Regional Solid Waste Management Project
in Mashreq and Maghreb Countries

Country Report
on Solid Waste Management

Egypt

Prepared in collaboration with the International Consortium (ERM/GTZ/GKW)
& the Regional Management Group-ANPE

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COUNTRY REPORT - EGYPT

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IN MASHREQ AND MAGHREB COUNTRIES

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0. EXECUTIVE SUMMARY

Egypt generated an estimated 15.3 million tonnes of municipal solid waste in 2001, growing at an estimated 3.4 percent per year. Municipal solid wastes have been inadequately managed for many years in the country. Waste collection systems have left large areas (up to 70 percent in some cases) of towns and cities unserviced or under-serviced. The majority of collected waste dumped in facilities lacking any effective controls. Composting, although widespread, has generally not been effectively implemented; important recycling activities are undertaken in at least some cities (particularly Cairo). An estimated 9.7 million tonnes of waste dumped alongside watercourses or in/adjacent to communities requires removal to appropriate waste management facilities, or proper management in situ. Hazardous wastes may be inappropriately managed with non-hazardous municipal wastes.

Egypt has adopted a National Strategy for Integrated Municipal Solid Waste Management (2000) through which to develop and implement enhanced solid waste management systems. A central objective of this strategy is the phased privatisation of waste management services. Central government will facilitate implementation of the strategy, and Egyptian Environmental Affairs Agency will be responsible for environmental standards and procedures. New cost recovery initiatives have been introduced to provide a revenue stream in support of privatization. Solid waste management privatisation is operational in Alexandria and will be operational in Cairo, Giza, Aswan and Suez in 2003. The time frame over which continuing privatisation of the sector might occur is highly uncertain, however. The privatisation process has stalled as a result of administrative and management issues, and is taking longer to complete among priority governorates than initially intended.

PSP contracts signed and operational before the end of 2003 will result in private sector solid waste management service provided to approximately 25 percent of the population of the country at an annual contract cost of LE 277 million (approximately $US 46 million), equivalent to approximately LE 72/tonne (approximately $US 12/tonne). These costs suggest that an indicative solid waste management budget for delivery of equivalent local level waste management services within urban communities might be in the order of LE 600 - 650 million ($US 100 - 108 million).

Accordingly, it is likely that initial implementation of the National Strategy for Integrated Municipal Solid Waste Management can be achieved within the GOE preliminary estimate of LE 1000 million ($US 167 million) in annual costs. However, declines in the value of the Egyptian Pound against international currencies, rapidly rising waste generation rates, and the need for a wider diversity of waste management facilities (particularly in support of recycling and composting activities and environmentally sound disposal of waste) in accordance with the National Waste Management Strategy are likely to introduce future cost structures whose rates of increase exceed that of overall inflation.

Although privatisation is a core component of the National Strategy, it is only one of five "policy directives" and substantive action has not been yet taken on the remaining four of these: (i) strengthened supportive capacity of central government; (ii) application of the polluter pay principle; (iii) application of the principle of attaching an economic value to wastes as being recoverable resources; and (iv) enhanced public awareness and community participation in waste management systems. The current impact of the privatisation initiative has been to enhance the "public cleansing" function of a solid waste management system where privatisation has been introduced, but it has not addressed the need to link waste management to the wider economy or the environment that are at the heart of ISWM (see METAP Regional Solid Waste Management Project ISWM Regional Guidelines).

Until ISWM approaches are introduced, waste generation will continue to grow in an essentially uncontrolled and uncontrollable manner in Egypt. Costs will rise. The extent to which human health and environmental impacts will be felt will be a function of the willingness of GOE to introduce and enforce adequate environmental standards, which will themselves force costs higher. The country will face a cycle of rising costs to address ever increasing quantities of waste and will have limited or no ability to correct the situation.

The evolution of existing waste management systems from a "public cleansing" orientation to an ISWM orientation will require investment in the four areas of the National Strategy that have not been substantively implemented to date. This will bring multiple benefits: (i) mechanisms for reducing waste generation will be introduced, which over time can impact the cycle of more waste/more cost; (ii) economic benefits at the national and local levels associated with the increased recovery and utilisation of resources will occur; (iii) smaller waste disposal sites will last longer; and (iv) the environmental and economic liability posed by waste disposal sites will be reduced.

Achieving the benefits of ISWM systems will require investment in waste management system planning, infrastructure and capacity building beyond what is presently being undertaken. The extent of required investment has not been quantified. However, regional and broader international experience suggests that while the introduction of ISWM systems requires new and significant capital expenditures, the net per tonne cost of managing solid wastes need not increase commensurately as compared to the environmentally appropriate waste disposal systems that characterise "public cleansing" types of waste management system, and in some instances can be less.

1. INTRODUCTION

Solid waste management is an important environmental and economic priority in all the beneficiary countries[1] of the METAP Regional Solid Waste Management Project (RSWMP). The project has been established in order to assist the countries in catalysing appropriate responses to the challenge of effectively managing solid wastes.

The overall objective of the RSWMP is to promote the adoption of sustainable integrated waste management practices in METAP beneficiary countries. More specifically the project aims to assist target countries in:

- Designing, developing and implementing the main elements of Integrated Solid Waste Management (ISWM) systems;
- Promoting the exchange of information and experiences in the region in support of the enhanced application of ISWM; and
- Laying the groundwork and building the necessary foundation for increased investment in the sector, for example from the World Bank, European Investment Bank and/or private sector.

In order to achieve these objectives, the project is structured to give effect to local solutions within the context of a regional initiative.
The World Bank, with a European Union Fund, engaged the International Consortium GTZ-ERM-GKW for carrying out the Integrated Solid Waste Management Project.

For all tasks to be carried out within the project, the good knowledge of the existing situation in each of the countries is indispensable. Within the inception phase country visits have been undertaken in order to present the project, analyse the existing situation and meet with all stakeholders in the countries.

The current report is gathering the results of the review of the existing situation, prepared by the International Consortium with the support of its local Consultant, Tarek Genena from EcoConServ-Egypt.

[1] The beneficiaries of the METAP RSWMP project are Algeria, Egypt, Jordan, Lebanon, Morocco, Palestinian Authority, Syria and Tunisia.

2. ENVIRONMENTAL, SOCIO-ECONOMIC AND WASTE MANAGEMENT OVERVIEW

2.1 ENVIRONMENTAL AND SOCIO-ECONOMIC OVERVIEW

Egypt is a country of 1.0 million km^2 located along, and inland from, the southeast Mediterranean and the Red Sea. An arid climate gives rise to desert that covers over 95 percent of the country.; however, the Mediterranean coast experiences a cool and wet period during the winter months. The Nile river traverses the country from south to north, and is the major source of surface freshwater in the country.

Table 1: Key Sector Data

Population	64 million	
GDP per Capita	$US 1,515	
Municipal Solid Waste (MSW) Generated	14.9 million tons (2000)	
Accumulated Solid Waste	9.7 million tons	
Material Composition of MSW	Food Wastes	60%
	Paper/Paperboard	10%
	Plastic	12%
	Glass	3%
	Metal	2%
	Other	13%
Waste by Type (millions of tonnes generated per year - 2000)	MSW: 14.9 Agricultural: 16.5 Construction/Demolition: 4.0 Industrial: 6.2(of which 0.3 million tons hazardous) Healthcare: 0.13 million tons Clearing of waterways: 29.4 Wastewater treatment sludge: 2.0	
Per Capita MSW Generation	Rural: 0.5 - 0.7 kg/day Urban: 0.6 - 1.0 kg/day	
MSW Collection Coverage[1]	Rural: 0 - 25% Urban: 30 - 95+%	
Management of Waste (Percent)	Composted	8
	Recycled	2
	Landfilled	2
	Open/Other Dumps	88
Public sector SWM expenditure (million) Estimated 1998 Estimated annual 2003 - 2008	 LE 32-37 ($US 6.0-6.5) LE 1,000 ($US 165)	
MSW Generation Growth	3.2 percent/year	

1. Estimated percent of population that receive regular waste collection. Privatisation of waste management has resulted in coverage in Alexandria at 95+ level; elsewhere it is below 65%.
2. Annual budget estimated to implement National Strategy for Integrated Municipal Solid Waste Management

As indicated in Table 1, Egypt has a population of 64 million people (2000), growing at 1.8 percent per year. The population is concentrated in the Nile delta and along the Nile river, with important towns and cities located along the Red Sea coast and the Suez Canal. Cairo and Alexandria account for approximately 20 million people. Rural population comprises 57 percent of the total population, and is concentrated in the delta.

