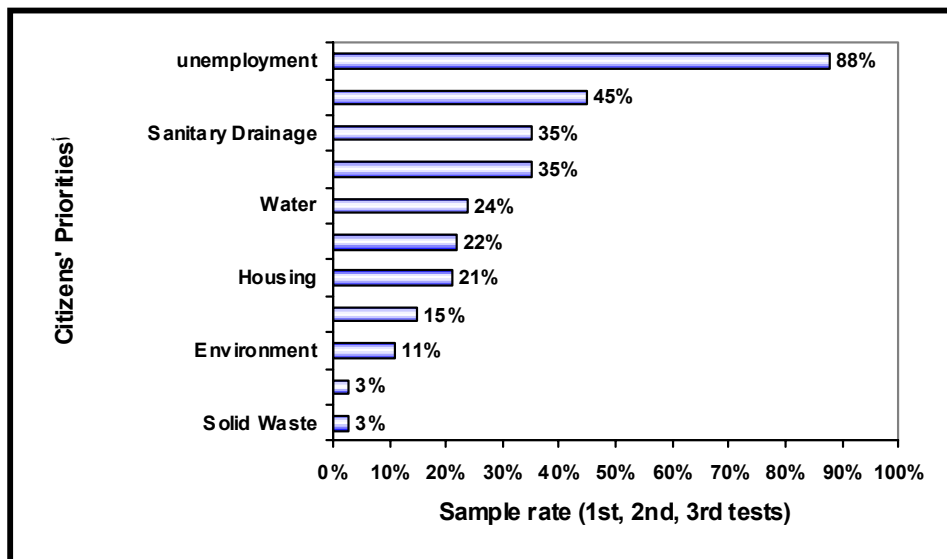
Table (3) distribution of priorities as set forth under the field research

Topics	Urban priorities	Rural priorities
Unemployment	1	1
Health	2	3
Housing	3	9
Agriculture	4	4
Potable water	5	5
Education	6	6
Sanitary drainag	7	2
Roads, transport	8	7
Environment	9	8
Tourism	10	10
Solid wastes	11	11

Note: 1= highest priority, 11= lowest priority

Further, figure (3) illustrates the distribution of priorities as set forth in the field research

Figure (3) distribution of priorities as set forth under the field research



4-3-5 Concerns of citizens with environmental problems

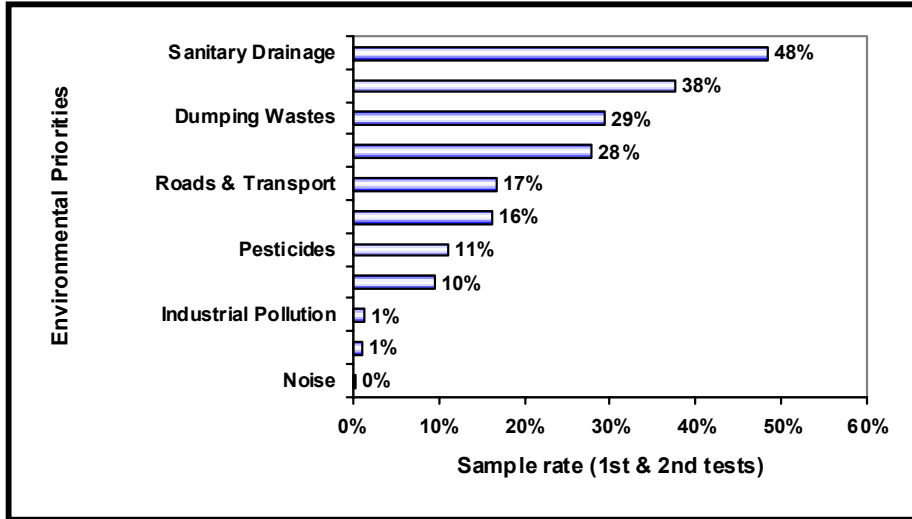
The main environmental concerns as mentioned by the researched were sanitary drainage (48.3%), shortage of water (37.6%), and other concerns according to their order, which include throwing garbage, increase of environmental awareness, roads, transport, land deterioration, chemical pesticides, agricultural drainages, industrial pollution, car exhaust and noise. Table (4) illustrates the distribution of the citizens' concerns with environmental problems according to the questionnaire results. Sa for figure (4), it illustrates the distribution of the citizens' concerns with environmental problems.

Table (4) distribution of the citizens' concerns with environmental problems as set forth in the questionnaire results

Topics	Urban priorities	Rural areas priorities
Dumping wastes	1	4
Sanitary drainage	2	1
Shortage of water	3	2
Increase of environmental awareness	4	3
Creeping of sandy dunes and deterioration of agricultural lands	5	6
Roads and transport	6	5
Pesticides and chemical fertilizers	7	7
Agricultural drainages	8	8
Industrial pollution	9	10
Car exhaust	10	9
Noise	11	11

Note: 1 = top priority, 11= least priority

Figure (4) distribution of citizens' concerns with environmental problems



By asking the citizens about the agency they contact in connection with environmental problems, their answers were as follows:

- 39% of the citizens contact the city council first
- 29% of the citizens contact the local unit of the village
- 21% of the citizens contact local community development societies
- 7% of the citizens contact the police

Results of the questionnaire indicated that 39.6% of the researched citizens have contacted any of the above agencies in connection with environmental problems, and 60.4% have not contacted any agency before.

Priorities of citizens and their demands from the governorate over the next five years

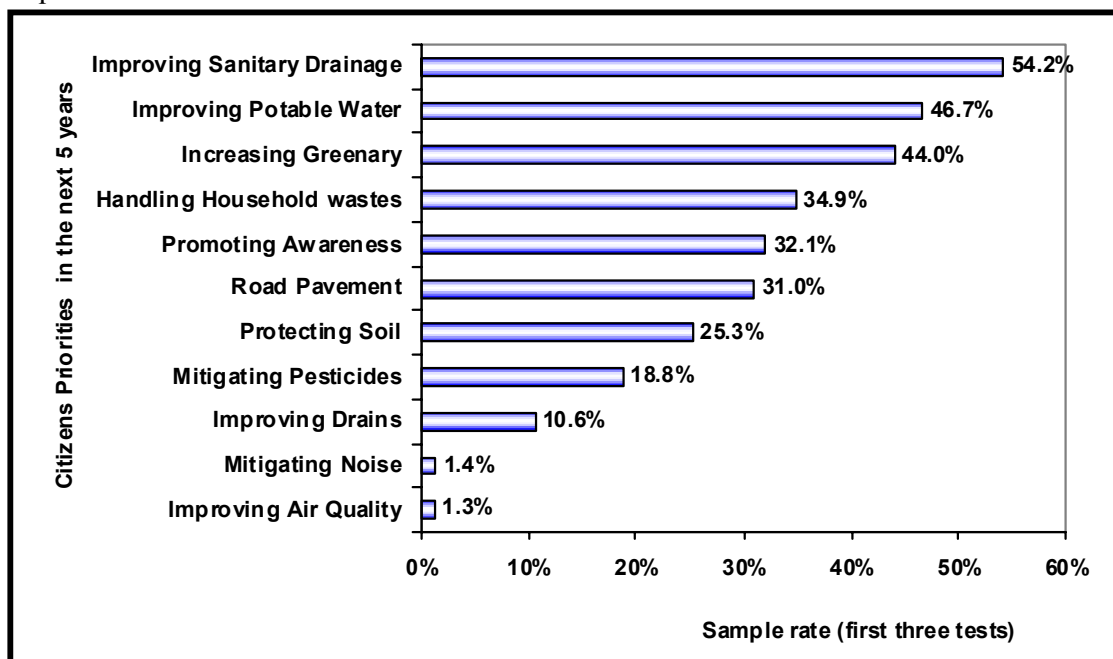
The three main concerns as mentioned by the researched citizens were improving sanitary drainage (54.2%), connecting and enhancing the quality of potable water (46.7%), increasing greenery and green surfaces (44%). Other concerns according to their order included handling household wastes, raising environmental awareness, paving roads, protection of agricultural soil, reducing the risks of using pesticides, enhancing drainages, controlling pollution and enhancing the quality of air. Table (5) illustrates environmental priorities which the government should address attention to over the next five years, as mentioned in the results of the questionnaire. As for figure (5), it illustrates the percentage of distribution of these priorities as mentioned in the questionnaire.

Table (5) environmental priorities which the government should address concern to over the next five years

Topics	Urban priorities	Rural areas priorities
Increasing greenery and green surfaces	1	3
Improving connection/quality of potable water	2	2
Handling household wastes	3	6
Enhancing sanitary drainage	4	1
Raising environmental awareness in the society	5	5
Paving roads	6	4
Protection of the agricultural soil and its quality	7	7
Reducing risks of using chemical pesticides	8	8
Improving drainages	9	9
Controlling noise	10	11
Enhancing the quality of air	11	10

Note: 1- highest priority, 11- lowest priority

Figure (5) percentage of the distribution of these priorities as set forth under the questionnaire



4-3-7: Priorities of citizens and 105 social welfare (charity) society:

By asking citizens about their knowledge of the existence of a private society and their demands from private societies over the next five years, the New Valley Governorate has 180 private societies, 75 of which are community development societies in their areas/ 95% of the replies by yes and 5% replied by saying that they do not know any private societies in the area. Completing the question about the activity of private societies, the answers were as follows:

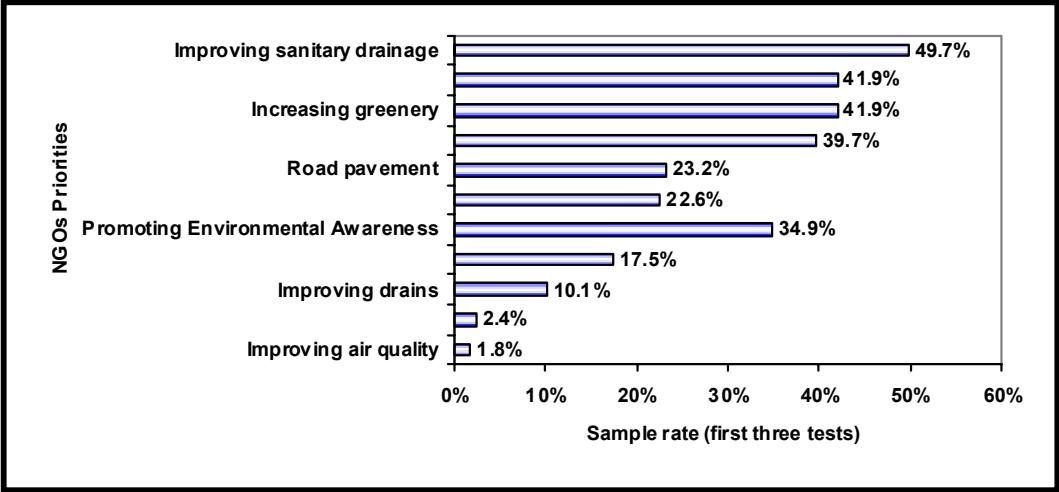
- Social welfare (charity) societies: 49.6%
- Local community development societies: 48.6%
- Environment protection: 1.8%

The three main concerns as mentioned by researched citizens are improving sanitary drainage (49.7%), handling household wastes (41.9%), and increasing greenery/green surfaces (41.9%). Other concerns according to their order included improving the connection/ quality of potable water, paving roads, protection of agricultural lands, raising environmental awareness, reducing the risks of using pesticides, enhancing drainages, controlling noise and enhancing the quality of air. Table (6) illustrates environmental priorities which the researched citizens consider that private societies should address concern to over the next five years. As for figure (6), it illustrates the distribution of these priorities.

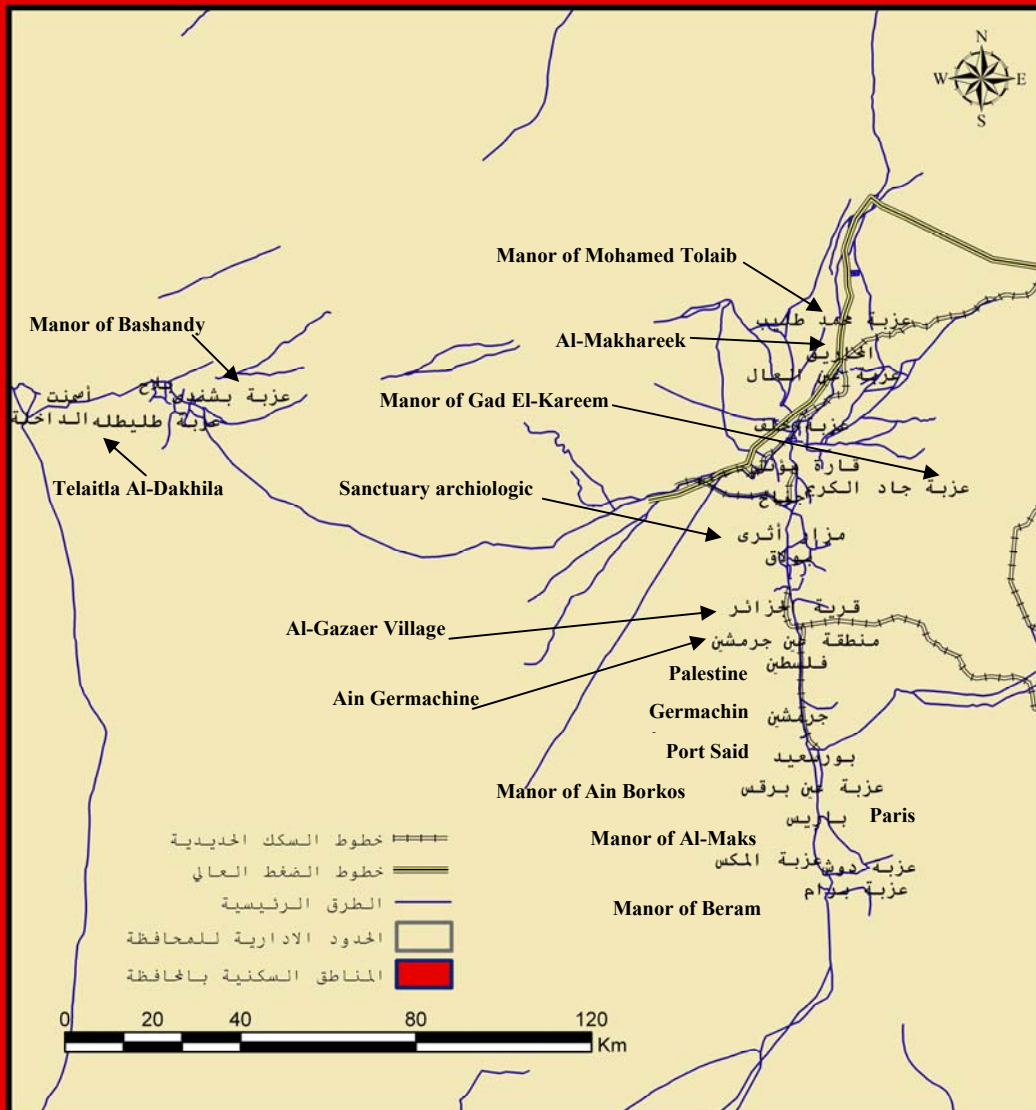
Table (6) environmental priorities deemed by researched citizens for private societies to address concern to over the next five years

topics	Urban priorities	Rural priorities
Increasing greenery and green surface	1	4
Handling household wastes	2	2
Enhancing sanitary drainage	3	1
Enhancing the connection/quality of potable water	4	3
Raising environmental awareness	5	5
Protection of agricultural soil and its quality	6	7
Reducing the risks of using pesticides	7	8
Paving roads	8	6
Improving drainages	9	9
Controlling noise	10	11
Improving the quality of air	11	10

Figure (6) distribution of environmental priorities which researched categories deemed that private societies should address concern to over the next five years.



Population Areas and main roads at Al-Wadi Al-Gadid Governorate



4.3.8 Opinions of citizens about local services

4.3.8.1 Potable water

The questionnaire results pointed out that all the researched citizens receive their needs of potable water from the public grid by 100%. Questioning the researched citizens about the possibility of receiving a better service against more financial return, 67% of them answered by yes, and 33% of them did not agree to pay more costs.

4.3.8.2 sanitary drainage

Questionnaire results indicated that 49.4% of the researched categories are connected with the public grid, 48.6% of them rely on the trenches system, and 2% rely on other means. Questioning the researched citizens about the possibility of receiving better service against more financial consideration, 71% of them answered by yes and 33% did not agree to pay more costs (table 7).

Table (7) distribution of questionnaire sample according to the type of sanitary drainage services

Type of sanitary drainage	urban	Rural areas
Public network	87%	21.2%
Trench	13%	75.4%
Other	.	3.4%

4.3.8.3: solid wastes

Results of the questionnaire pointed out that 59.9% of those researched deal with the waste collection system of the city council or local unit, 8.2% rely on private systems and 31.9% pointed out that there is no system for collecting wastes in their areas. Questioning researched citizens about the possibility of receiving better service against more financial consideration, 65% of them answered by yes and 35% did not agree to pay more costs (table 8).

Table (8) Distribution of questionnaire sample as per the wastes collection services

Waste collection systems	urban	Rural areas
City council/ local unit system	100%	29.7%
Private system (private project or personal)	.	14.4%
Nil	.	55.9%

4.3.8.2 : electricity

Questionnaire results indicted that all researched citizens enjoy lighting services by 100%

5. Priority environmental issues according to the environmental profile:

The main priority issues in the governorate were defined and set forth below according to the order of their significance as deemed by the beneficiaries. Among these eight issues, the first five issues were classified as persistent priority requiring quick treatment.