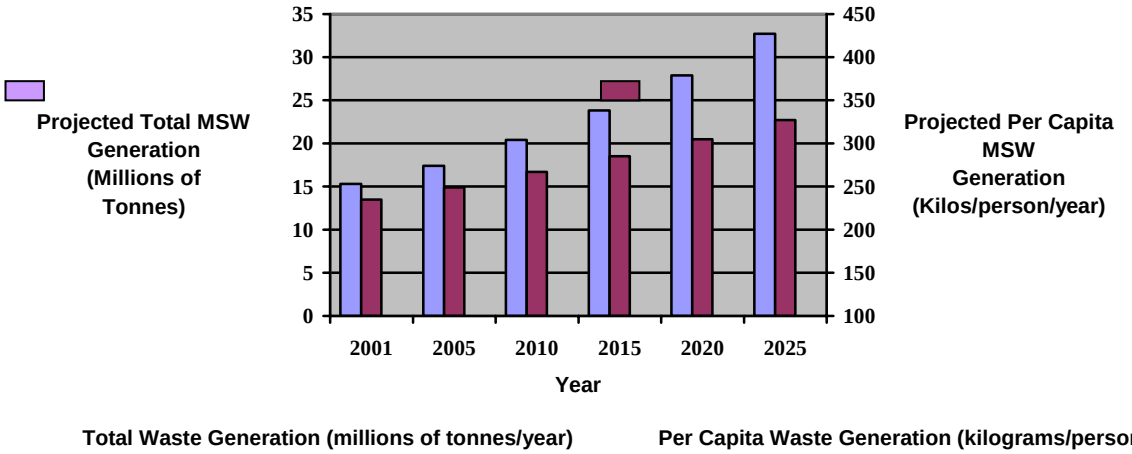
Per capita gross domestic product is $1,490, growing at about 3.3 percent per year (2001). Industrial contributions to GDP (35 percent) are double those of agriculture and services comprise about half of the value of GDP.

2.2 WASTE MANAGEMENT OVERVIEW

An estimated 14.9 million tonnes of municipal solid waste (MSW) was generated in Egypt in 2000, see Table 1. The majority of waste (60 percent) is organic waste; paper/ paperboard and plastics comprise approximately similar proportions of waste generated (12 percent and 10 percent respectively), and a wide variety of remaining materials are generated at lower proportions.

Figure 1 projects waste generation for selected years between 2001 and 2025 in the event that actions are not taken to influence the amount of waste generated. The total amount of municipal solid waste generated in this period is projected to grow from 15.1 million tonnes in 2001 to 32.7 million tonnes over this period at an average rate of growth of 3.2 percent. Growth in total waste generation is a function of population growth, economic growth and the extent to which people adopt "consumer" and "disposable" lifestyles. The data in Figure 1 identify that in the absence of actions to the contrary, the amount of waste generated on a per capita basis will grow over the 2001 - 2025 period from 235 kgs/person/year to 327 kgs/person/year. Approximately 75 percent of this quantity is generated in urban centres, a proportion that will grow as population continues to migrate to cities[1].

Figure 1:
Projected Waste Generation 2001 - 2025



Note: Projected waste generation reflects population growth and growth in waste generation per capita as the economy grows. These projections assume a "no change" scenario with respect to current rates of growth of both population and the economy.

Waste collection coverage varies. Until recently, waste collection in all cities and towns left large areas (up to 70 percent) unserviced or under-serviced. Recent privatisation initiatives (see Section 2.5) have demonstrated potential to greatly improve waste collection coverage in urban areas, however. The majority of municipal solid wastes (88 percent) are managed through land disposal in dumps, see Table 1. A small amount (8 percent) is composted. Estimates for the amount of waste recycled may in fact understate the actual importance of recycling since this activity is conducted by the "informal" sector whose activities are, by definition, difficult to quantify.

[1] Waste management data are based on estimates and limited field values obtained over the past several years. Field verification is required to confirm data estimates.

As identified in Table 1, large amounts of other types of waste are also generated in Egypt, some of which may improperly be managed in MSW systems. Hazardous waste generated in the health care sector and in the industrial sector may be particularly significant in this regard. Many years of inadequate attention to the sector have resulted in the accumulation of an estimated 9.7 million tonnes of waste (generally municipal solid wastes) that the Government of Egypt has identified as needing to be moved, or managed *in situ* in an environmentally appropriate manner.

3. CURRENT SOLID WASTE MANAGEMENT SITUATION AND FUTURE PLANS

3.1 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Egypt has not developed a formal policy statement on waste management, but has taken a number of initiatives over the past three years that establish policy direction. The key elements of policy are expressed in the National Solid Waste Management Strategy, discussed below in Section 3.3.

Table 2 summarises the major elements of legal framework for solid waste management in Egypt. As illustrated by the Table, the legal framework is comprised of many pieces of legislation. However, the two most significant pieces of legislation are Law 38 of 1967 and its subsequent amendments and Executive Regulations and Law 4 of 1994 and its Executive Regulations. Law 38 of 1967 addresses waste management specifically. Important provisions of the law include: (i) provision that local administration agencies are responsible for waste collection and disposal, and that they meet these responsibilities through licencing of waste collectors and contractors; (ii) provision for occupants of buildings to set out waste for collection; (iii) a requirement for waste collectors to obtain a licence; and (iv) provision for a levy of 2 percent of the rental value of a dwelling to be used for cleansing purposes. A penalty of LE 100 (approximately $US 20) may be imposed for violation of the law.

Law 4 of 1994 addresses the broad framework for environmental management in the country, and the framework is given effect through its Executive Regulations. With respect to waste management, the law is primarily concerned with the licensing of facilities and the application of environmental assessment. Executive Regulations have not, however, been introduced for solid waste management.

Lack of budget at the local level and lack of technically adequate waste management standards at the national level have contributed to poor waste management performance in the country for many years. A recent Cabinet decree allows for collection of a waste management fee on electricity bills. The amount of the fee is proportional to electricity use and ranges between LE 1 - 12 (approximately $US 0.20 - 2.50) per month per household. Implementation of the fee requires Governorate approval; currently the fee is collected only in the Governorate of Alexandria.

The Egyptian Environmental Affairs Agency has compiled a series of guidelines related to the effective implementation of solid waste management. These guidelines represent a good beginning in establishing a sound environmental basis for waste management activities, and additional guidelines and standards can be developed to address the environmental performance of waste management systems.

The institutional framework for waste management in Egypt provides for SWM operations to be undertaken at the local level; the Ministry for Housing, Utilities and Urban Communities participates in the selection of waste disposal sites. The Egyptian Environmental Affairs Agency (EEAA) has responsibility for ensuring the environmentally sound performance of waste management systems and facilities. The National Strategy for Integrated Municipal Solid Waste Management of 2000 (see Section 2.3) identifies that within this framework Governorates will implement the national strategy, a key component of which provides for the privatization of waste management service. Increasingly, therefore, Governorates will become managers of private sector contracts, where operations - and facilities and equipment - will be provided by the private sector monitored and managed by the Governorate and performing to environmental standards and procedures established by EEAA. Further, central government will facilitate implementation of the strategy and undertake public awareness activities. A joint

ministerial committee co-chaired by the Minister of the Environment and the Minister of Local Development has been established to coordinate government implementation of the strategy.