5.1 high priority environmental issues

Priority	Priority topic	Related issues
1	Sanitary drainage	Lack of sanitary drainage grids in most of the villages, insufficient sanitary removal trucks and poor capacity of available trucks
2	Supplying water and water quality	Turbidity of water as a result of iron oxides, poor maintenance of the lines and blocking of the pipes as a result of the accumulation of oxides.
3	Solid, agricultural and hazardous wastes	Absence of systems for collecting solid wastes and safe disposal of the same, especially in the rural areas, insufficiency of the number of waste collection trucks in the cities, poor suitability and efficiency of some of them, insufficient manpower working in waste collection, accumulation of palm tree wastes
4	Protection of agricultural soil and its quality	Creeping sandy dunes on the agricultural lands, phenomenon of sand on the crops which lead to deterioration of soil and poor productivity
5	Low environmental awareness	Poor environmental awareness among the citizens, unhealthy practices

5.2 Low priority environmental issues

Priority	Priority topic	Related issues
1	Improving drainages	Covering all uncovered drainages
2	Paving roads	Dusty roads spread in the rural areas in general and a number of residential areas in Paris and Farafra cities
3	Increasing greenery and green surfaces	Planting trees in the streets, entrances of cities and villages, increasing green surfaces as a natural outlet for citizens, especially that the general climate in the governorate is very dry desert climate

6. Description of environmental priorities

6.1 Sanitary drainage

6.1.1 General background

The number has 14 sanitary drainage projects, three in the urban areas and 11 projects in the rural areas. According to the results of the general consensus in 1996, 51% of the households are connected with sanitary drainage grids. This percentage increased in 2006 to approximately 70%, after establishing sanitary drainage projects in Mawt City, Bashandi, Hindaw and east Ouinat villages, knowing that an integrated sanitary drainage project is under construction in Farafra city. The total lengths of the grids amounted to 588 km. On the other hand, the villages and minor villages (deprived of sanitary drainage plants) rely for disposing human wastes and used water on household trenches which are emptied periodically by evacuation trucks which unload sanitary water at specific areas outside the boundaries of the villages. Estimates indicate that the percentage of houses with household trenches in most villages amount to more than 95%, which indicates that this method is suitable and performs its purpose without real environmental problems.

The Human Development Report for Egypt for 2005 indicates that the percentage of households which receive sanitary drainage services in the cities (connected with the sanitary drainage grids) amount to 98.5% of the total households in the cities. Table NO.9 illustrates the treatment plants and their capacity in the New Valley Governorate.

Table (9) Treatment plants and volume of daily drainage water (m3/day)²

Description		Lifting plants		Disposal (m3/day)		Grids (KM)	Number of subscribers
		main	secondary	Design	Actual		
Kharga	urban	1	2	35000	33000	270	23600
	rural	2	2	5500	2900	28	704
Kharga total		3	4	40500	35900	298	24304
Paris	urban	1	3	2500	1800	31	1202
	rural	.	.	.	.	.	.
Paris total		1	3	2500	1800	31	1202
Dakhla	urban	1	4	15000	8640	176	5600
	rural	6	6	30270	8975	68	3550
Dakhla total		7	10	45270	17615	244	9150
farafra	urban	.	.	.	.	.	.
	rural	3	.	650	400	15	570
Farafra total		3	.	650	400	15	570
Governorate total	Urban	3	9	52500	43440	477	30402
	Rural	11	8	36420	12275	111	4824
Total		14	17	88920	55715	588	35226

² Information Center – Local Units- August 2007

- Available treatment systems

All drainage plants in the cities and villages follow the biological (secondary) treatment

- Sanitary drainage system in the cities

The governorate has three projects in Kharga, Paris and Mawt cities (integrated projects comprising lifting and treatment plants and grids). Currently an integrated sanitary drainage project is under construction in Farafra city, with funding amounting to 65 million pounds.

- Sanitary drainage system in the rural areas

The villages and minor villages (deprived of sanitary drainage plants) rely for disposal of human wastes and used waters on household trenches which are emptied periodically by evacuation trucks which discharge sanitary water into specific areas outside the boundaries of the villages

- Final disposal of wastewater

Final disposal of sanitary water is carried through a number of agricultural drains (partially in Kharga and Mawt cities). The other part is uncovered on the ground at areas remote from the urban parts. Generally, as the governorate has low population density, particularly in the rural communities. The problem of pollution from sanitary water which are common in other governorates are not remarkable in the New Valley, in view of the high temperature throughout the year with low relative humidity, leading to increasing the percentage of evaporation from any water bodies on the ground surface.

- Liquid industrial drainage

All industrial installations drain their sanitary into the public grid. As the existing industries are all small and micro small industries, the resulting pollutants are considered without influence, whether in terms of quantity or quality.

6.1.2 The governorate's achievements in the field of sanitary drainage over the past five years

Table No.10 presents a statement of the projects carried out in the governorate in the field of sanitary drainage and their cost over the past five years

Table (10) description of the governorate's achievements in the sanitary drainage field³

Projects/ works	Cost Million LE	Funding source
Expansion of Kharga sanitary drainage	65	Urbanization Agency
Integrated sanitary drainage in Farafra	12	Urbanization Agency
Integrated sanitary drainage in Mawt city	67	Urbanization Agency
Integrated sanitary drainage in Hendaw village	2.2	Urbanization Agency
sanitary drainage grids/equipments and machines/ operation tasks	25.977	Investment plan/emergency plan/social fund/local contribution
Total	172.177	

³ Urbanization Authority – General Administration for Planning – Public Works Program – August 2007

6.1.3 Current situation : problems and reasons

Current status	Most significant problems and negative effects	Most significant reasons for the problem	Current plans or programs to address the current status
Existence of 23 main villages deprived of sanitary drainage services by 68% of the total main villages. No sanitary drainage in Farafra city	Continued reliance of the residents of deprived areas in the villages and Farafra city on the household trenches system, which if safe healthwise, nevertheless they cause many environmental problems if the evacuation trucks are not present or broken down for various reasons	Shortage of financial provisions for sanitary drainage projects, especially in the rural areas	The Ministry of Housing is currently implementing an integrated sanitary drainage project in Farafra City. - Encouraging private societies to implement sewage drainage projects for the villages
Current capacity of the sanitary drainage plant in Kharga city is insufficient to absorb the existing sanitary, leading to directing the sanitary water to the agricultural drains and the agricultural drainage pools	Directing part of the sanitary drainage to the agricultural drains and agricultural drainage pools. The seriousness of this problem is attributed to the fact that a number of farmers plant some crops and graze livestock and sheep on growing grass in the sanitary drainages which are contaminated with sanitary water and has negative effect on human and animal health. In addition, a	The plant was designed to absorb approximately 18 thousand m³/day while the actual volume of sanitary amounts to 40 thousand m³/day. This increase happened as a result of the constant urban expansions to absorb the increasing numbers of the population	1. The Ministry of Housing and Urbanization is implementing a project for the expansion of the sanitary drainage project. 2. There is a current coordination with the Chemical War Dept. at the Ministry of Defence to lay down suitable solutions of this problem

Current status	Most significant problems and negative effects	Most significant reasons for the problem	Current plans or programs to address the current status
	number of citizens breed fish in these contaminated pools		

Current status	Most significant problems and negative effects	Most significant reasons for the problem	Current plans or programs to address the current status
Aging of sanitary drainage lines in a number of locations outside Kharga city	Existence of approximately 18 km main and secondary sanitary lines which need replacement and renewal, in view of their aging and intolerance of current loads	Aging and increase of loads as a result of increase of population	Replacement and renewal of lines
More than 65% of Salam land in Kharga city is deprived of grids	Absence of sanitary drainage grid in the area makes people rely on household trenches	Salam area is the extension of Kharga city and requires integrated sanitary drainage grid	Completion of sanitary drainage grid for the area, with the participation of the residents
The handicraft area is deprived of sanitary drainage services	Absence of sanitary drainage grid in the area, making various shops to rely on trenches	The handicraft area is the urban extension of Kharga city and needs integrated sanitary drainage grid, lifting plant and treatment plant	Construction of integrated sanitary drainage project in the handicraft area
Poor economic exploitation of the treated sanitary water	Not achieving full benefit from treated sanitary water in cultivating wood forests and growing trees producing bio fuel	Poor suitable funding to establish wooden trees forests and not directing suitable investments to environmental projects, knowing that there are currently three tree forests in Kharga, Baris and	Including the environmental projects with investment projects proposed to investors

Current status	Most significant problems and negative effects	Most significant reasons for the problem	Current plans or programs to address the current status
		Mawt	

Water purification plants and drainage treatment



- محطات تنقية مياه الشرب
- الطرق الرئيسية
- المناطق السكنية بالمحافظة
- الحدود الإدارية للمراكز
- الحدود الإدارية للمحافظة
- محطات معالجة الصرف الصحي



Vision and objectives

Enhancing sanitary drainage services to control harmful environmental effects and gratify the benefit from treated sanitary water by achieving the following goals:

- Implementing sanitary drainage projects in deprived cities and villages
- Replacement, renewal and expansion of current grids to include the biggest number of beneficiaries
- Providing sanitary drainage services in the crafts area in Kharga
- Expediting the segregation of the sanitary drainage from agricultural drainage in Kharga and Dakhla
- Gratifying the benefit from re-using treated sanitary water and sludge safely in the reclamation of desert lands and irrigation of a number of projects
- Raising the awareness of the society of environmental hazards resulting from the poor sanitary drainage methods and controlling the phenomena of disposing sanitary water in the agricultural drains

6.1.4 Targets and required works

Target	Target for the next five years to achieve the main target	Decisions, procedures, institutional support, required projects and programs to achieve the target
Implementing sanitary drainage projects in deprived cities and villages	• completing the expansion project of Kharga sanitary drainage • completing the integrated sanitary drainage project in Farafra • Building Nos.23 sanitary drainage projects in the main deprived villages	1. Providing the necessary funding for implementing projects. 2. Laying down an action plan to handle sanitary drainage problems in the villages, especially those whose connection with the sanitary drainage grids is not feasible economically and technically. The plan may comprise providing high capacity evacuation trucks and increasing the frequency of evacuation and transport

Target	Target for the next five years to achieve the main target	Decisions, procedures, institutional support, required projects and programs to achieve the target
		To sanitary treatment plants 3. Addressing concern to the reform the sector by establishing a public economic agency or company on the level of the governorate and consider the establishing of a central body to be in charge of managing potable water and drainage 4. Encouraging the private sector through participation in sanitary drainage projects
Replacement, renewal and expansion of current grids to include the biggest number of beneficiaries	- Expanding the extension of new sanitary drainage lines to the beneficiaries. - Replacement of old sanitary drainage lines with total lengths of 17.9 km	- Providing the required funding for implementing projects. - making digital maps for sanitary grids to facilitate inspection, cleaning and maintenance of lines and check rooms
Providing sanitary drainage services in the crafts area in Kharga	Building sanitary drainage grid, lifting plant, and treatment plant in the crafts area	Providing required funding
Expediting the separation of sanitary drainage from agricultural drainage in Kharga and Dakhla	- Segregating sanitary drainage from agricultural drainage in Ein Sheikh area in Kharga - Segregating the sanitary drainage for the villages of Dakhla city which are still draining into	The governorate decree No.26 of year 2006 was passed prohibiting citizens to graze and feed livestock on the plants and weeds which grow in sanitary drainage pools in the cities and villages

	the agricultural drainages grid	
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Target	Target for the next five years to achieve the main target	Decisions, procedures, institutional support, required projects and programs to achieve the target
Gratifying the benefit from recycling treated sanitary water and sludge	1. Expanding the construction of wood trees forests. 2. directing the private sector to build economic projects based on sanitary drainage water such as planting gatrova	1. Assessment of the potentials of using treated sanitary water and sludge safely for reclaiming lands and irrigating some crops. 2. providing necessary funding for building forests and providing seedlings. 3. directing the private sector to plant some economic crops on treated sanitary water and agricultural drainage pools
Raising the community's awareness of the environmental hazards resulting from the poor sanitary drainage methods and controlling the phenomenon of disposing sanitary water into the agricultural drains	Organizing environmental awareness and education programs on the level of the cities and villages, especially in the deprived areas	Providing necessary funding to implement awareness programs

6.1.5 List of proposed projects

6.1.5.1 High priority projects

Projects	Responsible agency	Proposed agency for implementing the project	Estimated budget in LE million	Time frame	Proposed funding agencies
Segregating sanitary from agricultural drainage in Kharga and Dakhla	Governorate	Urbanization agency	65	24 months	Ministry of Housing
Implementing grid lines with total lengths of 823.4 km in the cities and villages	Governorate	Investment plan Contingency plan Public works Urbanization Agency	166.5	5 years	General budget Social fund Ministry of Housing
Implementing Nos.20 lifting plants (oxidization pools) and Nos.20 treatment plants in the main villages	Governorate	Urbanization agency Investment plan	188.2	5 years	Ministry of Housing – General budget – private sector

6.1.6.2 Medium priority projects

Projects	Responsible agency	Proposed agency for implementing the project	Estimated budget in LE million	Time frame	Proposed funding agencies
Lifting plant, treatment plant and grids in the crafts area in Kharga	Governorate Kharga markaz	Governorate	5000	36 months	Investment plan Social fund
Integrated sanitary drainage project in Drab Al Arbeen 1 st village	Governorate Paris markaz	Local community development society	302.4	12 months	Donors Private sector
Integrated sanitary drainage project in Drab Al Arbeen 2 nd village	Governorate Paris markaz	Local community development society	302.4	12 months	Donors Private sector
Integrated sanitary drainage project in Qasr Zayan village	Governorate Kharga markaz	Local community development society	311	12 months	Donors Private sector
Integrated sanitary drainage project for the village of company 55	Governorate Kharga markaz	Local community development society	329	12 months	Donors Private sector
Integrated sanitary drainage project in Zakhira village	Governorate Dakhla markaz	Local community development society	309.4	12 months	Donors Private sector

6.1.6.3 Low priority projects

Projects	Responsible agency	Proposed agency for implementing the project	Estimated budget in LE million	Time frame	Proposed funding agencies
Integrated sanitary drainage project at the company village 8	Governorate Kharga markaz	Local community development society	252.5	12 months	Donors Private sector
Integrated sanitary drainage project at the company village 17	Governorate Kharga markaz	Local community development society	217	12 months	Donors Private sector
Integrated sanitary drainage project at Al Qasr Al Qibli village	Governorate Paris markaz	Local community development society	202.5	12 months	Donors Private sector
Integrated sanitary drainage project at Ba'er Al Abeed village	Governorate Dakhla markaz	Local community development society	363.1	12 months	Donors Private sector
Integrated sanitary drainage project at Shams village	Governorate Dakhla markaz	Local community development society	309.4	12 months	Donors Private sector
Integrated sanitary drainage project at Sheikh Moftah village	Governorate Dakhla markaz	Local community development society	364.1	12 months	Donors Private sector
Integrated sanitary drainage project at Een El Deer village	Governorate Dakhla markaz	Local community development society	315.5	12 months	Donors Private sector
Integrated sanitary drainage project at El Khair & El Nama'a village	Governorate Farafra markaz	Local community development society	265.9	12 months	Donors Private sector

6.1.6 Profile of a number of priority projects and programs

1. Separating sanitary drainage from agricultural drainage in Kharga and Dakhla

Problem description:

- Mixing agricultural drainage water with sanitary water in Kharga city and Dakhla villages as a result of the unsuitability of the design capacity of the sanitary drainage plants to the increasing quantities of sanitary.
- A number of citizens graze their livestock on the drains weeds which constitutes a serious danger for human and animal health
- Increasing quantities of drainage into the drains and agricultural pools which represents a serious danger for bridges which may lead to their collapse as happened previously in El Hendaw pool.

Project description and components:

- Expanding the treatment plant in Kharga to absorb the quantities of sanitary drainage fully
- Extending tilted lines from Dakhla villages which are still draining into the agricultural drainage pools to the treatment plant in Mawt city
- Conducting awareness program for the families on the dangers of cultivation and grazing on sanitary drainage water

Project implementation agencies:

New Valley Urbanization Agency

Project estimated cost:

65 million pounds

Funding agencies

Ministry of Housing & Utilities

2. Implementing sanitary drainage network lines in the cities and villages

Description of the problem

- Absence of sanitary drainage services in the villages and new urban extensions of the cities
- The areas deprived of sanitary drainage services rely on the trench system

Project description and components:

- Extending sanitary drainage lines to the villages and urban expansions in the cities for a total lengths of 823.4 km
- Conducting an awareness programs for the citizens in connection with the significance of participating in implementing sanitary drainage projects and non reliance on the trench systems.

Project implementing agencies:

Ministry of Housing & Utilities

Project estimated cost:

166.5 million pounds

Proposed funding agencies:

Governorate – Social Fund – Ministry of Housing & Utilities

3. Implementing No.20 lifting plants (oxidization pools) and Nos.20 treatment plants in the main villages

Problem description:

- Absence of sanitary drainage services in the main villages
- These villages rely on the trench system, an unsafe method health wise

Project description and components:

- Implementing Nos.20 lifting plants (oxidization pools)
- Implementing Nos.20 treatment plants

Project implementation agencies:

Ministry of Housing – Donor agencies

Project estimated cost:

188.2 million pounds

Proposed funding agencies:

Governorate – Social Fund – Ministry of Housing & Utilities

4. Providing sanitary drainage services in the craft area in Kharga

Problem description:

- Absence of sanitary drainage services in the crafts area in Kharga
- This area relies on the trench system, which is an unhealthy system

Project description and components:

- Implementing lifting plant (oxidization pools)
- Implementing treatment plant

Project implementation agencies:

Ministry of Housing

Project estimated cost:

2 million pounds

Proposed funding agencies:

Ministry of Housing & Utilities

5. Implementing an integrated sanitary drainage project in Darb Al Arbeen 1st village

Problem description:

- Absence of sanitary drainage services in Darb Al Arbeen 1st village
- This area relies on the trench system which is unhealthy system

Project description and components:

- Implementing a lifting plant (oxidization pools)
- Implementing a treatment plant

Project implementation agency:

Ministry of Housing

Project estimated cost:

302.4 thousand pounds

Proposed funding agencies:

Ministry of Housing & Utilities – Social Development Fund – Private Sector

6. Development and environment in Ba'er Al Abd village

Integrated sanitary drainage project for Ba'er Al Abd village in Dakhla markaz

Problem description:

- Absence of sanitary drainage project in the village
- The residents rely on household trenches to dispose human wastes
- Shortage of evacuation trucks and many broken down trucks, leading to the flooding of the trenches and appearance of environmental problems.
- High costs of evacuation for the family income, as the evacuation cost 48 pounds monthly, which is an economic burden for the family

Project description & components:

- The project consists of the construction of tilting grids for sanitary drainage inside the village and septic tanks, Nos. 5 tanks with 30 cubic meters capacity per tank, and treated water collection tank to benefit from sanitary water in the irrigation of wooden trees and decoration plants
- Conducting an awareness program for the families on the significance of the project, sanitary drainage system and enhancement of the environment

Project implementation agencies:

Local community development society in Ba'er Al Abed Village

Project estimated cost:

363.1 thousand pounds

Proposed funding agencies:

Ministry of Housing & Utilities – Social Development Fund – Donor Agencies- private sector

6.8 Five year plan for enhancement of sanitary drainage services 2007/2011

6.8.1 Needs of networks

Table (11) illustrates the governorate needs of sanitary drainage grids during the five year plant 2007/2012 for the grid lines or for the expulsion lines and expected cost.

Table (11) governorate needs of sanitary drainage grids during the Five year plan 2007/2012

Description	Quantity of sanitary m3/day	Grid lines		Expulsion lines
		Length (km)	Cost by million LE	Cost by million LE
Kharga urban area	52893	150	30	10.8
Kharga rural area	11565	182.4	36.48	14.1
Kharga total area	64458	332.4	66.48	24.9
Paris urban area	3185.6	45	9	1.2
Paris rural area	6427.2	69	13.8	4.9
Paris total area	9612.8	114	22.8	6.1
Dakhla urban area	17050	48	9.6	6.6
Dakhla rural area	52846	249.78	49.956	40.5
Dakhla total area	69896	297.78	59.556	47.1
Farafra urban area	3122.4	25.2	5.04	2.7
Farafra rural area	7881.6	63	12.6	7.5
Total Farafra markaz	11004	88.2	17.64	10.2
Governorate total	154970.8	832.38 .	166.476	92.7

6.8.2 Needs of lifting plants and treatment plants

Table (12) illustrates the governorate needs of lifting plants during the five year plan 2007/2012 and expected cost

Table (12) governorate needs of lifting plants during the five year plan 2007/2012 and expected cost

Description	Lifting plants			Treatment plants		
	Current capacity (m3/day)	Required capacity (m3/day)	Cost by million LE	Current capacity (m3/day)	Required capacity (M3/day)	Cost by million LE
Kharga urban area	121000	11000	1.8	120000	-	-
Kharga rural area	3700	25300	7.9	1000	16500	16.5
Kharga total area	124700	36300	9.7	121000	16500	15.5
Paris urban area	4000	4000	0.65	4000	1000	1
Paris rural area	-	16000	4.1	-	9500	9.5
Paris total area	4000	20000	4.75	4000	10500	10.5
Dakhla urban area	11000	31500	8	5000	20500	20.5
Dakhla rural area	10700	120200	30.2	9250	70250	70.25
Dakhla total area	21700	151700	38.2	14250	90750	90.75
Farafra urban area	17000	-	-	-	4500	4.5
Farafra rural area	8800	11200	3.3	2500	9900	9.9
Total Farafra markaz	25800	11200	3.3	2500	14400	14.4
Governorate total	176200	219200	56.050	141750	132152	132.150

6.2 Potable water

6.2.1 General background

The New Valley Governorate relies totally on underground water for agriculture, drinking, industry and all purposes. Therefore, planning for future potable water projects is controlled by the potentials of the underground reservoir and economies of extracting water. Table No.13 illustrates the description of wells, purification plants, quantities of potable water and annual consumption quantities.

Rate of potable water consumption

Potable water consumption rates in the New Valley are considered among the relatively high rates, as the average daily consumption amounted to 621 liter in 2006. This average varies with the difference in the lifestyle. The average consumption per capita in the urban area is 697 liter/ day, and 523 liter/day in the rural areas. This increase in the rates may be attributed to the use of a considerable part of potable water for non household use such as irrigating gardens and spraying streets with water especially in the summer.

Quality of water:

The quality of underground water is characterized by purity and absence of suspended materials. Further, they are at medium and deep depths and are free of biological pollutants.

Problems of operating potable water services:

The underground water wells are facing two basic problems being the blocking of the well strainers and their low productivity or complete stop of production, rise in the concentration of non organic materials such as iron and manganese salts in some areas. These problems are confronted in the following manner:

Residues which reduce the well productivity or discontinue its production: this is natural phenomenon and usually happens after 2 to 8 years of constructing the well, according to the nature of soil and quality of underground water. Removing them may be initiated after productivity reaches 70%, by hydraulic means or using chemicals to remove them so as not to affect the safety of the strainer.

Pollutants from iron and manganese minerals: removed by transforming them from diluted form into undiluted form, then precipitating and segregating them by filtration. This transformation is carried out by oxidization in the ventilation towers for iron diluted salts. In the meantime, dissolved gas such as carbon dioxide and hydrogen sulfide are removed to enhance water taste.

Treatment of potable water

Table No. (13) Description of wells, purification plants, quantities of potable water and annual consumption quantities⁴

Description	Wells		Purification plants	No. of reservoirs	Consumption (m3/day)	Average share per capita (liter/day)
	No.	Capacity (m3/day)				
Kharga City	15	48000	12	23	39410	646
Paris City	2	5120	2	3	3790	875
Mawt City	7	21400	4	11	17500	862
Farafra city	1	5000	1	1	2221	476
Total urban area	25	79520	19	38	62921	697
Kharga rural areas	23	15925	8	22	10920	784
Dakhla rural areas	19	6350	3	13	4544	762
Paris rural	37	42500	20	55	30842	518
Farafra rural	7	22900	3	4	4429	257
Total rural	86	87675	34	94	50735	523
Governorate total	111	167195	53	132	113656	621

⁴ Local units for markazs and cities- Information center- August 2007

The governorate is characterized by the fact that all residential communities – regardless of low population density- are supplied with potable water. It is known that underground well water is pure by nature as it is extracted from deep wells and the well depth ranges between 600 to 1300 m. however, some wells contain a percentage of iron and manganese residues which slightly exceed the permitted rate of 0.5 part per million. However, these residues do not have a harmful effect on public health, as their effect is limited to the color and taste of water only.

Since 1997, the governorate laid down a plan to build potable water treatment plants to purify water of iron and manganese residues, carried out by the New Valley Urbanization Agency according to the defined priorities, being the number of population and percentage of water residues.

The average per capita share of produced water- as stated under table 13- is considered a high rate compared to its counterpart on the national level amounting to 275 liters daily (as mentioned in Mubarak and Urbanization Book- Ministry of Housing 2002). Therefore, the matter requires more efforts to rationalize the highly costly potable water consumption in order to protect the reserve of underground water for the next generations.

Water distribution grids and their management:

The New Valley Urbanization Agency is responsible for drilling potable water wells and building treatment plans according to the plan laid down in advance, on the basis of considering the future needs of cities and villages of wells and plants.

The local units of the markazs and cities undertake well operation and maintenance processes and the plants and the construction of distribution grids which serve approximately 98% of the population. Means of supplying with potable water vary, between a connection to each house and a connection to each residential building.

The periodical maintenance operations of the wells, plants and distribution grids are carried out periodically and regularly by the local units, to avoid the problems which may result from the blocking of well strainers which lead o low productivity and – occasionally- complete stop of production. Further, technicians at each treatment plant conduct daily maintenance of the various equipments from 10:00 p.m. to 5:00 a.m., as the pumping of water is discontinued during this period.

Quality of potable water:

All the cities and villages of the governorate are covered with potable water services which rely on underground water as a single source for water. However, a number of wells contain a relatively high percentage of iron oxides which affect the taste of water. The governorate is building water purification plants in the cities and villages to enhance water supply services to all the residential communities.

6.2.2. Governorate's achievements in the field of potable water over the past five years

Table No.14 illustrates the governorate achievements in the potable water field during the past five year plan (2002/2007).⁵

Table (14) governorate achievements in the potable water field over the five year plan

Projects/ works	Cost by million pounds	Funding source
22 potable water reservoirs	3.251	Urbanization Agency/ Social Fund
17 purification plants	27	Urbanization Agency
20 potable water wells	24	Urbanization Agency
Potable water grids/ equipment And machines/ operation tool	41.821	Investment plan/ emergency plan/ Social Fund/ local contribution
Total	96.072	

⁵ Urbanization Authority – General Planning Department- Public Works Program – August 2007

6.2.3 current status : problems and reasons

Current status	Most significant problems and their negative effects	Most significant Reasons for the Problem	Current plans or Programs to address Current status
Existence of villages deprived of potable water treatment plants a total of 58 villages	Presence of iron and Manganese oxides exceeding the health permitted rates, affecting the color and taste of water	Natural	The Ministry of Housing Builds potable water treatment plants according to laid down Plan and as per the priorities determined in this respect
Discontinuation of water Supply frequently for long Hours	- breakdowns of wells - small operation period of wells which depend on the electricity generated from the diesel plants, especially in Dakhla and Farafra	- Poor periodical maintenance operations and absence of spare parts in some instances. - Dakhla and Farafra markazs rely on electricity complexes to generate energy	- Supporting maintenance projects and providing spare parts - Connecting unified grid electricity to Dakhla and Farafra markazs

6.2.4 Vision and objectives

Enhancing potable water services and rationalizing consumption through the following goals:

- Completing the coverage of the governorate by pure potable water services and increasing production to fulfill the expected increase in demand.
- Expanding current grids to include a bigger number of beneficiaries and reduce the loss in grids.
- Upgrading operational efficiency of wells and plants to control frequent break downs
- Building institutional capacities
- Upgrading the awareness of the society in connection with the significance of conserving water resources and rationalizing consumption.

6-2-5 Targets and required actions

Main goal	targets for the next five years to achieve the main goal	Decisions, procedures, institutional support, required programs and projects to achieve the goal
Completing the governorate's coverage with pure potable water services and increasing production to fulfill the expected rise in the demand	• Building 33 purification plants in the deprived villages. • Assessment of the operation and maintenance plans of treatment plants and upgrading their operation efficiency for their estimated capacity	Providing required funding
Expanding current grids to include a the biggest number of beneficiaries and reduce the loss in the grids	• Expanding the construction of new potable water lines to the beneficiaries. • Replacing old potable water lines • Implementing a comprehensive program to detect leakage and repair main lines and sub grids in the cities • Review of all the buildings benefiting from connecting potable water, whether residential, governmental, or commercial, to affirm safety of meters and correct readings • Implementing general awareness programs for the citizens to rationalize the consumption of water and maintain its resources • Provide a digital data base on water distribution grid in order to ensure the availability of information on the infrastructure of the grids and assess them to ensure continuation of potable water supply services	Provide required funding to implement projects

Main goal	Target for the next five years to achieve the main goal	Decisions, procedures, institutional support, and required projects and programs to achieve the goal
Upgrading the operation efficiency of wells and plants to control frequent risks	* providing operation equipments and spare parts	Providing necessary funding
Institutional capacity building	• Joining the works related to potable water services less than one agency or corporation to ensure quality of planning, implementation and follow up for all the potable water projects. • Promoting capacities to manage, operate and maintain water grids. • Using information technology in issuing services fees bills, enhancing reading of meters and fees collection	1. Considering the establishment of a unified department for potable water and sanitary drainage utilities 2. implementing training programs and developing personnel capacities. 3. implementing the e-government system
Upgrading community awareness of the significance of conserving water resources and rationalizing consumption	Organizing environmental awareness and education campaigns and programs on the level of cities and villages	Providing necessary funding to implement awareness programs. Encouraging private societies to undertake this role

6.2.5 List of proposed projects included under the five year plan

6.2.5.1 High priority projects

Projects	Agency in charge	Proposed project Implementing agency	Estimated budget by million pounds	Time frame	Proposed funding agencies
Drilling 12 new wells in the governorate cities and villages	Governorate	Urbanization Agency	12	5 years	Ministry of Housing
Construction of 33 purification plants in the Cities and villages of the Governorate	Governorate	Urbanization Agency	43	5 years	Ministry of Housing
Extending grids of Total lengths of 384 km	Governorate	Investment plan Emergency plan Public works	57.6	5 years	General budget Social fund

6.2.6 classification of a number of priority projects and programs

1. providing new potable water wells in the governorate cities and villages :

Problem description:

- The outflow of a number of wells in the cities and villages are insufficient to the current needs of the population in these areas
- Underground wells are the only source of potable water in the governorate

Project description and components:

- Drilling 12 potable water wells in the villages and cities of the governorate
- Conducting awareness programs for the people on the significance of rationalizing the consumption of potable water.

Project implementation agencies:

New Valley Urbanization Agency

Project estimated cost:

12 million pounds

Proposed funding agencies:

Ministry of Housing

2. Building potable water purification plants in the governorate villages and cities

Problem description:

- Increase of iron and manganese oxides in the well water exceeding the healthy permitted limit of 0.5 part per million
- Change of potable water color and taste as a result of the presence of residues

Project description and components:

- Implementing Nos.33 potable water treatment plants in the governorate villages and cities
- Conducting an awareness program for the people on the significance of rationalizing potable water consumption (high cost)

Project implementation agencies:

The New Valley Urbanization Agency

Project estimated cost:

43 million pounds

Proposed funding agencies:

Ministry of Housing

3. Extending potable water grids

Problem description:

- Presence of new urbanization expansions in the cities and villages as a result of the increase in population
- Need to extend potable water lines to these areas

Project description and components:

- Extending potable water grids for total lengths of 384 km
- Conducting an awareness programs for the people on the significance of financial and in kind contribution to implement potable water grids

Project implementation agencies:

The New Valley Urbanization Agency

Project estimated cost:

57.6 million pounds

Proposed funding agencies:

Ministry of Housing – Social Fund

6.2.8 Governorate five year plan to enhance potable water services 2007/2011⁶

Table (15) illustrates potable water service needs during the next five year plan and expected cost

Description	wells	Purification plants	Grids (KM)	Reservoir Capacity (cubic m)	Cost by Million pounds
Kharga urban area	٤	٥	١٠,٢,٥	٢٥٠٠	٢٧,٦٢٥
Kharga rural areas	٠	٤	٧٦	١٢٣٠	١٨,٧٧٧
Total Kharga markaz	٤	٩	١٧٨,٥	٣٧٣٠	٤٦,٤٠٢
Paris urban area	٠	٠	١١,٢٥	٣٠٠	٢,٣٣٨
Paris rural areas	٢	٢	٣٦,٢٥	٨٢٥	٨,٩١٤
Total Paris markaz	٢	٢	٤٧,٥	١١٢٥	١١,٢٥٢
Dakhla urban area	١	٤	٢٠	١٦٠٠	١٠,٧٥
Dakhla rural areas	٥	١٤	١٠١,٥٧٥	٤٧٩٠	٤٤,٢٥٣
Total Dakhla markaz	٦	١٨	١٢١,٥٧٥	٦٣٩٠	٥٥,٠٠٣
Farafra urban area	١	١	١٠,٥	٣٠٠	٤,٢٧٥
Farafra rural areas	١	٣	٢٦,٢٥	٧٧٥	١٠,٢٨٨
Total Farfra markaz	٢	٤	٣٦,٧٥	١٠٧٥	١٤,٥٦٣
Total urban area	٦	١٥	١٤٤,٢٥	٤٧٠٠	٤٤,٩٨٨
Total rural areas	٨	٢٣	٢٤٠,٠٧٥	٧٦٢٠	٨٢,٥٠٥
Governorate total	١٤	٣٨	٣٨٤,٣٢٥	١٢٣٢٠	١٢٧,٤٩٣

⁶ Strategic Study for Developing the New Valley up to 2027- July 2006

6.3 Solid, agricultural and hazardous wastes management

6.3.1 General Background

The process of collecting and disposing solid wastes represent a big problem in the governorate, making it on the top of environmental problems which the higher committee for environmental affairs, chaired by the governor, considered and put it as a priority in the governorate environmental action plan. The problem varies from one area to the other. In the urban areas, there are a some of drawbacks in the process of collecting solid wastes, as a result of absence of specialized cleaning companies for collecting these wastes. The city councils conduct collection operations, which are mostly irregular due to the poor efficiency of the mechanical process and low number of required manpower, causing accumulation of household wastes in front of residential buildings, spread of flies and mosquitoes, especially in the summer season. Temperature ranges between 40 to 48 degrees centigrade. In the rural areas areas, the problem is more difficult, due to accumulation of agricultural and animal wastes in the residential areas. In many instances, the people dispose of wastes by burning, leading to deterioration of the quality of air and negative effect on public health.

As for the organizational structure for solid waste management in the governorate, there is a cleaning section in each administrative center in charge of organizing the services related to cleaning the streets, collecting and disposing wastes. Each center comprises employees and workers in charge of managing wastes within the city boundaries.

In the rural areas, the wastes are collected by the people themselves (private systems) by borrowing or hiring a tractor to collect the accumulated wastes and transporting them to specialized places away from the residential bloc by a distance ranging from 1 to 10 kilometers.

The total solid wastes generated in the governorate in 2007 is estimated at approximately 121935 tons, including solid municipal wastes (28624 tons), agricultural wastes (73134 tons), sludge (5000 tons), demolition and construction wastes (7000 tons), hospital wastes (177 tons), in addition to the wastes of cleaning lakes and drains (8000 tons). Solid municipal wastes include the wastes of houses, shops, commercial markets, service agencies and hotels, in addition to the wastes of factories as they are considered small factories.

The average waste generation rate per capita daily amounts to approximately 0.56 kg in the governorate cities. In the rural area, it amounts to 0.24 kg/day, which conforms largely to the average waste generation rates on the national scale. Table (16) illustrates the quantities of wastes generated in the rural and urban areas and the percentage of collected wastes.

Table (16) description of solid wastes generated in the urban and rural areas ⁷

Markaz	No. of population	Urban area				Rural	Total
		Number of population	Generated wastes	Collected wastes	Collection percentage	Generated wastes	Generated wastes
			Ton/year	Ton/year	%	(ton/year)	(ton/year)
Kharga	٧٤٩٣٩	٦١.٢١	١٣٣٦٤	١.١٢٥	%٧٥,٧	١٢٧.	١٤٦٣٤
Paris	١.٥٨٦	٤٣٣٢	٩٤٩	٧١٥	%٧٥,٣	٥٧.	١٥١٩
Dakhla	٧٩٨١٢	٢.٢٩٣	٤٤٤٤	٣٢٧٥	%٧٣,٧	٥٤٣١	٩٨٧٥
Farafra	٢١٩١٩	٤٦٦٨	١.٢٢	٧٨٣	%٧٦,٦	١٥٧٤	٢٥٩٦
Total	١٨٧٢٥٦	٩.٣١٤	١٩٧٧٩	١٤٨٩٨	%٧٥,٣	٨٨٤٥	٢٨٦٢٤

As for permanent disposal of wastes, public dumping places are allocated in the cities at far distance from the residential bloc, to which collected wastes are transported. These locations are allocated officially by the governorate. The existence of such dumping places does not lead to any environmental problems currently, in view of the decline of organic materials percentage in the wastes, high temperatures, low rainfall and increase of depth to the underground water level. These wastes are placed in a big pit and then backfilled with sand after filling. Table (17) illustrates the distribution of public dumping places in the governorate markazs.