Implementation of this institutional framework has not been smooth, however. The ability of EEAA to play an effective oversight and regulatory role regarding landfills has been called into question by its participation in the identification of landfill site locations and by concerns regarding the ability of the agency to exercise its jurisdiction with respect to issues associated with the waste disposal site serving Alexandria. Also, the joint ministerial committee that oversees the implementation of the strategy is presently inactive.

Table 2: SWM Legal Framework

TYPE OF INSTRUMENT	NAME OF INSTRUMENT	SOLID WASTE MANAGEMENT ELEMENTS					
		WASTE TYPES ADDRESSED	FUNCTIONAL RESPONSIBILITIES ADDRESSED	WASTE MANAGEMENT SYSTEM COMPONENTS ADDRESSED	INSTITUTIONAL ROLES ADDRESSED	FINANCING AND COST RECOVERY PROVISIONS	OTHER
Environment and other Laws	**Law No. 4 for 1994** (The Environmental Law)	Domestic, municipal, hazardous waste	Policy/regulatory Enforcement/monitoring	Waste collection, treatment, disposal	EEAA (mainly) Ministry of Housing, Utilities and Urban Communities (for selecting disposal sites)		
	Law # 48 for 1982 for the Protection of the River Nile and Waterways against Pollution	Municipal, industrial waste	Policy/regulatory	Waste disposal	Ministry of Water Resources and Irrigation Ministry of Health and Population		
	Law No. 38 for 1967	Municipal, commercial, industrial, hazardous waste		Waste collection, disposal	Local Council / Ministry of Local Development	Imposes a cleanliness tax on all housing units equivalent to 2% of the rental value	
	Law 31/1976 which amended Law 38/1967	Domestic, municipal, industrial waste	Policy/regulatory Operations and types	Waste disposal			
	Law No. 31 for 1976	**Domestic, industrial waste**	Operations and types	Waste collection, transfer			
	Law 43 for 1979	**All solid waste**	Policy/regulatory, enforcement/monitoring	Waste collection, disposal			Delegates responsibility for "physical and social infrastructure" to city councils

Table 2 Cont.: SWM Legal Framework

Type of Instrument	Name of Instrument	Solid Waste Management Elements					
		Waste Types Addressed	Functional Responsibilities Addressed	Waste Management System Components Addressed	Institutional Roles Addressed	Financing and Cost Recovery Provisions	Other
Decree	**Prime Minister's Decree No. 338 for 1995**	Domestic, municipal, hazardous waste	Operations and types	Waste collection, transfer, treatment, disposal	Waste collection entities		
	Ministry of Housing Decree 134 for 1968 implements Law No. 38 for 1967	Domestic, municipal, industrial waste	Policy/regulatory operations and types	Waste disposal			
	Presidential Decree No. 284 for 1983	Domestic, municipal waste	Policy/regulatory Operations and types	Waste collection, disposal	Cairo and Giza Beautification and Cleansing Authorities		
	Cabinet Decree, 2000	All solid waste types	Policy/regulatory	Waste collection	Local Council	Collection of SWM fee on the electricity bill	
Other (Policy, Bill, draft regulation etc.)	**EEAA Guidelines** for selection sites for recycling and treatment factories	Municipal waste	Policy/regulatory	Recycling, treatment	Ministry of Housing, Local Council, EEAA		
	EEAA Guidelines for Landfill	All solid waste types	Policy/regulatory	Waste disposal	Ministry of Housing, Local Council, EEAA		

3.2 PLANNING AND INVESTMENT

Current solid waste management planning and investment activities in Egypt are identified in Table 3.

The Government of Egypt has embarked on an ambitious programme that will effectively restructure the solid waste management (SWM) sector. As a central part of giving effect to the National Strategy for Integrated Municipal Solid Waste Management (see Section 2.3) the government is encouraging the privatization of waste management services on a design-build-operate (DBO) basis. Working with the EU, the Egyptian Environmental Affairs Agency has identified 53 landfill sites around the country that are intended to be developed through privatization of waste management services. Over time, the range of investments and operations associated with ISWM systems are intended to include provision for recycling and composting of discarded materials. GOE has identified that privatization should be undertaken on a phased basis whereby initial privatization would be achieved in first priority governorates, to be followed by subsequent privatization initiatives in second and third priority governorates.

The Governorate of Alexandria is the first Governorate to have operationalised privatized SWM services, but others in Greater Cairo, Aswan and Suez have also been signed more recently. Management of waste in Alexandria (population approximately 4 million people generating approximately 2800 tonnes of waste per day) is undertaken through a 15 year contract signed with an international waste management operator that has resulted in very significant improvement in waste management services at a contract cost equivalent to approximately $US 12 - 15 per tonne, depending on seasonal rate of waste generation and exchange rates. Across the country, privatisation contracts signed and operational before the end of 2003 will result in private sector solid waste management service provided to approximately 20 percent of the population of the country at an annual contract cost of LE 277 million (approximately $US 46 million), equivalent to approximately LE 72/tonne (approximately $US 12/tonne). These costs suggest that an indicative solid waste management budget for delivery of equivalent local level waste management services within urban communities might be in the order of LE 600 - 700 million ($US 100 - 117 million).

Notwithstanding the aggressive progress made over the past three years, there remain critical SWM investment requirements in all regions of the country. Efficient waste collection and transportation equipment, and environmentally appropriate waste disposal facility development are widely required, and need to be properly integrated with existing and appropriate new composting facilities so that high quality compost can be produced and the life of waste disposal facilities can be maximised. Investment in recycling systems that are integrated with informal recycling activities is also required. GOE has taken some initial steps to encourage and create a climate for the required investments by exempting imported solid waste management equipment from import levies and duties.

Critically, investment in waste management systems is required, not simply in technology application nor simply in a private operator to "take care of the problem" but in the integration of different waste management components such that each functions efficiently and effectively with respect to others.

Notwithstanding the present focus on the injection of foreign capital and operations in support of enhanced solid waste management in the country, the city of Q'ena stands as an example of local level actions that can have highly positive results based on local

resources. As part of a beautification initiative, local planning and subsequent actions supported by the Governor have resulted in major improvements in waste collection using only local resources.

Table 3: Solid Waste Management Planning and Investment Programmes

PLANNED INVESTMENTS		
INSTITUTIONAL LEVEL	**ACTION**	**PROJECTED INVESTMENT REQUIREMENT**
National	Municipal solid waste management program (Ministry of Local Development – Governorates – EEAA)	LE 145 million as capital investment and LE 856 million annual operating costs
	Agriculture waste management program (Ministry of Agriculture and Land Reclamation)	LE 25 million as capital investment and LE 25 million annual operating costs
Governorate	Integrated Solid Waste Management Project for First Priority Governorates[2]	LE 543 million projected as annual operating cost
	Integrated Solid Waste Management Project for Second Priority Governorates[3]	LE 145 million projected as annual operating cost
	Integrated Solid Waste Management Project for Third Priority Governorates[4]	LE 96 million projected as annual operating cost
INVESTMENT COMMITMENTS		
SECTOR/LOCALITY	**PROJECT**	**INVESTMENT COMMITMENT**
Health Care/ National	Healthcare waste management program (Ministry of Health and Population)	LE 330 million as capital investment Start Date: January 2003 Duration: 36 months
MSW/Cairo	Integrated Solid Waste Management Project for Cairo East District	Annual contract value at start of service: LE 59.5 million Start Date: 2003 – Duration of Contract: 15 years
MSW/Cairo	Integrated Solid Waste Management Project for Cairo North District	Annual contract value at start of service: LE 52 million Start Date: 2003 – Duration of Contract: 15 years
MSW/Giza	Integrated Solid Waste Management Project for Giza Urban District I	Annual contract value at start of service: LE 36 million Start Date: 2003 – Duration of Contract: 15 years
MSW/Giza	Integrated Solid Waste Management Project for Giza Urban District II	Annual contract value at start of service: LE 44.9 million Start Date: 2003 – Duration of Contract: 15 years
MSW/Alexandria	Integrated Solid Waste Management Project - Alexandria	Annual contract value at start of service: LE 85 million Start Date: 2002 – Duration of Contract: 15 years
MSW/Aswan	Integrated Solid Waste Management Project - Aswan	Annual contract value at start of service: LE 9 million Start Date: 2003 – Duration of Contract: 15 years
MSW/Seuz	Integrated Solid Waste Management Project - Suez	Annual contract value at start of service: LE 9 million Start Date: 2003 – Duration of Contract: 15 years