⁷ Local units for the markazs and cities – August 2007

Table (17) Number of public dumping places in the rural and urban areas ⁸

Markazs	Number of dumping sites		
	Urban	Rural	Total
Kharga	1	4	5
Paris	1	.	1
Dakhla	1	15	16
Farafra	1	.	1
Total	4	19	23

In the urban areas, public dumping places are located at distances not less than 10 kilometers away from the residential bloc. As for the rural area, these distances range between 1 to 8 kilometers.

Table No. (18) illustrates the current potentials of equipments and manpower to collect and transport wastes at the various markazs of the governorate.

Table No. (18) current potentials used in collecting and transporting wastes at the governorate markazs ⁹

Cities	Vehicle	dumper	Loader	Tractor with trailer	Supervisors Administrators	Workers
Kharga	4	2	2	.	15	167
Paris	.	.	2	.	2	6
Dakhla	.	5	1	2	16	78
Farafra	.	2	.	.	2	6
Total	4	9	5	2	35	257

⁸ Local units of the markazs and cities – August 2007

⁹ Local units of the markazs and cities – August 2007

The four cities in the governorate are in agreement that there is a big shortage in the available equipments to collect wastes, including equipped collection vehicles and loaders to lift the wastes, besides the low efficiency of the current equipments and their frequent breakdowns. This leads occasionally to the deterioration of cleaning service. Further, the four cities in the governorate have agreed that there is a big shortage in the required manpower for collecting wastes. This steep shortage is attributed to the fact that the youths do not take up jobs in the cleaning field due to low salaries and wages. The shortage of manpower is considered among the priorities for enhancing service, as well as providing the appropriate equipments.

- **Medical wastes**

Waste generation rate at the hospitals is estimated at approximately 0.7 kg/day/bed, of which approximately 25% are dangerous wastes. Table No.19 illustrates the quantity of wastes generated at the governorate hospitals.

Table No. (19) description of wastes generated the hospitals at the governorate markazs¹⁰

Markazs	No of hospitals	No of beds	Total generated wastes (ton/ year)	Generated Medical Wastes (tons/ year)
Kharga	4	320	77	20
Paris	1	40	10	2
Dakhla	5	313	75	19
Farafra	1	60	15	4
Total	11	733	177	45

Permanent disposal of medical wastes is carried out by incinerators at the general and central hospitals. As for specialized and integrated hospitals which do not have incinerators, their medical wastes are transported to the incinerators in the general and central hospitals for permanent disposal. As for the normal wastes, they are collected by the local units' vehicles with the other wastes and transported to dumpsites.

¹⁰ Health and Population Directorate – August 2007

- **Palm tree wastes problem**

The problem of agricultural wastes is one of the significant problems constituting a danger for the environment in the Arab Republic of Egypt, making it on top of the government's priorities in its programs to eliminate environmental pollution. Many scientists initiated many experiments and researches in order to benefit from these wastes. Wastes resulting from the trimming of the palm trees (around 1.3 million palm trees) in the New Valley Governorate are considered among the most important wastes causing the main reason for environmental pollution in the New Valley. The quantities of palm trees wastes in the governorate amounted to approximately 73134 tons annually, distributed to the governorate markazs in the following manner in table (20).

Table (20) description of the volume of palm trees wastes¹¹

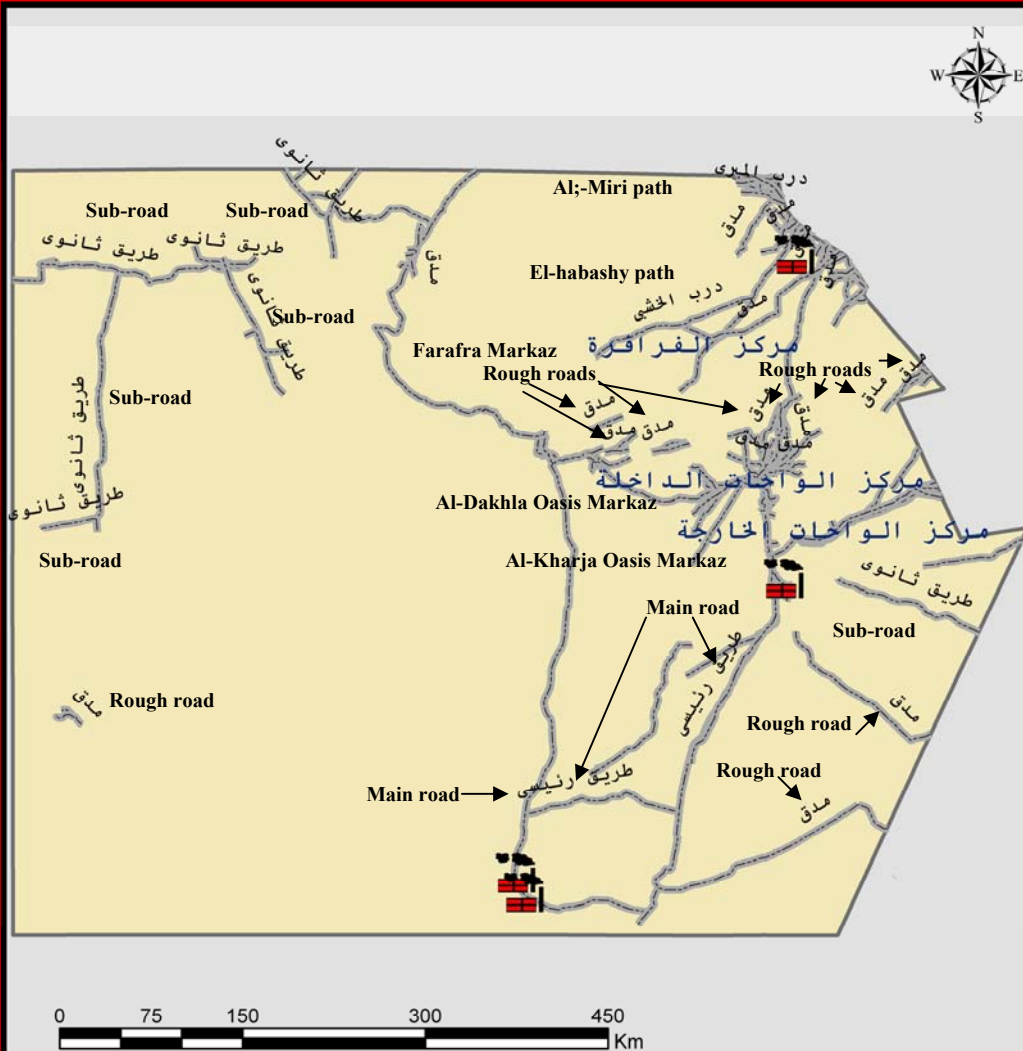
Markazs	Number of palm trees	Quantity of wastes By ton	Remarks
Kharga, Paris	٦.٢٤٥٩	٣٦١٤٧	Average production per palm tree of wastes is 60 kg
Dakhla	٥٩٥٢٧٣	٣٥٧١٦	
Farafra	٢١١٦٨	١٢٧١	
Total	١٢١٨٩.٠	٧٣١٣٤	

Problems resulting from the accumulation of wastes:

- Farmers' relaxation in cleaning the palm trees of he previous years wastes due to absence of economic means to reuse the resulting wastes, which has an adverse effect on the quality and quantity of crops.
- Increase of the spread of epidemics, as the accumulated palm trees wastes are considered a suitable environment for them.
- Increase of the number of rats which consider palm trees as their shelter.
- Increase of the fire rates resulting from the attempt to dispose of wastes by burning at their locations, without following the safe methods required in these cases.

¹¹ Study of the conference on the scientific research role in developing small and environmental industries – March 2005

Hot areas for air pollution



6.3.2 The governorate 's achievements in the solid, agricultural and hazardous wastes management field over the past five years

6.3.2.1 Decisions and procedures

The financial regulation for the contracts of hospitals and private clinics with the medical incinerators has been defined.

6.3.2.2 Technical and administrative support

Solid municipal wastes

Supporting the cleaning sector with the following equipments:

- 3 vehicles, 4 tons load
- 4 tippers
- 2 loaders
- 7 tractors with trailer, 4 of them are funded by the State Ministry for Environmental Affairs

Agricultural wastes:

Providing Nos.2 shredding units for palm trees wastes, funded by the Ministry of Agriculture.

Hazardous wastes:

- Supply and installation of Nos.2 medical incinerators at Kharga and Dakhla hospitals
- Providing equipments for collecting and transporting wastes from their generation places to the medical incinerators.

6.3.2.3 projects underway

In cooperation with the Ministry of Local Development, the governorate has built a factory for recycling solid wastes for the production of organic fertilizer in Kharga city, with a design capacity of 10 ton/hour.

6.3.3 current status : problems and reasons

Current status	Most significant problems and their negative effects	Most significant reasons of the problem	Current plans or programs to address the current status
Poor efficiency of the currently existing solid waste management system	25% of the solid wastes are not being collected. Workshop and factories dump their wastes in areas near them, which may contain dangerous wastes	1. absence of unified department to manage solid wastes. Rather, the local units in the cities and villages undertake the work as per the available potentials. 2. absence of a strategy to manage solid wastes in the governorate on the level of the city and village 3. absence of required expertise to lay down a general framework for this sector	Currently, there is no program or project to prepare a general plan for solid waste management
Almost 25% of the solid wastes are not being collected	1. low efficiency of existing equipments and frequent break down 2. shortage of required manpower as the youths refrain from working in cleaning due to poor wages and salaries	-Poor periodical maintenance operations and absence of required financial resources for maintenance in some cases. -Poor salaries and wages. -absence of protection clothes and equipments for personnel	Increasing collection percentage to 100%
Almost 50% of hazardous medical	Existence of medical incinerators at	- far distance between the cities and	Providing medical incinerators at

wastes represent an environmental danger	Khagra general hospital and Dakhla central hospital only.	villages due to the extensive area of the governorate	Paris and Farfra central hospital
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Current status	Most significant problems and their negative effects	Most significant reasons of the problem	Current plans or programs to address the current status
	The remaining quality, integrated and central hospitals should have them, as they are without incinerators and the wastes are collected and transported for far distances to the incinerators in an environmentally unsafe manner	- poor training and awareness of workers in hazardous waste collection in addition to absence of required professional safety and health gears	As well as providing incinerators at Kharga and Dakhla fever hospitals, a total of medical incinerators
Poor efficiency of current dumpsites	Dumpsites are not tightly controlled without divisions and internal road. The wastes are dumped there randomly	Absence of provisions to rehabilitate dumpsites	Rehabilitate dumpsites
Recycling solid wastes do not give the desired results	1. The factory does not operate with its full capacity due to frequent breakdown of equipments 2. no marketing policy for the product, which leads to accumulation of product and non achievement of the expected economic return	Poor local expertise to manage and operate the factory and administer marketing process	Periodical maintenance Training personnel
Absence of integrated system to reuse palm trees wastes, despite its	Accumulation of palm tree wastes at the farms, leading to the	Absence of a clear strategy to reuse palm tree wastes as organic	1. Reviving the project of

economic significance	spread of harmful insects and rodents, in addition to the frequent break out of devastating fires of palm trees, which is the main crop of the governorate farmers	fertilizer, fodder, environmental industries and national industries such as manufacturing counter woods of palm fond	manufacturing counter woods of palm fond and cooperate with the various scientific agencies. 2. Consider the extent of possibility of using palm tree wastes to enhance the quality of organic fertilizers at the solid wastes recycling factory.
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6.3.4 Vision and goals

Preparing and implementing an integrated solid waste management system in the governorate to control the environmental and health problems and gratify the benefit from solid, agricultural and hazardous wastes through achieving the following goals:

- Studying the current status and lay down an integrated system for solid waste management.
- Implementing suitable systems for the treatment and permanent disposal of solid wastes.
- Enhancing the operation and management of solid wastes services and utilities
- Developing a system for hazardous medical wastes.
- Training and raising the awareness of solid wastes employees and supplying them with adequate professional safety and protection equipments and gears.
- Increasing environmental awareness among the citizens
- Enhancing institutional organization and personnel capacity building

Main goal	Target for the next five years to achieve the main goal	Decisions, procedures, institutional support, required programs and projects to achieve the target
Considering the current status and laying down an integrated system for solid waste management	1. Preparing a plan for implementing an integrated system for collecting wastes in Kharga city, then following up and considering the possibility of repeating the experience in other cities, according to the acquired expertise. 2. Evaluating the possibility of the private sector's participation in the solid waste management. 3. Building a factory for recycling wastes in Mowt city	1. Preparing a study for the project and submission to the funding agencies 2. preparing waste management plan in Kharga city. 3. Implementing the plan and assessment of results. 4. communicating with the Ministry of Local Development in connection with the significance of building the waste recycling plant in Dakhla markaz

Main goal	Target for the next five years to achieve the main goal	Decisions, procedures, institutional support, required programs and projects to achieve the target
Implementing suitable systems for the treatment and permanent disposal of solid wastes	1. Rehabilitating dumpsites in the cities and local units and determine the locations of dumpsites in the local units which do not have dumpsites. 2. Training and raising the awareness of employees in the solid wastes factory and upgrading the equipments to recycle the biggest possible amount of organic and non organic wastes and safe disposal of the remaining wastes, with the presence of marketing policy for the product.	1. Preparing studies to qualify dumpsites and determine the cost and needs of equipments and gears. 2. Organizing training courses for the employees in the various operation phases. 3. Upgrading the efficiency of equipments and repairing breakdowns. 4. preparing a marketing study inside and outside the governorate to prevent accumulation of product
Enhancing the operation and management of solid wastes services and utilities	1. implementing clear policies for follow up and supervision to ensure sound operation. 2. tight and sound management of the waste recycling plant in Kharga 3. implementing a suitable program for periodical maintenance for the waste department vehicles and equipments in the cities to reduce breakdowns of vehicles and increase their lifespan	1. Establishing a central department for solid wastes. 2. Providing suitable support for the maintenance of equipments in order to control breakdowns. 3. Increasing the number of workers in the wastes recycling factory, providing professional safety and health gears, laying down a rewarding incentive system to encourage them to continue. 4. Considering the possibility of having the private sector operate the waste recycling plant.

Developing a system for hazardous medical wastes	Ensuring collection of medical wastes and dangerous wastes separate from municipal wastes and disposing them in tightly closed cells at the dumpsites Ensuring the collection of hazardous wastes separately and burning them in the medical incinerators before transporting them to the dumpsites.	1. Providing Nos.4 medical incinerators at the following sites : Paris central hospital Farafra central hospital Kharga fever hospital Dakhla fever hospital
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Main goal	Target for the next five years to achieve the main goal	Decisions, procedures, institutional support, required programs and projects to achieve the target
	3. On the short term, all the clinics, hospitals, factories, etc., should apply the segregation system from the source of wastes and upgrading the awareness of personnel and training them.	2. Training employees and providing professional safety and protection gears. 3. Providing transport means to transport hazardous wastes from their generation areas at the various health units to the medical incinerators 3. Collecting suitable fees against collecting and disposing these 4. hazardous wastes, and preparing a suitable follow up and fine system to prevent random and illegal disposal of wastes.
Training and upgrading the awareness of employees in the solid wastes field and supply them with adequate professional safety and protection gears and equipments	organizing training courses for employees in the solid wastes field at the governorate markazs. providing professional protection and safety gears to all employees and ensuring the compliance of employees to wear these gears	1. The general department for environment affairs to organize training courses for the employees, in coordination with the local units at the markazs and cities. 2. providing the required funding to buy professional safety and protection gears
Upgrading environmental awareness between employees	1. awareness seminars at the schools, youth centers, labor education and media centers. 2. radio sessions 3. competitions	Providing the required funding

Enhancing institutional organization and personnel capacity building	1. Ensuring the establishment and full operation of the central department for solid wastes and equipping it with the required expertise. 2. building the capacities of the markazs and cities to plan	1. coordination between the various 2. government departments and the city councils and people to avoid dualism 3. preparing suitable procedures for fines
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Main goal	Target for the next five years to achieve the main goal	Decisions, procedures, institutional support, required programs and projects to achieve the target
	and best coordination for current solid wastes activities 4. Enhancing the working conditions at the solid wastes department to increase their productivity and attract them to work 5. increasing the private sector's incentives and encouraging private societies to work in collecting and disposing wastes	Monitoring and commitment to ensure the biggest possible participation of the people and enhancing their behaviors in connection with the payment of required fees. 4. Considering the offering of tax exemptions to private societies and the private sector and providing low cost lands to encourage them to participate in solid waste management projects

6.3.6 List of proposed projects included in the five year plan

6.3.6.1 High priority projects

Project	Responsible agency	Proposed agency implementing the project	Estimated budget Thousand pound	Time frame	Proposed funding agencies
Building a factory for recycling solid wastes in Dakhla	Governorate	Ministry of Local Development	6000	24 months	General budget
Rehabilitating dumpsites in the cities	Governorate	Governorate	2340	24 months	State Ministry for Environmental affairs
Providing Nos.4 medical incinerators	Governorate	Governorate	1200	24 months	State Ministry for Environmental Affairs

6.3.6.2 medium priority projects

Project	Responsible agency	Proposed agency for implementing the project	Estimated budget Thousand pounds	Time frame	Proposed funding agencies
Environmental development and reform in Paris city	Governorate Paris markaz	Local community development association	300	12 months	Donor agencies
Environmental development and reform in Maa'sra villages	Governorate Dakhla markaz	Environment protection society	278	12 months	Donor agencies
Environmental development and reform in Balat villages	Governorate Dakhla markaz	Local community development society	1792.7	12 months	Donor agencies
Environmental development and reform in Giza villages	Governorate Dakhla markaz	Local community development society	265	12 months	Donor agencies

6.3.7 Description of a number of priority projects and programs

1. Building a factory for recycling solid wastes in Dakhla

Problem description:

- Absence of a system to benefit from solid wastes in the city
- Random disposal of solid municipal wastes, leading in many instances to the existence of accumulations resulting in the spread of insects and rodents and the spread of foul odor and visual pollution, hence negatively affecting the general health of the population.

- Accumulation of agricultural wastes, especially palm tree wastes, leading to the spread of epidemics which reduce the quality of dates, as well as the spread of fires in the palm trees farms, and hence negatively affecting the most significant economic resource for the governorate farmers.

Project description and components:

- Building a plant for recycling municipal solid wastes, agricultural solid wastes and the production of organic fertilizers
- Taking the required measures to obtain approvals then initiate implementation of the project
- Selecting and training employees
- Increasing awareness of the local community and focusing on activating the society's role to make the project successful and sustainable.

Project implementation agencies:

Governorate

Project estimated cost:

6 million pounds

2. Developing dumpsites for environmental conformity

Problem description

- Absence of environmental conditions in the current dumpsites, leading to the creation of environmental problems such as the increase of harmful insects and endangering health and safety of the neighboring areas population and endangering the health and safety of employees and visitors of the sites.
- Absence of suitable administrative offices for sites supervisors
- Absence of safety and security means, such as fire extinguishing equipments

Project description and components:

- Rehabilitating dumpsites at the governorate markazs through the construction of walls around the external periphery of the dumpsites, surrounding the sites with high trees, providing fire fighting equipments and building administrative offices for supervisors next to the entrances of the dumpsites to control entry and exit of vehicles.
- Designing and constructing internal roads at the dumpsites for traffic from one cell to the other
- Conducting awareness programs for the people on safe disposal methods of solid wastes

Project implementation agencies:

Governorate

Project estimated cost:

million pounds

3. Establishing an integrated system for managing hazardous medical wastes**Problem description:**

- Existence of big quantities of hazardous medical wastes estimated at approximately 50 tons annually, which may be increased, as a result of the expansion in building private clinics and hospitals.
- Absence of sufficient incinerators for hazardous medical wastes
- Absence of institutional structure for the safe disposal system of medical wastes
- Absence of safe dump cells in the governorate

Project description and components:

- Providing Nos.4 medical incinerators at Paris and Farafra central hospitals and Kharga and Dakhla fever hospitals.
- Conducting awareness programs for the hospital employees on means of safe disposal of medical wastes.

- Implementing a cell for dumping hazardous wastes and ash products
- Institutional structure for managing hazardous medical wastes

Project implementation agencies:

Governorate – health directorate – private sector

Project estimated cost:

4 million pounds

4. Environmental development and reform in Paris and Maasra cities, Balat villages, and El Qasr villages in Dakhla to benefit from solid wastes.

Problem description:

- Random disposal of solid municipal wastes, leading in many instance to the accumulated piles causing the increase of insects and rodents, spread of foul odor, visual pollution which negatively affects the general health of the population.
- Accumulation of agricultural wastes, especially palm tree wastes, leading to the spread of epidemics that reduce the quality of dates and spread of fire in the palm trees farms, hence negatively affecting the most significant economic source for the governorate farmers.

Project description and components:

- Building a plant for recycling solid municipal wastes, agricultural solid wastes and the production of organic fertilizers (classification unit- recycling unit- stores- compressors- organic fertilizer production unit)
- Preparing a detailed study and submission to the various funding agencies
- Taking the necessary actions to obtain approvals, then initiate implementation of the project
- Selecting and training employees
- Increasing awareness of the local community and focusing on the activation of the society's role to make the project successful and sustainable.

Project implementation agencies:

Community development societies in the said villages

Project estimated cost:

1023 thousand pounds

Project funding agencies:

Donor agencies

6.4 Conservation of natural resources and facing the dangers of spread of sand dunes

6.4.1 General background

The process of the spread of sand dunes in the New Valley is considered as a natural phenomenon, in view of the extensive areas covered by sand. However, the spread and movement of some of these sand dunes at rates ranging between 10 to 100 meters/year represents a danger and threat against agricultural areas, urban areas and main transport roads. By assessing the areas endangered with the spread of sand dunes, it was found that they cover 3578 acres representing 3% of farmed area, of which 1213 acres are in Kharga and 2365 acres in Dakhla villages. The governorate is searching for the best suitable means to resist sand dunes, taking into consideration that each case has a suitable method for stabilization, pending on several factors, the most of significant of which is the volume of the dune, direction of its movement, its speed, as well as determining its main source.

Stabilization by water and farming and the building of wind shields are considered among the common methods in the governorate which proved successful in many sites endangered by the risks of spread of sand, as happened in El Gadida village in Dakhla markaz. The Scientific Research & Technology Academy has adopted through the Food, Agriculture and Irrigation Researches Council and the Land Resources and Reclamation branch the “project for assessment of the extent of movement and settlement by winds and the economies of facing desertification components in Wahat areas.” In this project, walls were built of palm tree fends at three locations in Kharga, Dakhla and Farafra. The results pointed out that establishing the fends walls led to the reduction in the quantities of settled sand by various percentages. The efficiency of this type of walls ranges between 76.5% and 92.7%.

Resources endangered by deterioration as a result of the phenomenon of the spread of sand dunes.

Farmed lands:

The total area of the New Valley Governorate amounts to 440098 km², all are desert lands. The inhabited area amounts to 1201.71 km², representing 2.5% only of the total area of the governorate.

Most studies which have been conducted agreed that it is possible to expand in the area of 1.04 million acres approximately, relying on available underground water, as well as depending on Sheikh Zayed watercourse in the southern part of the Valley. These areas may be distributed as follows (table 21):

Table (21) description of farmed areas and horizontal agricultural expansion areas ¹²

Description	Available quantity of underground water (million m ³ /year)	Farmed area (by acres)	Agricultural expansion area (by acres)	Percentage of agricultural expansion areas
Kharga & Paris	٢٥٠	٣٠٤٦٦	١٣٤٠٠٠	١٢,٩
Dakhla	٥٠٠	٤٥٨٩٤	٨٠٠٠٠	٧,٧
Farafra	٧٠٠	٢٨٩٤٤	٦٦٠٠٠	٦,٣
East Ouinat	١٧١٥	٢٧٨٦٧	٢٢٠٠٠٠	٢١,١
South valley	٦٧٥	٠	٥٤٠٠٠٠	٥٢
Total	٣٨٤٠	١٣٣١٧١	١٠٤٠٠٠٠	١٠٠

Underground water wells:

The New Valley governorate relies completely on underground water for farming, drinking, industry and all purposes. Agricultural and industrial development rates continued to rely on the State efforts alone in the well drilling field. However, since 1996, the investment sector efforts emerged, especially in Dakhla, Farafra and East Ouinat areas.

Underground water exists all over the governorate in the sandy rocks formed in the ancient times, known as Nubian era. The rocks of this era extend up to north Sudan. The thickness of the Nubian sandy rock layer ranges between 4000 meters near the borders with Sudan, 1000 meter in Kharga, 1400 meters in Dakhla and 1800 meters in Farafra. The speed of the flow of this underground water is estimated at approximately 30 meters annually. Further, the annual feeding entering the Western Desert is estimated at approximately 240 million m³ annually. The quantity of water which may be used is estimated at approximately 60 thousand billion cubic meters, a quantity equivalent to more than 1000 double Egypt's annual share of the Nile water. ¹³

¹² Agriculture Directorate – Upper Egypt Development Strategy

¹³ Egypt's water resources and gratifying their benefit – Information Public Authority- Research session, 7-9 July 1998)

The governorate has 603 deep underground wells, 2037 private water sources and 526 investment wells. The total discharged quantities is 1265 million cubic meter annually (2005 assessment.)

Mineral resources:

The New Valley enjoys several mineral resources such as phosphate and gold in Jabl Kamel area, alabaster in Kahfe Garah area in Farafra, lime stone, marble, shale, glass sand and iron oxides.

Ecological diversity:

The Western Desert comprises approximately 1100 types of flower and vessel wild plants. These types vary according to their natural habitats, represented in the desert area and Wahat, then the Big Gulf and Jabl Al Ouinat. Further, the area includes a big collection of wild animals such as foxes, gazelles, wolves, wild cats, snakes, etc.

White Desert Protectorate:

The White Desert was announced as a natural protectorate according to the decree of the Prime Minister No.1220 of year 2002. It occupies a 3010 km² area, and includes a plant cover and a number of wild animals threatened by extinction such as white gazelle, mountain deer, etc. Moreover, the area is attractive as the visitor enjoys the beauty of the nature, sand dunes and geological formations of shining white lime stones, with their distinguished fossils dating back to more than 65 million years, and the small valleys in addition to its dry desert climate and unique features.

Big Gulf Protectorate:

The Big Gulf was declared as a natural protectorate according to the decree of the Prime Minister No.10 of year 2007, over an area of 48.5 thousand km². It is distinguished by the presence of unique geological formations. Further, it is distinguished by the presence of numerous plants and animals.

Main and regional roads and railways

1. overland roads	
* Kharga – Assiut road	230 km
* Kharga (Baghdad) – Luxor road	245 km
* Dakhla- Farafra road	190 km
* Kharga – East Ouinat road (Darb Al Arbee road)	300 km
* Mowt- East Ouinat Road	490 km
* Farafra – Al Bahria road	195 km
* East Ouinat- Abu Simbl Road	420 km
* byroads connecting the cities and villages f a total of	450 km

2. Railways

The railway connects Abu Tartour phosphate mines area with Safaga port, passing by Kharga city for a length of 650 km. further, there is also a line connecting San'a with Paris city for a length of 42 km to transport passengers.

Residential communities:

The sand dunes constitute a direct threat for 2939 rural houses, of which 225 are located in Kharga and Paris villages and 2714 houses in Dakhla markaz villages. The total number of population of these houses is 3578 persons (2005).

Most vulnerable areas to the risks of spread of sand dunes:

1. Kharga- Assiut area

Kharga hill is exposed to the effect of three belts of sand dunes extending from Abu Mohrak

The areas exposed to the spread of sand dunes in Kharga hill are:

- Noqb Al Kharga area – Assiut

The Kharga – Assiut road is perpendicular when approaching the surface of the height with the eastern sand dunes belt which is parallel with Kharga- Paris height in the north-south direction. Therefore, the upper part of the road is always exposed to the risk of accumulation of sand as a result of the approach of wind carrying sand from the surface of the height, at which point its speed slows down and the sand carried by the wind settle on the surface of the height, hence representing an extreme danger for car drivers.

- Kharga – Paris area

This area is exposed to the danger of the spread of the crescent sand dunes from the central belt to cover a number of farming areas and villages on their way.

- West Kharga area

Groups of crescent sand dunes groups appear in this area which forms the western belt of Ghard Abu Mohrak chain in Kharga hill. This chain represents a direct threat for Kharga-Dakhla road.

2. Dakhla – Abu Minkar area

- El Gidida village

This village and its neighboring villages are affected by a group of crescent dunes and sand hills which stretch towards agricultural lands.

- West Al Qasr area

This area is exposed to the stretching of sands existing in west Jabal Adminston, especially a number of agricultural areas in Al Qasr area and west Al Mohob, in addition to Dakhla-Farafra road.

- Abu Minkar area:

Despite the abundant underground water in this area, nevertheless its geomorphology and being surrounded by wind sedimentations, make it s agricultural expansion limited.

3. East Farafra sand field area

This field is a direct threat against Karween hill area of 35 thousand acres.

6.3.2 The governorate's achievements in the natural resources protection field and facing the risks of expansion of sand dunes over the past five years.

6.3.2.1 Decisions and procedures

The passing of decree No.361 of year 20007 amending categories of selling quarries materials to be suitable with the prevailing prices in the neighboring governorates.

6.3.2.2. Technical and administrative support

- The desert roads agency has conducted mechanical removal of the sands accumulated on the main and regional roads.
- Signing a protocol of cooperation with Assiut University in all fields, including the mineral resources sector.
- Contracting with the scientific research academy to conduct studies in order to benefit from the sand raw materials in the governorate.

6.4.2.4 Implemented projects

- Project for the assessment of the extent of wind moving and sedimentation and the economies of facing desertification factors in Wahat areas in cooperation with the scientific research and technology academy (food, agriculture and irrigation research council and land resources and reclamation branch)
- Study project of sand dunes with Assiut University (June 2007) and taking samples for industrial use.
- Study project of building materials in Kharga area, in cooperation with the scientific research academy

6.4.2.5 Current and periodical projects

- Fixing moving sand by shale, especially in Kharga areas- Assiut (5 k) and Mowt-Farafra (430 k, 36 k). this area is characterized by its low cost by a percent amounting to 10% of the cost of mechanical removal operations.
- Mechanical removal of moving sands. This method is used in areas which are difficult to cover by shale soil such as Kharga – Assiut road (65 k, 30 k, 45 k), Khraga- Dakhla road (30 k), Mowt – Farafra road (160 kilo to 180 kilo)

- Study project of white sand in cooperation with the scientific research academy to indicate the extend of suitability of white sand for transparent and white glass industry

6.4.3 current status : problems and reasons

Current situation	Most significant problems and negative effects	Most important reasons for the problem	Current plans or programs to address current situation
Deterioration of agricultural soil	Crawling of sand dunes towards cultivated lands, hence affecting the quality of soil and leading to poor productivity	Movement of sand dunes	Discharging additional quotas of water to the damaged farmers for the purpose of planting wind shields
Threatening traffic and transportation	Crawling of sands towards main and regional roads and railways	Movement of sand dunes	Till now, there are no practical and quick solutions to control these risks. The governorate turned to transporting a whole village (Khartoum) as a result of the crawling of sand dunes and absence of alternative solutions. Genah village needs to be relocated as well for the same reason.
No ideal exploitation of natural resources	1. non expansion of cultivating and reclamation of lands in At Minkar area as it is surrounded with wind sand sedimentation, and the same matter applies for Qarween h valley. 2. non exploitation of a number of mineral rays	Movement of sand dunes	Considering the method of exploiting available natural resources, away from the routes of sand dunes

	materials despite their abundance, as a result of the presence of three valleys and unpaved roads 3. Threatening highly costing underground wells in the urban area		
Non exploitation of the rare monumental sites present in the area	The government has around 120 monumental sites most of which are not available for tourist visits due to sand dunes	Movement of sand dunes	Paving the roads leading to these sites. Cleaning the sites of sand accumulations

Current situation	Most significant problems and negative effects	Most important reasons for the problem	Current plans or programs to address current situation
	Which distract the cutting and paving of roads leading to them. Perhaps the most significant of these sites is Qara cave in Farafra		

6.4.4 Vision and goals

Ideal exploitation of the natural and economic resources available in the region to enhance the local economy and raise the living standard through the following goals:

- Considering the current status and laying down an integrated system to control the crawling of sand dunes towards agricultural and urban areas, traffic and transportation roads.
- Considering the current status of the most endangered urban communities by the crawling of sand dunes and finding the most suitable solutions to save them, in order to maintain social and economic stability of the people.
- Considering the implementation of long term programs aimed at using sanitary water in fixing sand dunes and building green belts around the endangered areas and urban communities.
- Maintaining ecological diversity
- Considering the optimum use of available underground and mineral resources

6.5.4 Goals and required actions

Main goal	Target for the next five years to achieve main goal	Decisions, procedures, institutional support and required programs and projects to fulfill the goal
Considering the current situation and laying down an integrated system to control the risks of crawling sand dunes towards the agricultural and urban areas, traffic and transport roads	Cooperation with the specialized research agencies to find the best suitable means to fix sand dunes at the endangered places (each separately) with the participation of damaged people and benefiting from previous studies	Not establishing any new urban communities without ensuring that they are not exposed to the dangers of creeping dunes through aerial photographs and satellite photographs
Considering the current status of the most endangered urban communities by the risks of creeping sand dunes and finding the best solutions to rescue them, in order to maintain the social and economic stability of the people	1. Placing short and medium term plans to fix sand dunes at one of the most endangered areas, then considering the possibility of repeating this experiment at other areas. 2. Training farmers on the most suitable means to discontinue the crawling of sand dunes, whether by permanent or temporary fixation.	Organizing awareness seminars for the damaged farmers and citizens about the dangers of crawling sand dunes and encouraging them to participate in the process of fixing sand dunes.
Considering the implementation of long term programs aimed at using treated sanitary water for fixing sand dunes and building green belts around the endangered urban areas and communities	Cooperation with the research agencies to lay down programs for exploiting treated sanitary water, as well as agricultural drainage water in projects for fixing sand dunes at the damaged areas and communities	1. local community awareness programs of the feasibility of using sanitary water and agricultural drainage water 2. Laying down priorities for the areas where the project may be executed. 3. Programs for training the farmers to participate in the implementation of projects
Maintaining biological diversity	Developing natural protectorates	1. developing the infrastructure of natural protectorates. 2. Programs for training the

		people and private societies to participate in developing natural protectorates.
Considering the ideal exploitation of available mineral resources	• building cement factories • building colored and transparent glass factories • building mud brick factories	• offering rewarding incentives to the investors. • Implementing cross-sectional roads to facilitate the exploitation of mineral raw materials such as Suhag/Kharga road and Farafra /Derwot road

List of proposed projects included in the five year plan

6.4.6.1 High priority projects

Projects	Agency in charge	Agency Proposed to implement the project	Estimated budget by million pounds	Time frame	Proposed Funding agencies
Reclamation and cultivation of 125 thousand acres as first stage of the strategy to reclaim and cultivate 500 thousand acres	Governorate	Private sector	1317.5	5 years	Private sector
Developing natural protectorates	Governorate	Private societies	2	12 months	Donor agencies
Manufacturing cement	Governorate	Private sector	1130	36 months	Shareholding founders or banks
Manufacturing colored and transparent glass	Governorate	Private sector	610	12 months	Shareholding founders or banks
Manufacturing m brick	Governorate	Private sector	5	12 months	Shareholding founders or banks
Manufacturing di- ammonium phosphate fertilizers	Governorate	Private sector	2180	36 months	Shareholding founders or banks

6.4.6.2 Medium priority projects

Projects	Agency in charge	Agency proposed to implement the project	Estimated budget by million pounds	Time frame	Proposed funding agencies
Fixing sand dunes in Al Qatar village	Governorate Kharga markaz	Governorate Private associations	1670	12 months	Donor agencies
Fixing sand dunes in El Qasr villages	Governorate Dakhla markaz	local community development association	1500	12 months	Donor agencies
Fixing sand dunes in Al Rasheda villages	Governorate Dakhla markaz	local community development association	1000	12 months	Donor agencies
Fixing sand dunes the company	Governorate Kharga markaz	local community development association	500	12 months	Donor agencies
Fixing sand dunes in southern Max	Governorate Paris markaz	local community development association	500	12 months	Donor agencies

Description of a number of priority projects and programs

Reclamation and cultivation of desert lands and transforming them into productive lands

Problem description:

Erosion and shrinking of agricultural lands, deterioration of their productivity as a result of factors of crawling sand dunes.

Poor contribution of the governorate in the value of the agricultural national product, despite availability of land and water resources.