[2] The first priority (11) governorates and cities include: Cairo, Alexandria, Giza, Qualoubiya, Gharbaya, Menofeya, Aswan, South Sinai, Hurghada, Fayoum, and Luxor.
[3] The second priority (8) governorates include: North Sinai, Suez, Dakahleya, Port Said, Sharkeya, El-Behira, Wadi El-Gadid, and Mersa-Matrouh.
[4] The third priority (8) governorates include: Ismailia – Damietta- Kafr El-Sheikh – Beni Suef – Minia – Assuit – Sohag - Qena

3.3 STRATEGIES AND PRIORITIES

GOE adopted a National Strategy for Integrated Municipal Solid Waste Management in December 2000. This strategy is structured around 5 "policy directives" that address:

- Strengthened supportive capacity of central government.
- The "delegation" of solid waste management to the private sector
- Application of the polluter pay principle.
- Application of the principle of attaching an economic value to wastes as being recoverable resources.
- Enhanced public awareness and community participation in waste management systems.

More specifically, the strategy adopts the following, among other important initiatives:

With respect to policy and planning:

- Effective national integrated municipal solid waste management will be based on upgraded national legislation, regulations, standards, guidelines, institutional and physical infrastructure while creating the needed enabling environment and necessary resources.
- The Central Government will be the facilitator for the establishment and implementation of the National Strategy.
- Central government will set up general policies, guidelines, performance benchmarks and indicators and bases for contracting and licensing/ permitting, best practices and periodic review of all these to amend as needed, enact legislation and provide for its enforcement.
- Implementation of the national strategy will be the responsibility of the Governorates.
- Local government (governorates) are fully responsible for all SWM activities in various localities under their jurisdiction. This responsibility can be presumed through their own infrastructure or indirectly by private sector contracting.

With respect to cost recovery and financing:

By 2010, 100 percent cost recovery to be achieved; 0.35 of GDP[5] to be allocated to solid waste management.

- The "polluter pays principle" and full cost recovery is to be applied as being essential for private sector entrance and system sustainability.
- Central government will establish institutional cost recovery mechanisms (as with electricity bills, taxes, incentives and penalties) and ensure that recovered costs are fully dedicated to the SWM system itself…and…allocate budgetary financial resources.
- Two basic cost recovery principles apply: polluter pay and user pay, and the fair cost burden distribution among the masses taking into account the socio-economic realities or the served community.

[5] This percentage would correspond to an amount of approximately LE 1.9 billion ($US 315 million) based on GDP in 2002.

With respect to private sector participation:

- Operations of integrated solid waste management systems shall primarily be in the hands of Governorates/local government either by direct ownership/operation or through contracting of services to capable private companies, or a combination of these two organizational approaches, but always under government control to safeguard public interests.
- Private sector responsibilities encompass investment (funding) and direct service provision of the various functional elements of the SWM system, provision of supporting service, local manufacture of equipment, financial support and grants as part of their joint social responsibility.
- The Social Fund for Development (SFD) and Banks are to provide financial support, particularly the SFD for job opportunities through small and micro-enterprises.

With respect to community participation:

- Central government and governorate planning shall be integrated and shall foster a "Government-Public-Private-Community Partnership".
- The public shall be fully involved in and made aware of all steps of the planning, development and implementation of the strategy.
- Central government will "undertake enhancing measures for…public awareness, education and training, information…".
- Non-Governmental Organisations are identified to have a prominent role in communicating with the public and…in raising public awareness through educational campaigns, training and demonstration projects.

With respect to functional waste management objectives:

- In 10 years (i.e. by 2010): to collect 70% of waste generated in small villages and 99 percent of waste generated in large cities; landfill 90% of waste to be disposed of; 50% of waste generated to be composted, 20% of waste to be recycled; 50 % of waste to be source separated.
- Central government will enable the various system components to function properly (i.e. build, support, and develop their internal capacities…).

Table 4 identifies specific initiatives that have been taken to date to implement the National Solid Waste Management Strategy, or which give effect to its implementation.

Table 4: Strategies and Priorities

WASTE MANAGEMENT ELEMENT	NATURE OF STRATEGY/ PRIORITY	ARTICULATION OF STRATEGY/PRIORITY
Policy/Institutional	Introduction of economic incentives for the MSW management services. This included a tax break for at least 5 years as well as exemption of the equipment used in waste management services from custom duties.	Ministerial Decree
Finance/Cost Recovery	The Cabinet of Ministers had issued a decree allowing the collection of solid waste management fee on the electricity bill.	Ministerial Decree
Private Sector Participation	The Government of Egypt (GOE) issued international tenders to privatize solid waste services in a number of priority governorates The establishment of a ministerial SWM committee to facilitate and follow-up on the privatization efforts of the different governorates.	Ministerial Decree
Community	The number of non-governmental organizations working in the protection of the environment and particularly in the field of solid waste management is increasing rapidly in Egypt. The involvement of the community is mainly in recycling of municipal solid waste and manufacturing of simple products out of the waste stream. As the municipalities tend to provide the waste management service for the unserved areas, the involvement of the Zabbaleen system is increasing through the increase in the number of license issued by the municipality in some governorates.	Community response to the opportunity to participate in SWM gives effect to the priority for community participation expressed in the national SWM strategy
Waste Management System/Technologies	The GOE had constructed around 56 composting plants in the different governorates with future plans to reach nearly 100 composting plants in the next three years. GOE has identified 53 landfill sites, of which 41 accepted by inter-ministerial national committee, and 12 to be finalized. Sites meet minimum siting criteria established by EEAA; sites located in desert are not generally controversial; sites located in the delta may be. In principle, every Governorate will have a landfill site; in practice some will not, but are expected to negotiate use of a landfill in a neighboring governorate. Solid waste recycling is considered to be a priority in solid waste management. The Social Fund for Development is financing micro recycling projects either through 100% grant or loan with subsidized interest	Siting of facilities gives effect to need for composting expressed in national SWM strategy. Reports and recommendations of GOE in support of national SWM strategy SFD activity

3.4 FINANCING AND COST RECOVER

Financing and cost recovery are in a state of major transition in the country as the privatization of the solid waste management sector is undertaken.

Preliminary GOE estimates that the initial 5 year implementation of actions proposed in the National Strategy for Integrated Municipal Solid Waste Management would incur an investment cost of approximately LE 1.9 billion (approximately $US 300 million). This estimate has been developed indirectly based on updating data from earlier studies and

through application to Egypt of general averages that have been developed on experience

Elsewhere, rather than through a budgetting process associated with specific activities. Nonetheless, this investment is intended to meet the needs of a basket of activities over this period that include (i) legal and institutional strengthening and capacity development; (ii) public awareness activities; and (iii) the upgrading of planning and the implementation of priority physical infrastructure including development of governorate waste management plans, development of a national information system, the removal of accumulated wastes, the upgrading/implementation of new waste management facilities and implementation of demonstration programmes.

Traditionally, SWM infrastructure and equipment has been financed through central government allocation. However, the investment burden of required solid waste management infrastructure is considered beyond the capacity of government to absorb and priority is therefore being placed on private sector participation (PSP) as the primary way in which new waste management capital costs will be paid. The financing of waste management capital costs will increasingly fall to the private sector, as has already happened in Alexandria and other governorates where PSP contracts are now operational.

Operating and maintenance costs associated with the implementation of the National Strategy for Integrated Municipal Solid Waste Management over its first five years are estimated by GOE at approximately LE 1.0 billion (approximately $US 167 million) per year. Cost recovery for SWM services has traditionally been undertaken at the local level through imposition of a 2 percent levy on the rental value of housing units. As a result of rent controls, however, monies raised through this initiative have been highly inadequate for effective waste management services. Central government has now provided for a waste management levy to be added to electricity bills in proportion to the amount of electricity used in order to provide for cost recovery better matched to levels of service desired. Implementation of this initiative requires Governorate approval, and is expected to be increasingly widely adopted as privatization of the waste management sector progresses. For many years, the Zabbaleen have provided waste management services on a fee-for-service direct charge to generators, and commercial generators of waste may be required to contract for waste management services.

A number of factors suggest that the investment and operating/maintenance costs anticipated by GOE to implement the National Strategy for Integrated Municipal Solid Waste Management may be underestimated. The Egyptian Pound has undergone a depreciation against the US Dollar and other major international currencies of 40 - 50 percent since the Strategy was prepared, an important consideration given that international companies are being sought to lead the privatisation initiative. In addition, there has been a suggestion that the contract price for some of the early privatisation initiatives may not be indicative of prices over the longer term as international companies sustain low profits as the price of entry into the Egyptian marketplace. Also, it is not clear that existing contracts adequately address ISWM objectives, nor that they provide sufficient basis for private investment to achieve these objectives. As indicated in Figure 1, waste generation is increasing in Egypt and in the absence of actions to correct this will approach 50 percent greater by 2015 than currently, a trend that will necessarily entail increasing waste management costs.

3.5 PRIVATE SECTOR PARTICIPATION IN SOLID WASTE MANAGEMENT

The private sector participates in waste management in Egypt at the levels of the Zabbaleen, national private operators, international operators and non-governmental organizations.

Zabbaleen System:
The Zabbaleen community tends to serve neighborhoods that have above average income level since they are primarily interested in obtaining recyclable materials. They sort the collected waste, and recyclable materials are sold to local entrepreneurs; large amounts of organic materials are extracted and used as pig feed. They offer a door-to-door service daily or once every two days in return for monthly fees paid by the waste generator directly. The Zabbaleen are active in Greater Cairo and, to a much lesser degree, in Alexandria and a few other cities. Collectors from each area have a collection license from the local municipality for an assigned area. Collectors cannot work outside their assigned areas; however, a collector may have more than one license. The service coverage for each collection license is an assigned area usually comprising around 1000 apartments. The duration of the license is one year for collection and transportation of household waste. The monthly fee collected from households ranges between LE 1-5 per household.

Although up to 80 percent of waste recovered by the Zabbaleen is reutilized, they collect wastes from only a small percentage of the households in the communities where they are active. In Cairo, the waste management activities of the Zabbaleen account for approximately 10 percent of the waste generated in the city; However, management of these wastes as resources provides a means of survival for the estimated 40,000 - 60,000 members of the community.

Non Governmental Organizations (NGOs):
Some non governmental organizations (NGOs) also perform some limited solid waste services. However in the majority of cases, this has not been a successful experience due to institutional issues although interest by NGOs in participating in the sector continues to be significant.

National Private Operators:
In the last few years, some well organized private companies have entered the solid waste management sector, particularly in large cities. Each private operator must have a collection license or a service contract for his assigned area from the local municipality. Waste collected by private operators is delivered either to the Zabbaleen communities or directly to disposal sites. The scope of the service contract will include collection and transportation of waste generated from: household, commercial shops and workshops, streets, squares, gardens, to the main public dumpsites. The scope of the service contract could also include service for industrial establishments. The duration of a contract is typically three years. The terms of payment is based on annual payment received from the local municipalities, in addition to a monthly fee that is collected from the generator.

International Operators:
Under government plans to privatize the sector, waste management service operators will provide an integrated solid waste management service including: collection, transportation, treatment, and disposal services for municipal, health care and industrial non-hazardous waste for the whole governorate. To date, operators have been awarded contracts through competitive bidding for the following governorates: Alexandria, Cairo

(north, east, west sections) district, Giza urban districts I and II, Suez and Aswan. Contract durations range between 10-15 years

Privatisation of the sector has been delayed somewhat through the following problems that have emerged with respect to the tendering process:

- Tenders have been based on insufficient and unreliable waste generation and composition data.
- Data on available facilities and resources has not always been provided.
- Poorly defined specifications against which bidders could respond.
- Inadequate definition of financial resources available to governorates.
- Local lack of capacity for evaluating, enforcing, monitoring and inspecting private operations.
- Co-operation between contracted parties and existing small operators (e.g. Zabbaleen, NGO's) not certain.
- Inadequate provisions for foreign exchange fluctuations and inflation.
- Inadequate support from central authorities to Governorates, and inadequate capabilities to give support.

Some tenders have been cancelled as a result of these problems.

3.6 PUBLIC AWARENESS

There is a significant lack of awareness among regulated entities, NGOs, and the public about Egyptian environmental law and other waste management acts in support of solid waste management. Public participation in solid waste management activities is needed together with increased public sensitivity to environmental degradation in order to ensure that actions by government and NGOs receive appropriate recognition as models for future replication and diffusion of sound environmental practices.

Public awareness actions have been taken in support of solid waste management at the governorate level. These actions have been conducted through active NGOs and implementing agencies for solid waste management projects within these targeted areas. For example at Minia city and Fayoum governorate, the implementing NGOs and private sector firm in cooperation with the governmental entities have organized several awareness initiatives including: holding public conferences and workshops, holding do and do-not campaigns, competition among neighborhoods and schools, media and specific awareness activities (TV interviews at local channel), meeting with public figures, organizing cleanup campaigns among schools, and finally documentation and dissemination of project success to other similar projects.

3.7 CAPACITY DEVELOPMENT REQUIREMENTS

Table 5 summarises capacity development requirements in the SWM sector in Egypt.
Public sector waste management capacities are weak at all levels in Egypt, reflecting the lowly status of SWM over the years. At the management level, there have been significant problems within governorates in the tendering of contracts for privatized waste management services. The Governorate of Alexandria prepared for privatization of waste management services with the assistance of the international community for up to 2 years, and has successfully implemented a privatization agreement. Other governorates,

however, are reported to have attempted to have simply adopted the documents used in Alexandria without adequately assessing their relevance to their own circumstances, and this has led to delays and uncertainties in implementation of the privatization initiative.

Policy, legal and institutional instruments available for achieving waste management objectives are not well understood at the national and sub-national levels in the country. For many years, a primary constraint to waste management activity has been shortage of funds through which to pay for SWM services, regardless of whether these were provided through the public or private sector. Governorates are now able to adopt new cost recovery frameworks - charges on electricity bills according to extent of electricity use - but only Alexandria has so far acted on this opportunity.

A wide range of technologies have been used to manage solid waste in Egypt for many years. However, these have often been inappropriate and poorly operated, and their costs have been high; incinerators have been closed prematurely, compost has generally been of poor quality. Partly, this has been related to institutional problems (e.g. the Ministry of Local Development siting compost plants without adequately interfacing with other relevant Ministries such EEAA and Agriculture) and partly to inadequate capacity in planning, implementing and operating waste management technologies.