Project description and components:

- Reclamation and cultivation of 125 thousand acres in Kharga, Dakhla, Farafra and east Ouinat depressions
- Building modern irrigation networks to gratify the benefit from irrigation waters

Project implementation agencies:

Governorate

Project estimated cost:

1320 million pounds

Proposed funding agencies

Private sector

2. Developing natural protectorates in favor of tourism development

Problem description:

- Absence of an integrated system to benefit from the geomorphology and ecological diversity in the governorate
- Poor available funding to develop natural protectorates in favor of sustainable development
- Poor contribution of environmental tourism in the local economy, despite availability of all natural components

Project description and components:

- Building access gates to the natural protectorates
- Constructing buildings for visitors comprising halls for displaying videotapes and guidance tapes, and environmental products exhibitions.
- Implementing routes inside the protectorates
- Posting signage inside the protectorates
- Developing underground water wells next to the protectorates
- Supporting private societies to increase the efficiency of environmental industries for the service of environmental tourism purposes.
- Implementing training courses for the citizens to participate in the management and development of natural protectorates

Project implementation agencies:

Governorate

Project estimated cost:

1 million pounds

Proposed funding agencies:

Private sector – Ministry of Housing

3. Exploitation of mineral raw materials in manufacturing cement

Problem description:

- Non exploitation of abundantly available mineral and quarry raw material in the area

Project description and components:

- Production of various types of cement
- Preparing a detailed study and taking required actions to obtain approvals, then start implementation of the project

Project implementation agencies:

Private sector

Project estimated cost:

1.13 billion Pounds to produce 1.4 million tons annually

Proposed funding agencies

Private sector

4. Building glass manufacturing plant

Problem description:

- non exploitation of white sand raw materials abundant in high reserves

Project description and components:

- setting up colored and transparent glass factory
- preparing a detailed study and taking required actions to obtain the approvals, then initiate implementation of the project.
- Raising the awareness of local community and concentration on activating the community's role to make the project successful and sustainable.

Project implementation agencies:

Private and investment sector

Project estimated cost:

610 million pounds to produce 125 meters annually

Proposed funding agencies

Private and investment sector

5. Clay brick manufacturing

Problem description

- Non exploitation of mud raw materials available in high reserves

Project description and components:

- Building a factory to manufacture mud bricks
- Preparing detailed study and taking the required actions to obtain approvals, then start implementation of the project

Project implementation agencies:

Private sector

Project estimated cost:

5 million pounds

Project funding agencies:

Private sector

6. Manufacturing phosphate fertilizers

Problem description

- Poor use of phosphate raw material despite its availability in high reserves

Project description and components:

- Production of di- ammonium phosphate
- Preparing a detailed study and taking required actions to obtain approvals, then initiate implementation of the project

Project implementation agencies:

Private and investment sector

Project estimated cost:

billion pounds to produce 500 thousand tons annually

Proposed funding agencies:

Private sector

7. Fixing sand dunes in El Qasr, Ell Rasheda villages, the company and southern Max

Problem description:

- Presence of 200 houses and approximately 376 acres of agricultural land threatened by extinction as a result of the crawling of sand dunes towards Al Qatar village.
- Presence of 1976 houses and approximately 338 acres threatened by extinction a result of the crawling of sand dunes towards Al Qasr villages
- Presence of 660 houses and approximately 330 acres threatened by extinction as a result of the crawling of sand dunes towards Al Rasheda village
- Presence of 1976 houses and approximately 338 acres threatened by extinction a result of the crawling of sand dunes towards Al Sharka villages
- Presence of 1976 houses and approximately 338 acres threatened by extinction a result of the crawling of sand dunes towards the south Al Max villages
- Threatening the vital utilities and installations in the said villages

Project description:

- Permanent fixation of sand dunes by greenery, whether by wood trees or fruit bearing fruits.
- Preparing a detailed study and presentation to the various funding agencies
- Taking the required actions to obtain approvals then initiate the implementation of project
- Increasing the awareness of the local community and focusing on activating the society's role to make the project successful and sustainable.

Project implementation agencies:

Community development societies in the said villages

Project estimated cost:

6 million pounds

Proposed funding agencies

Donors- Ministry of Agriculture

6.4.8 Governorate five year plan to achieve benefit of natural resources 2007/2012

6.4.8.1 agriculture and land reclamation

Table (22) represents the areas proposed for reclamation in the governorate during the period from 2007 to 2012 and its cost.¹⁴

Table (22) areas proposed areas for reclamation in the governorate during the period from 2007 to 2012 and its cost

Plan phases	Kharga	Paris	Dakhla	East Ouinat	Farafra	Total
Area (thousand acres)	١٤,٧٤	١٨,٧٦	٢٠	٥٥	١٦,٥	١٢٥
Investment cost (million pounds)	١٥٥,٣٦	١٩٧,٧٣	٢١٠,٨	٥٧٩,٧	١٧٣,٩١	١٣١٧,٥

¹⁴ Strategic study for developing the new valley, up to 2027- June 2006

6.4.7.2 Environmental tourism

Environmental tourism is considered one of the significant components for increasing income in the governorate in view of the tourist components it contains. Environmental tourism is considered as one of the most important tourist components in the governorate in view of the unique desert nature. Among the most significant environmental tourism in the governorate is safari tourism, a number of monumental temples such as Hibis temple and El Bagawat and El Mazoka graves, in addition to environmental industries and natural protectorates. The governorate enjoys a number of tourist installations. Table 23 illustrates the plan to upgrade environmental tourism in the New Valley Governorate.

Table (23) plan to upgrade environmental tourism in the New Valley governorate¹⁵

five year plan	Increase of tourism installations	Training and upgrading efficiency of personnel	Developing and updating buildings and increasing equipments	Updating transport means and lighting of the areas	Total by million pounds
1 st phase 2007/2012	١١,٢٣٣	٠,٣٢٧	٠,٢٢٥	٠,٥٦٢	١٢,٣٥٦

6.4.7.3 Mineral resources

Table (24) illustrates the quantities of natural resources planned to be extracted up to 2012, and their expected cost and revenues.¹⁶

Table (24) quantities of natural resources planned to be extracted up to 2012, and their expected cost and revenues

¹⁵ Strategic study for developing the new valley, up to 2027- June 2006

¹⁶ Strategic study for developing the new valley, up to 2027- June 2006

Descript ion	Lime stone	Sand stone and sand	mud	Gravel, rocks	Marble	Granite , basalt	Costs	Revenues
Quantiti es	١٠	١٠	٥	١٠	٣	١	٧٤٩,٤٠٨	١٤٥٤,٦٢٦

6.5 Information, training and environmental awareness

6.5.1 General background

The environment law No.4 of year 1994 stipulates under article five (chapter five) “laying down environmental awareness programs for the citizens and assisting in its implementation”, as well as “preparing periodical reports on the main indicators of the environmental status and publishing them periodically.”

Environmental awareness and education is considered as one of the significant sectors in the environmental work scale, in light of the increasing intensity of pollution, its various sources and absence of awareness of its hazards.

Environmental awareness is considered as a main factor for upgrading awareness and recognition among the citizens in the rural and urban areas, even the educated, public and executive work leaderships, to inform them of the fact which can not be disregarded, as the process of conserving the environment is considered the basis of development in the governorate since it brings return on the health of the people and increase their income on the long term. Regardless of the funds spent on hospitals, health care centers and other facilities, there is no use behind this spending unless it is supported by conservation of the natural environment, which is fundamental for protecting the life of humans and their existence on earth.

Questionnaire on the environment in the New Valley:

To achieve the purpose of the general consultation program, the general department of environmental affairs has conducted a questionnaire on the citizens in connection with the environment in the New Valley. The form comprised 6 questions on the citizen's opinion on the status of the environment, his preferred means to receive environmental information and the extent of his readiness to participate in the various environmental field works. Further, the questions included the citizen's opinion on the reasons behind deterioration of the environment at his residence location, as well as the level of significance of environmental problems from his view point and the governorate's role to protect the environment. The results were as follows:

Status of the environment over the past ten years:

Requests of the questionnaire indicated that 88% of the participants said the status of the environment improved over the past ten years, 10% of the participants said it has not changed, as it is, while 2% said the status of the environment deteriorated over the past ten years.

Preferred means for obtaining environmental information:

Results of the questionnaire indicated that television is the preferred means for obtaining environmental information by 90%, followed by radio by 78%, then newspaper by 74% (figure 7.)

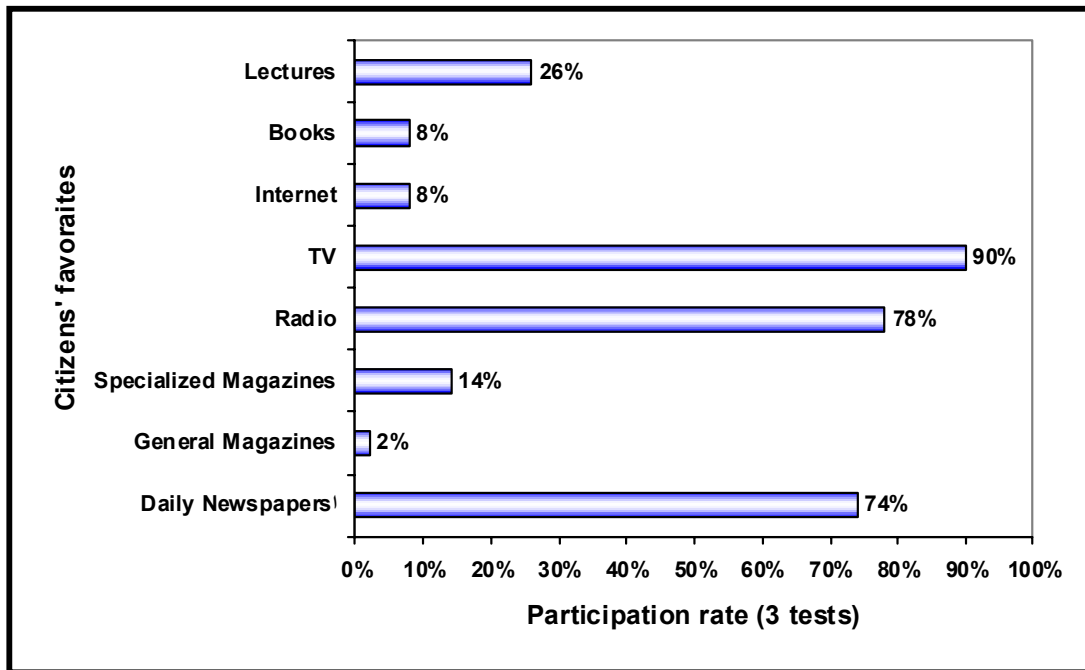


Figure (7) sources of awareness as set forth under the questionnaire results.

The citizens' contributions in the environmental work fields:

Results of the questionnaire revealed that 90% of the participants are ready to participate in the awareness campaigns, 96% are ready to comply with the environmental legislations, and 82% of the participants expressed their readiness to participate in voluntary work. As regards payment of donations and imposing taxes, results of the questionnaire revealed that 64% of the participants are ready to pay donations to the environment protection fund, while the majority the participants by 74% rejected the imposition of any taxes on part of the government to protect the environment (figure 8).

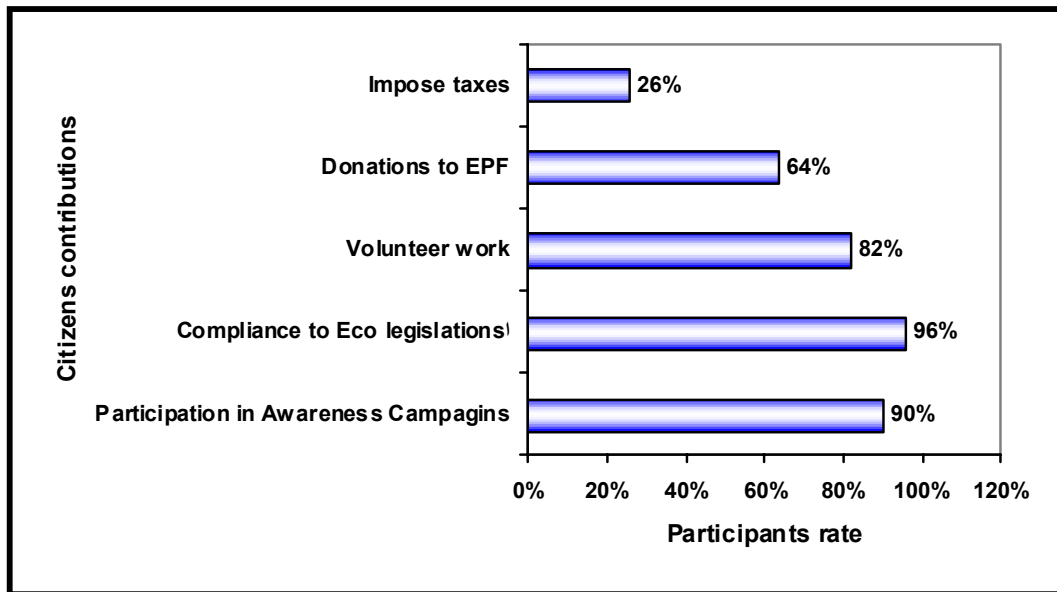


Figure (8) citizens' opinions on providing financial resources to enhance the environment

Reasons for the deterioration of the environment:

Results of the questionnaire on the citizens' opinions for reasons of the deterioration of the environment indicated that poor government spending on the environment is one of the most significant reasons for the deterioration of the environment, which ranks first by 66%, followed in the second rank by poor work of private societies by 58%, then followed by poor environmental awareness programs in the third rank by 52% (figure 9).

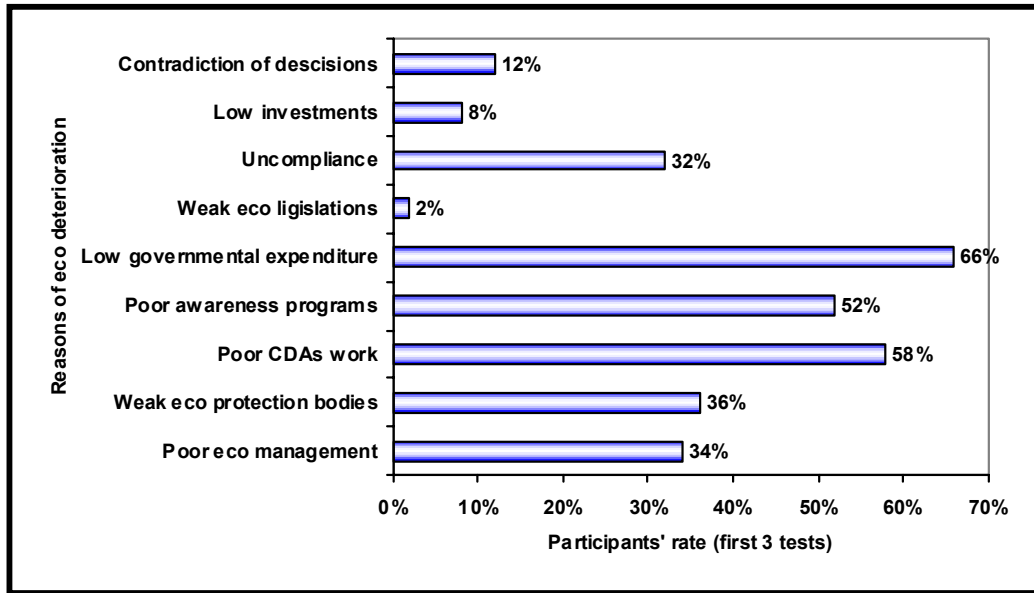


Figure (9) citizens' opinions on the reasons for deterioration of the environment.

Governorate's efforts to protect the environment:

By asking the citizens on the governorate 's efforts in the environment protection fields, results of the questionnaire pointed out that all the participants by 100% declared that the government should do more than what it is doing now to protect the environment.

6.5.2 The governorate 's achievements in the environmental information, training and awareness field over the past five years

6.5.2.1 Technical and administrative support

- EAA provides the required printed material, booklets and stickers for the environmental awareness and education programs.
- The central department for environment information and awareness conducts environmental awareness campaigns at the governorate markazs.
- The General Department for Environment Affairs has built an environmental library to serve the community, the first specialized environmental library on the level of governorates.
- The General Department for Environment Affairs has created a website on the internet under the address of: www.wadyenviro.150m.com, which comprises all the environment information and indicators, in addition to the environment law, environment projects and other vital topics to increase environmental awareness among browsers.
- Further, the Department for Environment Affairs has created a blog to increase interaction between the department and the browsers, under the address : <http://nvalley2027.Blogspot.com>
- The New Valley local radio broadcasts a weekly meeting for one hour in which it hosts the general director of environment affairs to discuss all fields of environmental work in the governorate.

6.5.2.2 Implemented projects

- The education sector held 75 environmental education courses, 385 seminar, 25 exhibitions and 94 environmental competitions. The total number of beneficiaries amounted to 36757 students at the various cities and villages of the governorate.

The youths and sports sector held greenery and beautification campaigns of the youth centers and entrances of cities and villages, with the participation of 1100 youths. Further, 200 educational seminars were held with the participation of 1000 youths, in addition to voluntary environmental work campaigns and trips with the participation of 1600 students.

- The information centers in Kharga and Dakhla held 6 discussion sessions, 5 training courses and 58 environmental meeting and seminars. Further, 14 competition and 5 environmental exhibitions were held. The total beneficiaries amounted to 5897.

6.5.2.3 Current and periodical projects

- Environmental courses, seminars and meetings held through the education, youths and information halls
- Greenery, beautification and trip campaigns through the youths and education sector
- Environmental competitions through the local radio, education, youth and information sectors.

6.5.3 current status: problems and reasons

Current status	Most significant problems and negative effects	Most significant reasons of problem	Current plans or programs to address the current status
Absence of an integrated system for environmental awareness and education	Existence of a big sector of the citizens lacking correct environmental information and behaviors, leading to many environmental violations punished by law	Absence of coordination between the main agencies for environmental awareness, which include education, youths and information	Developing an environmental management system to respond to the awareness requirements
Insufficiency of environmental awareness programs and projects to cover all the residential communities scattered and away from each other	Many citizens are deprived of the environmental awareness programs, which has a negative effect on the contribution of these citizens in the various development programs	Poor funding required for implementing environmental awareness programs	Supporting private societies and NGOs to implement awareness programs
Endangering ecological diversity in the governorate	Absence of environmental awareness among many citizens on the significance of maintaining the natural environment and its resources. Therefore, we find a number of citizens hunting hawks and gazelles in the white desert protectorate. Also, many tourists in the Big Gulf are cutting considerable quantities of glass silica in the Big Gulf protectorate	Absence of environmental awareness and absence of a system for local community participation in the environmental protection programs	Developing natural protectorates and training local residents on the protection of their resources
Shortage of tourism information marketing efforts inside and outside	Insufficiency of information offered to the tourists and Egyptian visitors on the multiple tourism attractions in the governorate leading to a limitation of the number of tourists, despite the numerous tourist attractions in the governorate	Poor tourism programs and lack of information at the agencies, companies and individuals concerned with the tourism activity, the governorate lacks tourism expertise which may place the governorate on the tourism map of Egypt	- Placing the governorate on the international environmental tourism map - providing tourism information to the visitors - Enhancing tourism services and training employees in the tourism field.