Mechanisms for information exchange regarding waste management are generally not available in Egypt. The internet is not commonly available and where it is, it is not clear that it is used for obtaining information about waste management.

Table 5: Capacity Development Requirements: Egypt

Types of Possible Capacity Development Requirement	Capacity Development Needs At Different Institutional Levels			
	National	Governorate	Greater Municipal	Municipal
Management PSP, Administration, Community Relations, Finance/Cost Recovery, Accounting, Project Management, HRD, Other	Finance/Cost Recovery Accounting Human Resources Development	Project Management Accounting Human Resources Development	Project Management Human Resources Development Accounting Community Relations	Project Management Human Resources Development Accounting Community Relations
Policy/Legal/Institutional Economic/Financial Instruments, Licensing/Permitting, Standard Setting, Accountability/Transparency, Penalties/Enforcement, Full Cost Accounting, Producer Responsibility, Waste Minimization/Recycling/ Composting, Institutional Roles/Responsibilities, Other	Economic/Financial Instruments Penalties/ Enforcement Standard Setting Waste Minimization/ Recycling/ Composting	Licensing/ Permitting Penalties/ Enforcement Waste Minimization/ Recycling/ Composting	Licensing/ Permitting Penalties/ Enforcement Waste Minimization/ Recycling/ Composting	Licensing/ Permitting Penalties/ Enforcement Waste Minimization/ Recycling/ Composting
Technologies Waste Minimization, Recycling, Composting, Waste Collection/ Transfer, Incineration, Waste Disposal, Other	Waste Minimization Recycling Waste Disposal	Waste Minimization Recycling Waste Disposal	Waste Minimization Recycling	Waste Minimization Recycling

Information Technology Availability of Computers, Internet Connectivity, Comfort with use of Internet, Extent of Internet Usage, Other	Availability of Computers Internet Connectivity	Availability of Computers Internet Connectivity	Availability of Computers Internet Connectivity	Availability of Computers Internet Connectivity

4. STAKEHOLDER IDENTIFICATION

Key stakeholders in the solid waste management sector are identified in Appendix A. A wide range of stakeholders are active in the sector in Egypt, and several NGOs are active in the sector because of the community development opportunities it offers, as well as the environmental issues that require addressing.

5. SOLID WASTE MANAGEMENT DONOR/LENDER ACTIVITY

Table 6 summarises international and donor activity in the SWM sector in Egypt. A wide range of international organizations and donors are participating in the sector in the country. Particular focus is currently being placed by donors on assisting and supporting GOE in its privatization initiatives.

Table 6: Solid Waste Management Donor/Lender Activity

DONOR/LENDER	NAME OF PROJECT	PROJECT START/FINISH DATES	PROJECT LOCATION	PROJECT OBJECTIVES	CONTACT PERSON, PHONE AND E-MAIL
USAID	Support for SWM activities, particularly privatisation of waste management (part of EEPP II)	Start: September 1999	SWM focus in Cairo, Qalubyia, Alexandria	Privatisation of waste management services	Ron Daniel, USAID 522-7000 Kirk Ellis,735-2195, kellis@scsengineers.com
KfW	Support for privatization of waste management services in Kafr El Sheik and/or Qena Governorates		Kafr El Sheik, Qena Governorates	Privatisation of waste management services	
GTZ	Support for privatization of waste management services			Privatization of waste management services	Hartwig Behnfeld: 079-310-943
Netherlands	ISWM in Fayoum		Fayoum	Preparation of SWM plans, support for privatization of waste management services, investment in fleet, transfer station and landfill.	
UK Dept. for International Development	Support for Environmental Assessment and Management II (SEAM II), particular focus on waste management	Start: mid-2000 Finish: 2004	Sohag, Qena, Damietta, Dakahleya	Environmental management and planning systems, poverty alleviation, community participation/ awareness	Phil Jago: 525-9648
Finland	Solid Waste Management Project		Beni-Suef	Enhancement of solid waste management facilities, provision of waste disposal site.	
European Union	Landfill identification project	ND	National	Identification of landfill sites to serve the country.	

DONOR/LENDER	NAME OF PROJECT	PROJECT START/FINISH DATES	PROJECT LOCATION	PROJECT OBJECTIVES	CONTACT PERSON, PHONE AND E-MAIL
European Union	Landfill identification project	Start: March 1999 Finish: 2002	Cairo	Recommendations for management of industrial hazardous waste generated in Greater Cairo	
European Union	Integrated Industrial Solid Waste Management	Start: May 01 Finish: 2003	6th of October City	Integrated waste management system for managing industrial solid wastes	
Italy	Egyptian-Italian Environmental Cooperation Project - Component 5: Solid Waste Management Project in El-Minya Governorate	Mid-2002 - 2004	El-Minya Governorate	Enhancement of solid waste management in El-Minya Governorate.	Marco Marchetti: 792-0271
United Nations Development Project	Mediterranean Urban Waste Management Project			Regional project based in Cairo	Lorra Thomson: 010-500-6777
Canada	Composting project	Start: 2002	North Sinai Governorate	Implementation of composting	

6. ANALYSIS, LESSONS LEARNED AND PRIORITIES FOR ACTION

6.1 ANALYSIS

For many years waste management in Egypt has been undertaken in the context of inadequate policy and legislative direction and with insufficient financing, fiscal accountability, and managerial and technical capacity. As a result, solid waste management systems in the country have not provided adequate levels of waste collection and wastes that are collected are generally "managed" in dumps.

This situation is changing rapidly, at least in the major cities, however. In 2000 GOE adopted a "National Strategy for Integrated Municipal Solid Waste Management", a document that has catalysed the following major changes in the solid waste management sector:

- Privatisation of solid waste management services on a "design-build-operate" (DBO) basis has been introduced in priority governorates.
- New cost recovery mechanisms have been introduced.
- Customs and tax exemptions have been introduced to attract sold waste management investment.
- New waste disposal sites have been identified, although these have not been developed except in Alexandria, Aswan, the Fayoum and Beni-Suef.
- Capacity development in the sector, particularly with respect to the privatisation of solid waste management services and the management of private sector solid waste management contracts, is resulting in strengthened solid waste management capacity at, particularly, the local level.

Key emphasis on achieving the goals of the National Strategy is placed on the participation of the private sector (PSP) in supplying waste management services at the governorate level. The benefits that this approach can bring have been demonstrated in Alexandria, the first governorate to operationalise a solid waste management PSP contract:

- Waste collection is effective and efficient, reaching areas that have not been adequately serviced in the past.
- Local level administrators have demonstrated their ability to effectively monitor and enforce contractual requirements.
- The presence of new waste collection equipment and uniformed staff has resulted has raised the solid waste management sector to a new level of social respectability.
- Costs are reasonable by international standards.

On the other hand serious issues have arisen regarding the environmental suitability of the landfill site serving the governorate and the extent to which EEAA has been allowed, or has had capacity, to exercise competent jurisdiction in this regard. In addition, it is not yet clear whether and how composting or recycling objectives will be achieved. Also, there is significant uncertainty around the costs involved in the privatisation: on the one hand the order of magnitude increase in annual waste management costs as compared to the costs that had previously been incurred leads some in the country to believe that inordinate levels of profit are being made at public expense, while on the other hand some analysts believe that the privatisation contractor may in fact have under-bid the contract as a way of establishing a market presence in the country favourable to winning future privatisation opportunities.

Uncertainties on these issues have combined with a series of substantive issues[6] stemming from inadequate public sector capacity to manage the tendering process that have slowed the pace of the privatisation initiative elsewhere in the country. In Greater Cairo, solid waste management services privatisation contracts have been signed in Cairo and Giza Governorates, but in Cairo inadequate attention to integrating the Zabbaleen into the privatisation initiative has slowed this process; in Qalubiya Governorate and in one of the privatisation zones in Cairo Governorate privatisation tenders have been cancelled through lack of interest on the part of the private sector, reportedly because they want to see how well existing contracts will be executed before committing additional resources. Elsewhere, lack of capacity to manage the tendering process has resulted in governorates that had planned to privatise their solid waste management sectors postponing their planned activities until they are better prepared and able to manage the process.

Addressing the capacity deficits that underlie the difficulties being experienced in the privatisation of the sector requires that two key issues be addressed: (i) realistic expectations regarding privatisation; and (ii) the role of national government.

There has been a mismatch between the expectations of public sector waste managers and the private sector regarding the privatisation process. Alexandria took 2 years to prepare for their privatisation initiative; other governorates assumed that the tender documents that were used in that process could simply be adopted for their own purposes. While those documents might have served as a model, however, other governorates have been unprepared for the amount of work necessary to prepare for and manage the tendering process, expecting instead that they could simply copy and follow the exact footprints of Alexandria. Also, the under funding and inadequate legal and institutional structure of the sector for many years has resulted in public waste managers not understanding the cost structures of modern waste management systems and services and so being unprepared for the bids submitted. This is compounded by the central presence of international contractors in the privatisation process, and suspicion that they may be over-charging for services that could, in fact, be provided through domestic contractors at lower cost.

Potentially, central government could play a forceful role in addressing these issues by assisting local entities better understand what is required to achieve a successful privatisation of the sector. Institutionally, central government is well positioned to do this, since a Ministerial Solid Waste Management Committee co-chaired by the Minister of Environment and the Minister of Local Development has been established and provides a basis for a coordinated approach to this issue; however, this Committee is presently inactive. Even if this mechanism were active central government capacities to address privatisation requirements are insufficient; additionally, the absence of Executive Regulations under Law 4 of 1994 addressing the solid waste management sector undermines both the extent to which EEAA is in fact able to execute a forceful role in this regard, and the environmental integrity and environmental appropriateness of investments in the sector. International agencies are working with priority governorates to develop enhanced capacity and so facilitate the continuing progress of the privatisation process in these governorates.

Although privatisation is a core component of the National Strategy, it is only one of five "policy directives" and substantive action has not been yet taken on the remaining four of these: (i) strengthened supportive capacity of central government; (ii) application of the polluter pay principle; (iii) application of the principle of attaching an economic value to wastes as being recoverable resources; and (iv) enhanced public awareness and

[6] These issues are specified in Section 2.5.

community participation in waste management systems. The current impact of the privatisation initiative has been to enhance the "public cleansing" function of a solid waste management system where privatisation has been introduced, but it has not addressed the need to link waste management to the wider economy or the environment that are at the heart of ISWM (see METAP Regional Solid Waste Management Project ISWM Regional Guidelines).

Until ISWM approaches are introduced, waste generation will continue to grow in an essentially uncontrolled and uncontrollable manner in Egypt. Costs will rise. The extent to which human health and environmental impacts will be felt will be a function of the willingness of GOE to introduce and enforce adequate environmental standards, which will themselves force costs higher. The country will face a cycle of rising costs to address ever increasing quantities of waste and will have limited or no ability to correct the situation.

6.2 LESSONS LEARNED

Table 7 summarises key lessons learned by Egypt in the SWM sector. The table identifies issues that have been problematic and which require resolution, as well as successes that have been achieved.

Table 7: Lessons Learned

SOLID WASTE MANAGEMENT COMPONENT	LESSON LEARNED
Policy, Legislative, Institutional	Adoption of a broad national SWM strategy at the most senior decision-making level has been an effective catalyst to enhanced SWM and has led to enhanced collaboration between government agencies in support of enhanced SWM.
Planning	Local authorities that engage in provatisation of SWM services should take the time necessary to adequately prepare for the privatisation initiaitve, failure to adequately prepare may result in delays, unmet expectations, withdrawal of the private sector from the privatisation process and high costs Local authorities (especially rural Governorates) may require external assistance to conduct the preparatory work in advance of the privatization process. There are significant opportunities for local authorities to enhance waste management services cost-effectively through commercialising existing public services
Financing and Cost Recovery	Collection of a SWM service fee on top of the electricity bill is an effective cost recovery mechanism
Private Sector Participation	Privatisation of SWM can result in rapid improvement in SWM services at affordable cost. Commercialisation of public SWM collection service can be achieved on a commercially and financially sustainable basis. Privatisation of the SWM sector should address and integrate the activities of existing informal or "semi-formal" players; failure to do this can cause important social problems.
Public Awareness and Public Participation	The environmental regulatory agency must maintain its credibility to establish standards and regulate waste management facilities if EIA is to be credible and effective
Technology Application	The informal and "semi-formal" sector are important waste management participants who make a critical contribution to SWM, and particularly to recycling Effective and sustainable SWM technology application requires appropriate technology selection, capability to manage/operate/maintain equipment, adequate cost recovery and integration into wider waste management systems The manufacture of good quality compost from solid wastes requires that non-compostable materials be removed prior to the composting process; successful separation combined with appropriate technology (e.g. Dakalaya) can produce an economically viable activity and a least-cost waste management solution.

6.3 PRIORITIES FOR ACTION

The National Strategy for Integrated Municipal Solid Waste Management provides a sound basis for identifying priorities for action consistent with ISWM principles. While considerable progress has been made towards implementing ISWM in recent years, however, progress has been uneven, both geographically within the country and in terms of the types of action that have been undertaken. Table 8 summarises progress towards, and priorities for, implementing ISWM principles in terms of policy/legal/institutional considerations, financing and cost recovery, private sector participation, public awareness/community participation and technology application.

The two major achievements in support of ISWM over the past 3 years have been the adoption of the National Strategy for Integrated Municipal Solid Waste Management and the subsequent implementation of PSP. While these actions represent good progress towards achieving ISWM in the country, much remains to be done as identified in the "Priorities for Action" identified in Table 8.

The National Strategy for Integrated Municipal Solid Waste Management provides a general frame for addressing the priorities identified in Table 8. Privatisation of the sector is identified in the Strategy as one of five "policy directives". The others are as follows, and little has been undertaken to date to implement them:

- "Central government will assume a supportive 'enabling' role". As indicated above, EEAA in particular requires an appropriate regulatory framework through which to deliver such a role and enhanced capacity to equip it with the necessary skills. This relates not only to support for privatisation, but more generally to the range of ISWM requirements.

- "The 'polluter pay' principle shall prevail. Producers will be fully responsible for their products through their whole life cycle, particularly with regard to packaging materials". This is a very important ISWM principle, in terms of both reducing waste generation/disposal and in terms of financing/cost recovery, but action has not yet been undertaken to implement this objective.

- "The concept of attaching an economic value to wastes as being recoverable resources will be fully stressed…". This has also not yet been acted upon by government, although it is implicitly addressed by the informal sector. Part of addressing this issue is to recognise that materials have negative value when they are wastes - i.e. they cost money to manage - and that management of these materials as resources may result in either creation of positive value (i.e. a net economic gain is realised) or at least a negative value that is, nonetheless, a lesser negative value than if the materials continued to be managed as waste.

"Complete involvement of public organs and the served community at large to ensure proper execution". Public awareness and community participation in waste management decision making continues to be at a low level.

The evolution of existing waste management systems from a "public cleansing" orientation to an ISWM orientation will require investment in the four areas of the National Strategy that have not been substantively implemented to date. This will bring multiple benefits: (i) mechanisms for reducing waste generation will be introduced, which over time can impact the cycle of more waste/more cost; (ii) economic benefits at the national and local levels associated with the increased recovery and utilisation of resources will occur; (iii) smaller waste disposal sites will last longer; and (iv) the environmental and economic liability posed by waste disposal sites will be reduced.