6.5.3 vision and goals

Upgrading the environmental awareness of the citizens, defining environmental efforts aimed at achieving a sustainable development, the final goal of which is to enhance the quality of life of the citizens through the following goals:

- Increasing environmental awareness among the residents all over the governorate and for the various categories.
- Publicizing the New Valley as an environmental friendly areas, free of all environmental pollutions

6.5.5 Goals and required actions:

Main goal	Target for the next five years to achieve main goal	Decisions, procedures, institutional support and required programs and projects to fulfill the goal
Increasing environmental awareness among the citizens all over the governorate	Organizing awareness campaigns spread all over the governorate to include the biggest possible number of beneficiaries	1. environmental awareness program on sanitary drainage problems 2. Awareness programs on conserving water resources and rationalizing consumption. 3. Awareness programs on safe disposal of solid wastes of all types. 4. Awareness programs on risks of crawling sand dunes and means of facing them. 5. Radio programs for all types of environmental awareness. 6. Providing financial support to implement awareness programs in the cities and villages.
Increasing environmental awareness in the schools and youth centers	Organizing camps, seminars, exhibitions, shows and increasing internal trips	1. Environmental awareness programs for school students 2. Environmental awareness programs for the youths at youth centers. 3. Providing financial support to carry out awareness programs and competitions.
Publicizing the new valley as an environmental friendly area free of environmental pollutants	Implementing information campaign to the external tourist markets to identify the significance of the New Valley as a unique site for environmental tourism and publicizing the visit to the natural protectorates	1. Radio and TV information program on the New Valley as a pollution free area. 2. media programs for environmental tourism marketing in the governorate 3. Training programs for employees in the tourism sector.

		4. Awareness and training programs for private societies. 5. Collecting the oasis heritage connected with the natural protector and place it on the data base as well as posting it on the internet and to tourism companies concerned with environmental tourism
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6.5.6 List of proposed projects included in the five year plan

6.5.6.1 High priority projects

Projects	Agency in charge	Proposed agency to implement the project	Estimated budget by one thousand pounds	Time frame	Proposed funding agencies
Supporting the environment department in the governorate to increase environmental awareness programs	Governorate	Governorate	100	24 months	Ministry of Environment
Environmental awareness seminars	Governorate	Youth& sports Education Information centers	200	Throughout the year	Concerned ministries
Environmental service work campaigns	Governorate	Youth& sports Education	300	Throughout the year	Concerned ministries
Environment competitions	Governorate	Youth& Sports Education Information centers Local radio	100	Throughout the year	Concerned ministries

6.5.7 Description of a number of priority projects and programs

1. Supporting the environment department in the governorate to increase environmental awareness programs

Problem description:

- Shortage and poor environmental awareness among the citizens in connection with environmental issues and problems
- Scattered environmental awareness efforts among several agencies without clear coordination among them.
- Unifying the concepts of environmental information message

Project description and components:

- Providing required funding to hold training seminars and courses
- Providing all the audiovisual materials, books, references and stickers

Project implementation agencies:
Environment Affairs Department in the governorate

Project estimated cost:
100 thousand pounds

Project description and components:

- Environmental seminars and lectures at the schools
- Environmental seminars and lectures at the youth centers
- Environmental seminars and lectures at the information centers

Project implementation agencies:
Media centers- private societies – education directorate

Project estimated cost:
200 thousand pounds

Proposed funding agencies:
Funding by the Ministries of Education, Youths, Sports, Environment and Information

3. Encouraging community initiatives to implement awareness programs and raise environmental awareness

Problem description:

- Increasing environmental awareness of the citizens and encouraging them to participate in the community service.
- The need for greenery of the streets, entrances of the cities, villages, schools and fixing sand dunes.

Project description and components:

- school students competitions
- competitions for members of the youth centers
- competitions for citizens through the local radio
- awareness and greenery camps

Project implementation agencies:

Governorate

Project estimated cost:

400 thousand pounds

Proposed funding agencies:

Funding by the Ministries of Education, Youths and Environment

6.5.8 Governorate five year plan in the fields of environmental awareness and education
2007/2012

6.5.8.1 Five year plan for the youths and sports sector

No	Projects	Planned number of beneficiaries	Implementation location	Planned number of projects	Funding source
1	Environmental education seminars	١٥٠٠	Youths markazs	١٢٠	National council for youths
2	Environment service work camps	١٠٠٠		١٨٠	
3	Educational competitions	١٠٠٠		٥	
4	Greenery camps	٤٠٠		٤٠	
5	Trips	١٢٠٠		٤٠	

6.5.8.2 five year plan for the general education sector

No	Project name	No. of beneficiaries	Implementation location	No. of projects	Funding agencies
1	Educational seminars in the environmental awareness field	10,000 students	Schools	٥٠	Ministry of Education
2	Work camps in the environment service field	600 students	Educational departments	٢٠	
3	Field visits to the	250 student	Educational	١٠	

	governorate		departments		
4	Educational competitions	15000 students	Schools	٥	
5	Greenery and beautification of schools	215 student	Schools	٢١٥	
6	Cultivating some roofs of schools	10 schools	Schools	١٠	

6.5.8.3 five year plan for information centers

Discussion sessions	12 sessions/ year
Training courses	2 courses/year
Information meetings & seminars	12 sessions/year
Exhibitions	2 exhibitions/year
Competitions	4 competitions/ year
Visits (to environmental projects)	2 visits/year

7. Required actions to raise general environmental awareness in the governorate
Awareness campaigns should be planned whereby they target all the society sectors. The new courses and concepts which support achievement of the environmental action plan goals in the governorate take time to establish themselves. This process also requires big resources to support it. In the early stages of implementing the environment action plan in the governorate, awareness campaigns should revolve around priority issues of the environmental action plan, with the existence of a number of programs, targeting the following:

- Primary stakeholders
 - Means of maintaining underground water and rationalizing its use.
 - Random throwing of wastes and its effect
 - Sanitary drainage and hygiene

- Secondary stakeholders
 - significance of providing enhanced management of wastes, water supply and sanitary drainage services
 - The industrial private sector's need for self follow up of the effects of wrong disposal of industrial wastes on the surrounding communities, in addition to the necessity of improving working conditions.
 - Protection of natural resources

General awareness may be directed through several agencies: media, educational departments and schools, youth centers, civil society organization and workers in the industrial safety field. In order to support the implementation of the environmental action plan in the governorate, it is scheduled to make a number of promotional and interpretation campaigns, which include stickers, general and core video tapes, television and video programs, in addition to the messages which may be conveyed by the religious leaderships. Media activities in the environmental action plan will be coordinated with the current general awareness campaigns, comprising environmental events and competitions under the sponsorship of the governor. This is in addition to the cleaning and greenery campaigns which may be carried out under the sponsorship of donor agencies or the private sector.

Further, universities and schools should be targeted to increase awareness among the students, as this category has an impact on the customs and behaviors of parents. Further, these youths are the future leaderships of the society in the New Valley Governorate. As a first step, efforts should focus on promoting a high environmental awareness level among university professors and school teachers, as well their compliance and support of the environmental action plan goals in the governorate.

These activities should be coordinated with the central department for environmental awareness at EAA, which issued a number of booklets, pamphlets and stickers for general awareness.

It is significant to conduct a good follow up with the lapse of time on the effects of these campaigns. This includes conducting researches on the extent of change in the behavior and ideas of the concerned categories. The results of these researches will contribute in designing, managing and following up the campaigns to ensure their impact.

8. Institutional support and capacity building of environmental units in the governorate

8.1 institutional supports

- The environmental affairs department's level was upgraded to a general department according to the decree of the chairman of the central agency for organization and management No.232 of year 2007.
- An EAA office is located in each city
- An environmental liaison officer is present in each local village unit
- The governorate decree No.340 of year 2005 reforming the higher environment committee on the governorate level was issued pursuant to the memorandum of understanding between the State Ministry for Environment Affairs and the Ministry of Local Development, signed on 5 June 2005 in the decentralization field of environmental management. This committee will assume the responsibility of directing the implementation of the environmental action plan in the governorate.
- As for the concerned ministries such as the Ministry of Housing, Ministry of Irrigation and Ministry of Health, they have environmental responsibilities according to the various laws and significant roles which should be carried out. Therefore, their abilities need support to enable them to fulfill these responsibilities. Further, their institutional structures will also need support to direct the effective contribution procedures from the private sector, private societies, community development societies and all sectors of the entire society.

8.2 Environmental planning and management system

The preparation of an efficiency decentralized environmental planning and management system is considered one of the significant requirements for the implementation and sustainability of the environmental action plan works in the governorate through a planned and organized system for environmental management, under the supervision of the environment higher committee. The environment planning and management system shall assume the following tasks:

- Strategic planning to ensure sustainable development which takes into consideration the various environmental considerations.
- Implementing planning the uses of lands, which considers environmental laws through the implementation of environmental impact assessment conditions and compliance with the same.
- Coordination between the activities of taskforces for the purpose of enhancing environmental services, conserving, protecting and treating resources.

- Increasing the general awareness and consulting the society in connection with environmental issues
- Capacity building through training, appointment and operation of effective guidance services.
- Arranging the necessary financial and human resources to carry out the environmental action plan programs and projects
- Supporting the governorate environmental action and ensuring its sustainability and updating the same.

The significance of institutional support is attributed to the following:

- Developing a system for environmental planning and management for efficient treatment of priority issues on the levels of the government, private sector and private society
- Ensuring compliance with the implementation and execution of the governorate environmental action plan and its approval by the senior management in the governorate.
- Encouraging and facilitating the participation of all the taskforces concerned with enhancing environmental services and conserving natural resources.
- Setting up a mechanism for communication and coordination between each taskforce to ensure sustainability of the environmental action plan.

The management and planning environmental system relies on the decentralized system for environmental managing, consisting of the following:

- Environment higher committee

It assumes the responsibility of coordinating and including the management and planning activities on the level of the governorate. Currently, the governorate is defining the organizational structure of the committee, role distribution and responsibilities, planned to include the following:

- Supporting more coordination and exchange of information between the ministries and their bodies on the governorate level.
- Increasing coordination and cooperation between the sector bodies on the governorate level

- Conveying opinions to the central agencies, such as EAA and Ministry of Local Development, and gratifying local incomes in the national environmental plans.
- Following up the implementation and updating of the governorate environmental action plan priorities and ensuring the inclusion of environmental issues in the development plans.

Environmental Affairs General Department

- Continuing the support of the environmental affairs general department through the organization targeted training programs for their employees, amounting to 18 employee distributed to the following departments :
 - Legal tracking and complaints department, which assumes the responsibility of dealing with the environmental problems reported by the public
 - Information management and geographical information systems department, which assume providing data and information, issuing reports and periodical reports, in addition to the maps for the various environmental problems.
 - Environmental education and information department which assumes the responsibility of raising environmental awareness in connection with the various environmental issues.
 - Environmental inspection and assessment department which undertakes the responsibility of inspecting installations and ensuring their compliance with the environmental criteria. It also undertakes revision of the environmental impact assessment forms for projects prior to submitting them to EAA
 - Environmental planning and follow up department, which undertakes preparation of monthly and annual action plans and following up their implementation with the other departments.
- Setting up environmental management units in the industrial areas in Kharga and Dakhla
- Supporting the capabilities of staff in the environmental units in the cities and environmental liaison officers in the villages

8.3 Main departments concerned with environment

A system for environmental planning and management should be established based on the current system of decentralized environmental management in the governorate (table 24). The environmental planning and management system should also assist in coordinating and boosting the efficiency of the other main departments in the New Valley Governorate in order to assume their environmental responsibility.

Table (24): main departments concerned with environment (responsibilities and coordination)

Departments	Environmental responsibilities fields	Coordination with other agencies
Ministry of Water Resources and Irrigation (concerned basically with the distribution of water and cleaning watercourses of wastes)	- Implementing law 12/1984 in connection with the village, drainage and relevant decrees. - Preparing estimates for irrigation water to the central Ministry. - Managing infrastructure facilities to supply with drainage services, irrigation water, operate and distribute them according to the Ministry provisions. - Ensuring adequate irrigation and drainage of agricultural lands to increase the expected crops. - Increase efficiency of transport of water to the irrigated lands - Replacing and renewing old drainage grids. - applying law 48 through joint inspection of water surfaces with the police	- Health directorates take samples to measure the quality of water in order to protect public health. - Submitting any problems related to the quality of irrigation water to the Ministry of Water Resources and Irrigation. - Submitting violations of laws, other than law 48, to the EAA in the governorate or any other concerned agency. - Submitting problems of the quality of irrigation water to the Ministry of Water Resources & Irrigation
Ministry of Housing Public Agency for Sanitary Drainage	- Implementing law 93/1962 in connection with the disposal of sanitary drainage and relevant decrees to ensure conformity of sanitary drainage collection and treatment services with the Egyptian laws. - Encouraging the reuse of treated sanitary water and sludge. - Providing sufficient collection and treatment utilities for the small villages and rural areas. - Ensuring the availability of sufficient treatment utilities of industrial wastes. - Ensuring conformity of household and industrial sanitary water disposed in the public sanitary grids with the Egyptian criteria. - Preparing small sanitary drainage projects (pipelines, systems, pumps),	- The health directorate has a routine follow up program of the industrial drainage liquids drained into the public sanitary grid. - The health directorate tests the drainage liquids on behalf of EAA or the sanitary drainage department, according to the request. - Submitting water pollution violations to the water surface police

	and big projects and implementing them by the central ministries, and managing them by the governorate. - Supervising staff of the centers and their follow up of the projects being implemented by the private sector contractors. - The centers staff assume the responsibility of inspecting leakage cases or damaged pipes, odors emitted from treatment units, pollution resulting from untreated sanitary	
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Departments	Environmental responsibilities fields	Coordination with other agencies
Ministry of Agriculture and Land Reclamation – Agriculture Department	- Applying law 53/1966 and relevant decrees - Presenting marketing and financial services and agriculture seedlings through the agricultural cooperative societies - Assisting the agricultural sector to combat diseases and epidemics. - Assisting in maintaining the quality of soil (for example by conducting researches in connection with the salinity of soil) - Encouraging reclamation and land leveling projects. - Managing and cleaning water and drainage courses (the Ministry of Water Resources and Irrigation undertakes the management of main watercourses. The Ministry of Agriculture manages secondary watercourses) - Providing information, training and agricultural guidance services for agricultural practices (such as combating infections, the use of fertilizers and breeding animals)	- Ministry of Health and Exports Development Agency monitor the quality of agricultural production. - The department informs environmental units in each markaz of environmental violations.
Ministry of Health and Housing , Health Department	- Takes samples from the potable water sources, water treatment plants and drainage liquids resulting from the sanitary drainage treatment plants and sanitary water in the local sanitary grids as well as the watercourses water. - Analyzing these samples (or sending them to the central Ministry of Health for analysis). - Taking and analyzing samples from industrial pollution sources and other pollution sources, according to the request of other agencies. - Implementing vaccination programs to prevent and manage infectious diseases	- In the event of a problem related to the quality of potable water, a committee is formed from the environmental affairs department and water company to verify and inspect the problem. - Samples taken from the suspected locations in the Nile River are sent to the central ministry, after which it notifies the governorate in the event of a problem

8.4 Institutional support to other agencies

The institutional structure is not confined to government agencies alone. It should also include directing big efforts to building the capacities of private societies, educational installations and the private sector in order to boost their abilities in environmental planning projects and programs, as well as managing them. Further, the initiatives should include the appointment of environmental liaison officers at the professional associations in order to boost self follow up of their member companies and informing them of the benefits they will enjoy as a result of enhancing environmental performance.

8.5 Training

Preparing and implementing comprehensive training programs is among the implementation priorities during the first and second years of announcing the completion of preparing the governorate environment action plan. The training programs should be designed in such a manner which includes offering institutional support to the various taskforces according to the activity carried out by each taskforce. Training personnel entrusted with the new components of the environmental management and planning system, whether those established and supported or to be established as mentioned above is considered among the significant training priorities. These personnel will have an important role in the successful implementation of the environment planning and management system. Further, a unit for environmental training should be established in the governorate, provided it is formed initially of two acting members to cover the training concerned with environment services, conservation of resources and public communication skills. This unit should support the ties with EAA, Assuit University and donor agencies in order to provide the required support.

Training programs carried out in the governorate:

Targeted group	Training/ awareness
EAA/ environment units in the cities	- Using environmental monitoring systems - Environmental impact assessment. - Laws and regulations - Inspection and complaints procedures - Field inspection - Dangerous wastes management
Environmental liaison representative (on the level of villages)	- using the environmental officer guide

Environmental training needs determined by main departments operating in the environment field

Departments	Training needs
Agriculture	• Using chemical fertilizers and organic alternatives • Increasing the quality of agriculture crops for export, especially in recently reclaimed areas • Developing and improving date farms • Environmental awareness and education
Water resources	Irrigation : • managing water, especially in connection with transporting and distributing water • consumption of various crops • benefits of irrigation systems and various techniques of water rationalization. • Environmental awareness and education Drainage : • Replacing and renewing old drainage grids • Method of implementing best irrigation, drainage and agriculture practices in the recently reclaimed areas. • Environmental impact for environment sensitive areas and how to reduce its effect on agriculture (water level, irrigation, drainage, crops) • Environmental awareness and education
Water and sanitary drainage	• Operating and maintaining water and sanitary systems in the treatment plants • Techniques of measuring leakage level and lost water in the water grids • Techniques for reducing wasted water • Training chemists concerned with selecting the quality of water • Environmental awareness and education
Solid wastes management	• Building the capacities of managers and personnel concerned with managing the wastes to administer solid wastes in general (on the level of the city and markaz) • Method of improving general environmental awareness and feeling of responsibility towards issues related to wastes. • Safe recycling of wastes • Method involving the private sector in managing solid wastes • Environmental awareness and education

9. Roles and responsibilities

Each environmental goal mentioned in the environmental action plan shall have the main agencies in charge of its implementation, as set forth under table (25). The environment department should undertake the responsibility of coordinating the preparation of the policy, monitoring results and presenting reports on the achievements in this respect, as well as offer the recommendations concerned with the development of performance.

Table (26) responsibilities for implementing the environmental action plan in the governorate

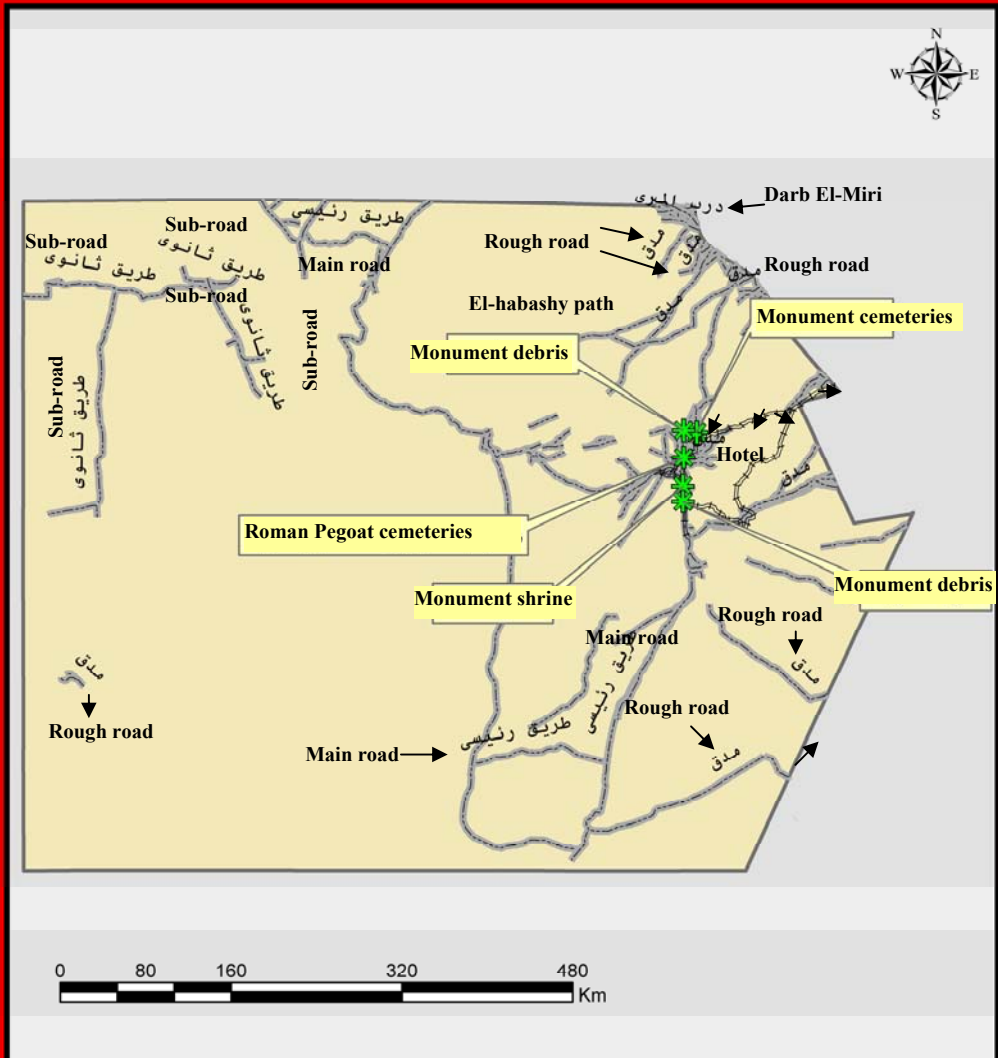
Main goals	Main implementing agencies	Supporting agencies
First : sanitary drainage		
Implementing sanitary drainage projects in the deprived cities and villages	Governorate	Local units at the markazs and cities
Replacing, renewing and expanding current grids to include the biggest number of beneficiaries	Governorate	Local units at the markazs and cities
Providing sanitary drainage services in the crafts area in Kharga	Governorate	Kharga city council
Expediting the segregation of sanitary drainage from agricultural drainage in Kharga and Dakhla	Urbanization Agency Environment Affairs	Drainage General Department
Gratifying the benefit from using treated sanitary water and sludge safely in the reclamation of desert lands and irrigating a number of crops	Governorate/ environment affairs	Agriculture department
Increasing the society's awareness of environmental risks resulting from poor sanitary drainage methods and controlling the phenomenon of disposing sanitary water into agricultural drains	Environment Affairs	EAA
Second : potable water		
Completing covering the governorate with potable water services and increasing production to fulfill the expected increase in demand	Urbanization Agency Governorate	Local units of the markazs and cities
Expanding current grids to include the biggest number of beneficiaries and reduce wasted water in the grids	Governorate Social Fund	Local units of the markazs and cities
Increasing the efficiency of operating wells and plants to control frequent break downs	Governorate	Local units of the markazs and cities

Main goals	Main implementing agencies	Supporting agencies
Institutional capacity building	Governorate	Local units of the markazs and cities
Increasing the community awareness of the significance of conserving water resources (high costs) and rationalizing consumption	Environment Affairs	EAA
Third : solid, agricultural and hazardous wastes		
Considering the current situation and laying down an integrated system for solid wastes management	Governorate	Local units of the markazs and cities
Applying suitable systems for the treatment of solid wastes and final disposal of the same	Governorate	Local units of the markazs and cities
Enhancing service operation and management and solid wastes utilities	Governorate	Local units of the markazs and cities
Developing hazardous medical wastes system	Health & Housing Dept.	Local units of the markazs and cities
Training and increasing the awareness of personnel in the solid wastes field and supplying them with sufficient occupational protection and safety methods	Local units of the markazs and cities	EAA
Increasing environmental awareness among the citizens	EAA	Local Radio Information Center
Enhancing institutional organization and personnel capacity building	Governorate	Local units of the markazs and cities
Fourth : protection of natural resources and facing the danger of expanding sand dunes		
Considering the current situation and laying down an integrated system for controlling the expansion of sand dunes towards agricultural and urban areas, transport and transportation roads	Governorate Environment Affairs	Research agencies
Considering the current status of the most vulnerable urban communities to the risk of expanding sand dunes and finding the most suitable solutions to save them, in order to	Governorate Environment Affairs	Research agencies

maintain social and economic stability of the citizens		
Considering the implementation of long term programs aimed at using sanitary drainage water to stabilize sand dunes and build green belts around the vulnerable areas and urban communities	Governorate Environment Affairs	Research agencies

Main goals	Main implementing agencies	Supporting agencies
Conserving ecological diversity	Governorate Environment Affairs	EAA
Considering the ideal use of available land and mineral resources	Governorate Environment Affairs	Research agencies
Fifth : information, training and environment awareness		
Increasing environment awareness between the population all over the governorate	Environment Affairs Education Youths & Sports	Local radio Education Youths & sports
Increasing environmental awareness in the schools and youths centers	Education Youths & Sports	Environment Affairs
Promoting the New Valley as an environment friendly area free of all environmental pollutions	Governorate	Tourism Activation Agency

The cultural and civilized heritage and the most significant of the tourism monuments



Funding and implementing the plan

10.1 Administrative agencies

The proposed works for the environment action plan has considered the offering of practicable solutions. However, the limitation of financial resources is considered a barrier in the face of achieving the required improvements, while the five priority issues which have been defined require fast interventions:

- Enhancing sanitary drainage services
- Enhancing potable water services
- Controlling the risks of sand dunes and exploiting available natural resources
- Increasing environmental awareness

After completing the preparation of the plan, the governorate should contact the departments and agencies concerned in charge of handling the above priority issues. However, these agencies should be assisted to integrate the parts related to the environmental action plan in the governorate in their practical plans and determination of the implementation costs.

The detailed implementation plans shall gratify the proper use of currently available budgets and determine the priorities which require additional resources in order to fulfill the environmental action plan of the governorate. Under the framework of the implementation plan, the priorities of activities under each component should be defined. For example, it may be necessary to decide prioritizing basic government services in the most deprived areas or boost works for attracting environmental friendly investments.

Further, the governorate should determine from the beginning a number of measurable indicators to determine the progress in the governorate environment action plan activities. Also, the departments and companies should be encouraged to lay down administrative and individual goals. This will assist reaching more efficiency and constructive exploitation of the limited resources in order to give more useful effects and advanced environmental performance.

The implementation of the governorate action plan priorities will act to mobilize the resources within Ismailia governorate on all levels, starting with the governorate, then the communities, community development societies and private societies. The environment action plan will provide a clear framework through which funds are directed to priority issues. The government environment action plan should be submitted to the main

concerned ministries, donor agencies and national organizations, with their clear framework in the of a constructive and objective plan to instigate support on part of these organizations to the efforts of the environment department in the governorate. Promotion and winning constant support on the highest levels may assist in opening the field for additional funding to implement the governorate action plan.

In order to support the private sector's role, the governorate should lay down a legal and economic framework to promote the participation of the private sector and investment in supplying and connecting environmental utilities services. This will reduce the financial and administrative burden on the governorate and enhance the quality, coverage and connection of environmental services.

10.2 Finance institutions and foreign donor agencies

A number of finance institutions work in the New Valley Governorate, the funding of which may be used in the implementation of a number of the environmental action plan priorities.

10.3 Finance institutions local donor agencies

The effective participation of the government in the process of preparing the governorate environment action plan is considered a basic factor for reaffirming its ownership. For this purpose, government representatives participated extensively in the taskforces to prepare the environment profile of the New Valley Governorate and determine priorities of the governorate action plan. To support the governorate action plan on the strategic level, the governorate formed the higher environmental committee which assumes the responsibility of implementing the governorate environment action plan and periodical revision of the liabilities of the current plan.

10.4 Private sector

The private sector plays a significant role in assisting the implementation of the environment action plan in the New Valley Governorate. Development of this role is essential and connected with other concerned stakeholders especially the governorate. The governorate should determine the various methods through which the private sector may participate and how to encourage such participation. This may include for example : increasing the private sector's role in offering environmental services (such as the development of waste collection and disposal, water supply or sanitary treatment), building more constructive partnerships between the governorate environment affairs department, industrial sectors and investors to handle the compliance issues with the implementation of the environmental impact assessment and inspecting factories and promoting and supporting the private sector companies' liability to implement sound environmental systems or practices.

10.5 Private societies

The New Valley Governorate has a number of private societies for community development operating in the environment field. Through their programs, they aim at enhancing the environmental situation in the governorate. Over the past years, CDAs were able to attract a number of external finance through the support of donor agencies and local donations in order to conduct a number of significant environmental initiatives. Private societies will have a significant role in executing the environmental action plan through initiatives with the international and local donor agencies.

11. Contribution in influencing national and international issues

Undoubtedly, the implementation of the said environmental priorities which were included as part of the environmental action plan in the government will lead to enhancing the environmental status on the national level. Most of the said problems come as part of the work priorities on the national level. Further, the environmental action plan shall address the said priority issues in the national environmental action plan issued in 1992. This environmental improvement, expected to agree with the international agenda, will result in improving the quality of life for the citizens, especially issues of reducing industrial pollution. The procedures set forth under the plan will also contribute in fulfilling Egypt's obligations according to international protocols, especially the agenda of the 21st century issued by "Rio" conference and the millennium objectives.

12. Plan assessment and implementation follow up

12.1 Follow up of activities

The environmental action plan was designed in such a manner which permits periodical measuring and follows up of the development in priority activities agreed upon. The activities related to priority environmental issues were defined and the goals laid down, through which the success of these activities is measured. Therefore, it is necessary to design a simple and efficient follow up system to assist in measuring the development related to activities. The follow up results are presented to the governorate executive council in place of the Environmental Higher Committee. Further, the council undertakes updating environmental action plan issues in view of the changes which happen on the priorities with the lapse of time.

12.2 Annual assessment

A report should be prepared on the “environmental status” and refer it to the higher committee annually, provided it includes a summary of the following:

- Achievements related to the activities agreed upon (implementation)
- Environmental improvement as a direct result to achieve the environmental action plan
- Areas in need of a bigger concern of the poor performance or hurdles
- Necessary changes recommended as a result of changing priorities or environmental conditions.

The “environmental action plan” coordinator at the EAA in the governorate should coordinate to prepare this report, in coordination with the environmental units and environmental liaison representatives working in the governorate. Further, private societies, the private sector and public leaderships should participate in the assessment process.

12.3 Execution evaluation

The environmental action plan should be characterized by efficiency and flexibility to ensure its sustainability. Further, the policies, targets and works set forth under the plan should be updated, with continued consultations with the concerned parties in order for the local changing conditions to be reflected in the plan. In addition, reports measuring work progress should be documented in the lessons learned during the constant plan cycle, whereby improvements are introduced on future actions.

In the environmental action plan role, the following should be taken into consideration:

- Preparing and updating detailed execution plans (3- years) and the required budget for priority activities annually.
- Follow up and assessment of achievements and execution performance.
- Assessment of execution difficulties and determining alternative methods for execution of goals.
- Continuation of consultations with the primary and secondary stakeholders, crystallizing their opinions and their support of the next environmental plans.
- Determining the new necessary activities as a result of change of conditions (such as new laws and/or criteria)
- Continuous attempts to attract foreign investments whether governmental, from the private sector or donor agencies.
- Keeping abreast of the technological development which may contribute in offering feasible and efficient solutions to the environmental problems.
- Responding with the changing requirements concerned with institutional support and capacity building.

13. Conclusion

All major stakeholders participated in preparing the environmental action plan to agree on the following:

- Priority issues
- Essential activities and procedures which should be taken at the level of the governorate and markazs by the government sector, industrial and private sector, in addition to a number of local societies operating in the community development
- Basic requirements for institutional support to all the main stakeholders
- General awareness and necessary training programs
- Leadership and main stakeholders tasks
- Need to lay down precise budgets for the developments agreed upon
- Necessary follow up and constant environmental planning

The following table illustrates the desired benefits from the implementation of the environmental action plan, as well as quality benefits which primary and secondary stakeholders strive to achieve:

Desired benefits from the implementation of the environmental action plan:

Benefits
• Enhancing health/ reducing mortality rate • Better standard of training and expertise for EAA employees • Deepening the residents' feels of acquisition / cleanliness of streets • Controlling the hazards resulting from environmental risks • Receiving training on environmental topics in a better manner • Expanding the participation of the people • Providing opportunities to increase profits • Providing better employment opportunities • Increasing funding opportunities from donor agencies • Increasing the opportunities to recover cost of infrastructure and environmental services • Expanding the scope of transferring technology • Supply of enhanced and safe irrigation water • Improving the drainage of agricultural lands and maintaining the soil

14. Annexes

Annex 1 – List of participants in preparing the environmental action plan

No.	Group	Name	Employer
1	Solid wastes management	Mr. Adel Thabet	Health & Population Dept.
2		Engineer Adel Abdulrahman Agami	Agriculture Dept.
3		Mr. Hassan Mahmood	Assurance Dept.
4		Engineer Ahmad Abdulaziz Hasouba	Kharga City Council
5		Engineer Hatem Abdulradi Mohammed	EAA
6	Potable Water & Sanitary Drainage	Engineer Abdugawad Al Mokadem	Irrigation Dept.
7		Engineer Emad Sefeem Tadros	Agricultural Drainage Dept
8		Engineer Mohammed Abdulal	Kharga City Council
9		Engineer Nabila Hassan Sayed	Kharga City Council
10		Engineer Abdulhakam Ahmad Gebali	Social Development Fund
11		Engineer Mohammed Mohammed Atito	EAA
12	Sand dunes and protection of natural resources	Engineer Adel Abdulrahim Agami	Agriculture Dept
13		Engineer Abdulgawad Al Mokadem	Irrigation Dept
14		Dr. Mohsen Abdulwahab	Agricultural Research Center
15		Engineer Abdulkhalek Orabi	Quarries Dept.
16		Engineer Mohammed Ragab Abdulsamad	EAA
17	Environmental awareness and capacity building	Mr. Ali Ahmad Ismail	Education Dept.
18		Mr. Ridda Hassan	Youths & Sports Dept
19		Mr. Rabi Ahmad Hassan	Nile Information Center
20		Mr. Ahmad Nafea	Local Radio
21		Engineer Lutfi Ali	EAA

**New
Valley Governorate
EMU**



State Ministry of Environment

EEAA



Annexes

Participants in developing the Environmental Action Plan

Governorate EMU participated in developing the Environmental action Plan and was represented by the following names:

- 1- Mohamed Mohamed Ateto.
- 2- Mustafa lotfi Aly.
- 3- Mohamed Ragab Abdul Samad.
- 4- Hatem Abdul Radi Mohamed.

Under the supervision of Engineer/ Adel Ahmaed Nafd, EMU General Manager

The following working groups also participated:

First group: Solid Wastes:

- | | |
|---------------------------------------|----------------------------------|
| 1- Mr. Adel Thabet | Manager of Health and Population |
| Department. | |
| 2- Engineer/ Adel Abdul Rahiem Agami | Agriculture Department |
| 3- Mr. Hassan Mahamoud | Solidarity Department |
| 4- Engineer/ Ahmed Abdul Aziz Hassona | City Council of Khaja |

Second group: Potable Water and Sanitary Drainage:

- | | |
|---|----------------------------------|
| 1- Engineer/ Abdul Gawad Al Mokadem | General Department of Irrigation |
| 2- Engineer/ Emad Sifin Tadres | General Department of |
| Agriculture Drainage | |
| 3- Engineer/ Mohamed Abdul Al | City Council of Kharja |
| 4- Engineer/ Nabila Hassan Sayed | City Council of Kharja |
| 5- Engineer/ Abdul Hakeem Ahmed Gibally | SFD |

Third group: Sand dunes and protecting natural resources:

- | | |
|--------------------------------------|----------------------------------|
| 1- Engineer/ Adel Abdul Rahiem Agami | Agriculture Department |
| 2- Engineer/ Abdul Gawad Al Mokadem | General Department of Irrigation |
| 3- Dr. Mohsen Abdul Wahab | Agriculture Research Center |
| 4- Engineer/ Abdul Khalik Orabi | Manager of Quarry Department |

Fourth group: Environmental Awareness and Capacity Building:

- | | |
|----------------------------|-----------------------------|
| 1- Mr. Aly Ahmed Ismail | Education Department |
| 2- Mr. Rabi'e Ahmed Hassan | Nile Center for Information |
| 3- Mr. Ahmed Nafi'e | Local Radio |

Under the supervision of:

- | | |
|---|-----------------------------|
| 1- General Engineer/ Mohamed Fathi el-Shahawi | |
| Governorate Secretary General | |
| 2- Mr. Youssef Mohamed Fanousi | Assistant Secretary General |

ESP, DANIDA:

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

All under general supervision of:

Dr. Mawaheb Abu El Azem
CEO, EEAA