The "Priorities for Action" identified in Table 8 identify specific actions that will give effect to the National Strategy for Integrated Municipal Solid Waste Management.

Action may also be required on the financing of the National Strategy. At the time the strategy was adopted, investment costs of LE 1900 million and annual costs of LE 1000 million were projected. Since that time, the Egyptian Pound has depreciated by almost 50 percent against the $US (as an indicator of other western currencies) with the result that foreign inputs to the national waste management program will be correspondingly more expensive if paid for with local currency.

Outside the priority governorates, waste management generally continues as it has in the past and with the same constraints: inadequate legal and institutional structures and capacity resulting in inadequate financing and cost recovery which together result in poor levels of waste collection and waste disposal. In some cases, governorates have taken advantage of the new cost recovery opportunities open to them (i.e. inclusion of a waste management levy on the electricity bill) without improving service. Q'ena offers an important example, however, of how a city that is not a national waste management priority can nonetheless strengthen its local policy and institutional frameworks and in so doing deliver enhanced waste management services.

Table 8: ISWM Priorities For Action

ISWM COMPONENT	STATUS	PRIORITY FOR ACTION
Policy/Legal/ Institutional	National ISWM Strategy prepared, adopted at national level.	Legal framework incorporating policy objectives, SWM planning requirements, timeframes for action and environmental standards Application of "polluter pay" and further application of "user pay" principles Clarity regarding some national institutional functions (e.g. roles of EEAA regarding SWM EIA, Ministry of Local Development in supply of equipment) Broad capacity development at national and local levels Capacity development at managerial and technical levels
Financing/ Cost Recovery	New cost recovery mechanisms implemented at household level	Application of "polluter pay" and further application of "user pay" principles New sources of SWM infrastructure financing for governorates where DBO PSP is unlikely to be attractive
Private Sector Participation	PSP being implemented on a DBO basis in priority governorates Commercialisation of public sector SWM services demonstrated	PSP models for smaller governorates
Public Awareness/ Community Participation	Low levels of public awareness regarding SWM issues Low levels of community participation in SWM planning/ decision-making	Sensitisation of public regarding SWM issues. Creation of opportunities for public input to SWM planning/decision-making
Infrastructure	Improved collection/disposal infrastructure associated with PSP initiatives Generally weak-to-absent collection/disposal elsewhere Poor waste treatment technology selection, integration and performance Widespread recycling activity	Priority investment in local ISWM plans, and in infrastructure/ equipment to implement those plans; plans to address specifically each of storage/collection, recycling, composting and disposal of residual wastes Investments in infrastructure to include support for, or be a consequence of, satisfactory implementation of above priorities

APPENDIX A: SOLID WASTE MANAGEMENT STAKEHOLDERS

INSTITUTIONAL LEVEL	STAKEHOLDER (NAME OF ORGANIZATION)	STAKEHOLDER INTEREST IN SOLID WASTE MANAGEMENT	STAKEHOLDER CONTACT COORDINATES (NAME, ADDRESS, TELEPHONE AND FAX NUMBERS AND E-MAIL)
National	Ministry of Agriculture and Land Reclamation	• Agriculture solid waste (ASW) • Setting public policies • Setting legislation and implement it • Setting national and regional strategies and integrated action plans for ASW management • Guidelines for planning, contracting and manage the ASW • Training and HRD • Monitoring and inspection	Tel: (20-2) 337 3388 Fax: (20-2) 349 8128 E-mail: capi@idsc.gov.eg
	Ministry of Housing	• Construction and demolition waste • Setting public policies • Setting legislation and implement it • Setting national and regional strategies and integrated action plans for waste management • Training and HRD • Monitoring and inspection	Tel: (20-2) 792 1384 – 792 1385 Fax: (20-2) 795 7836 E-mail: mhuuc@idsc1.gov.eg
	Ministry of Industry	• Industrial solid waste • Setting public policies • Setting legislation and implement it • Setting national and regional strategies and integrated action plans for waste management • Training and HRD • Monitoring and inspection	Tel: (20-2) 795 7034 – 594 1167 – 594 1168 Fax: (20-2) 795 5025 E-mail: moimw@idsc.gov.eg
	Ministry of Health and Population	• Healthcare solid waste • Setting public policies • Setting legislation and implement it • Setting national and regional strategies and integrated action plans for waste management • Implementation of the System • Guidelines for planning, contracting and manage the HCW	Tel: (20-2) 794 1507 – 794 0526 – 795 7046 Fax: (20-2) 795 3966 – 795 9422 E-mail: moh@idsc.gov.eg

INSTITUTIONAL LEVEL	STAKEHOLDER (NAME OF ORGANIZATION)	STAKEHOLDER INTEREST IN SOLID WASTE MANAGEMENT	STAKEHOLDER CONTACT COORDINATES (NAME, ADDRESS, TELEPHONE AND FAX NUMBERS AND E-MAIL)
		• Training and HRD • Monitoring and inspection	
	Ministry of Local Development	• Setting national and regional strategies and integrated action plans for: Agriculture solid waste, Construction and demolition solid waste, Industrial solid waste, and Health care waste	Tel: (20-2) 349 7470 – 349 7656 Fax: (20-2) 349 7788 E-mail: mlocmng@idsc1.gov.eg
	Egyptian Environmental Affairs Agency (EEAA)	All the above	Tel: (20-2) 525 6463 – 525 6472 Fax: (20-2) 525 6461 – 524 9862 E-mail: eeaa@idsc.gov.eg
Governorate	All Governorates	• Setting national and regional strategies and integrated action plans • Implementation of the system • Training and HRD • Monitoring and Inspection	
Greater Municipal	All Greater Municipal	• Implementation of the system • Training and HRD • Monitoring and Inspection	
Municipal	All Municipal	• Implementation of the system • Training and HRD • Monitoring and Inspection	
Non-Governmental Organizations	Omar Ibn El Khatab Association for Community Development and Environment Protection	Solid waste management service	Tel: (20-3) 5023771 Fax: (20-3) 5023771
	Association of Protecting the Environment – El Mokatam	Solid waste management service	Tel: (20-2) 510 2723 Fax: (20-2) 510 0149
	Arab Office for Youth & Environment	Solid waste management service	Tel: (20-2) 516 1519 Fax: (20-2) 516 2961
	Friends of the Environment & Development Association (FEDA)	Solid waste management service	Tel: (20-2) 795 3346 Fax: (20-2) 795 7637
	Hurghada Environmental Protection & Conservation – HEPCA	Solid waste management service	Tel: (20-65) 446 674 Fax: (20-65) 445 035

INSTITUTIONAL LEVEL	STAKEHOLDER (NAME OF ORGANIZATION)	STAKEHOLDER INTEREST IN SOLID WASTE MANAGEMENT	STAKEHOLDER CONTACT COORDINATES (NAME, ADDRESS, TELEPHONE AND FAX NUMBERS AND E-MAIL)
Private Sector, Research, Consultancy Organizations	Care Services	Solid waste management (collection – transportation – recycling)	Tel: (20-2) 682 2260 Fax: (20-2) 683 0903
	Europe 2000	Solid waste management service	Tel: (20-2) 3956 647/8/9 Fax: (20-2) 3956 647/8/9
	Misr Service	Solid waste management service	Tel: (20-2) 4019 081 Fax: (20-2) 4017 100
	Attar Equipment Enterprise	Solid waste equipment	Tel: (20-2) 290 7073 Fax: (20-2) 291 4888
	Egyptian German Company for Protection of the Environment (ALBA)	Health care waste management	Tel: (20-2) 419 8520 Fax: (20-2) 414 3530
	EcoConServ Environmental Solutions	Implementation of Fayoum Solid Waste Management Project	Tel: (20-2) 735 9078 – 736 4818 Fax: (20-2) 736 5397