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published by

giz

Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Country report on the Solid Waste Management in **EGYPT**

April 2014



COUNTRY REPORT ON
THE SOLID WASTE MANAGEMENT IN

EGYPT



Published in
April 2014



This report was last updated in October 2013

Developed with the support of **Dr. Tarek Zaki** and in close cooperation
with the SWEEP-Net national coordinator **Mr. Amine Khial**

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LIST OF ABBREVIATIONS

ARFs	Advanced Recycling Fees
CD	Capacity Development
CDM	Clean Development Mechanism
CEDARE	Center for Environment and Development for the Arab Region and Europe
CO2e	Carbon Dioxide Equivalent
CTIS	Complaints Tracking Information System
EEAA	Egyptian Environmental Affairs Agency
EGP	Egyptian Pound
EGPC	Egyptian General Petroleum Corporation
EIECP	Egyptian-Italian Environmental Cooperation Project
ENCPC	Egyptian National Cleaner Production Centre
EOS	Egyptian Organization for Standardization and Quality
EPAP II	Egyptian Pollution Abatement Project
EPR	Extender Producer Responsibility
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIZ	Gesellschaft für Internationale Zusammenarbeit
HIECS	Household Income, Expenditure and Consumption Survey
ICT	Information Communication Technology
IMC	Egyptian Inter Ministerial Committee for Solid Waste Management
ISWM	Integrated and Sustainable Waste Management
ISWMS	Integrated Solid Waste Management Sector
IT	Information Technology
KfW	Kreditanstalt für Wiederaufbau
MCIT	Ministry of Communications and Information Technology
MoLD	Ministry of Local Development
MSEA	Ministry of State for Environmental Affairs
MSEs	Micro and Small Enterprises
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NGO	Non-Governmental Organisation

NHWTC	Nasreya Hazardous Waste Treatment Center
NSWMP	National Solid Waste Management Programme
PAYT	Pay-As-You-Throw
PPP	Public Private Partnership
PPSI	Private Public Sector Industry package
PSP	Private Sector Participation
RDF	Refuse Derived Fuel
3Rs	Reduce, reuse, recycle
SWDS	Solid Waste Disposal Sites
SME	Small and Medium Enterprises
SWM	Solid Waste Management
UNDP	United Nation Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and Pacific
UNIDO	United Nations Industrial Development Organization
WM	Waste Management
WEEE	Waste Electrical and Electronic Equipment
Zabaleen	Informal garbage collectors



COUNTRY PROFILE on the solid waste management situation in EGYPT

April 2014

BACKGROUND INFORMATION

Population:	84,748,160 (July, 2013)
Municipal Solid Waste (MSW) Generation:	21 million tons/year (2012)
Per Capita MSW Generation:	
- Urban areas	0.7- 1.0 kg/day (2012)
- Rural areas	0.4 - 0.5 kg/day
MSW Generation Growth:	2 %
Medical waste generation:	28,300 tons/year (2010)
Industrial waste:	6,000,000 tons/year
Hazardous waste:	260,000 - 500,000 tons/year (2009, 2011)
Agricultural waste:	30,000,000 tons/year(2012)
C&D Waste:	4,000,000 tons/year (2012)
Waste Tyres:	N/A tons/year
e-Waste:	N/A tons/year
Packaging Waste:	N/A tons/year

TECHNICAL PERFORMANCE

Municipal Waste

MSW Collection Coverage:	
- Rural areas	0 - 30 %
- Urban areas	50 - 65%
MSW Final Destination:	
- Composted	7 %
- Recycled	10 - 15%
- Landfilled	7 %
- Openly dumped	80 - 88 %
Number of Dumpsites:	-
Number of Controlled Landfills:	-
Number of Sanitary Landfills:	
- Planned	22
- Under construction	2
- Constructed	-
- Operational	7

Hazardous and industrial waste

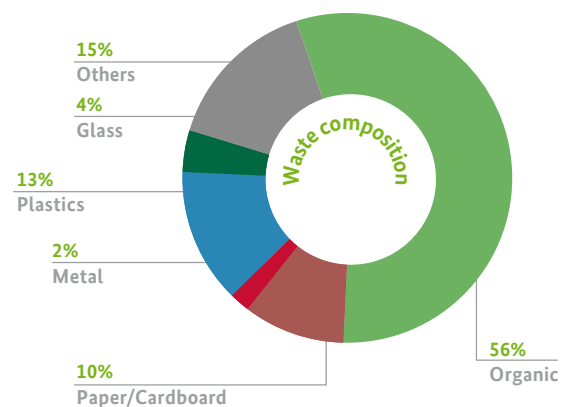
Number of hazardous landfills or plants (Chemical and physical treatment):	
- Planned	1
- Under construction	0
- Constructed	
- Operational	1
Types of disposal and treatments for medical waste:	Incineration & sterilization using shredding autoclaves

Policy and planning environment

- It was decided to establish a new “Egyptian Integrated Solid Waste Management Sector (ISWMS)”, as a separate sector, under the MSEA. The new national authority is intended to take charge of the solid waste sector in Egypt and to implement the National Solid Waste Management Programme (NSWMP). The decree to set up ISWMS is expected upon the establishment of the new Egyptian Parliament;
- The NSWMP will shortly develop a new national waste management policy;
- An updated Egyptian waste management strategy is in the process of preparation.

Legal framework

- Egypt has no SWM law;
- Up till now, law 38/1967 on General Public Cleanliness and law 4/1994 for the Protection of the Environment and their amendments are the main legislation controlling the SWM sector;
- The ISWMS will draft a new waste management legislation, and support its passage through the parliament;
- The Public Private Partnership Law 67/2010 (the PPP Law) will facilitate the development of the infrastructure of the solid waste sector.



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Institutional framework

The main updates in the institutional framework are:

- The ISWMS will be established as a new sector under the umbrella of MSEA;
- The ISWMS will be responsible to develop the new policy of the sector, update the national strategy for SWM and draft the new waste management legislation; lead the investment programs in the waste sector; and support the Governorates and new housing communities;
- The NSWMP will support establishing the new policies, legislation and institutional arrangements for waste management at the national and Governorate levels, coupled with acting as an investment pipeline for implementation of sectoral projects at the regional and local levels; and
- SWM units will be established in the Governorates to handle the planning services and infrastructure, supervise the implementation and service provision.

Financial & cost recovery arrangements

- Financing the solid waste management system is still a problem, due to the inadequate and often uncertain resources available;
- In urban areas, the waste collection cost per ton is about 125 L.E. and the corresponding cost for disposal is 100 L.E./ton (1 USD = 7 L.E.);
- The revenue from the waste collection fees doesn't cover the expenses needed for a sustainable waste management system;
- The gap between the available/allocated funding and the actual requirements of the service is increasing; and
- Adapting additional economic instruments.

Private sector involvement

- The overall experience and results of private sector involvement were less than adequate;
- Since issuing the 2012 country profile, Suez Governorate terminated the contract with the private company and established a cleansing and beautification authority for handling the SWM sector, whereas the Ministry of Local Development contracted two private companies to provide the services in Dakahliya Governorate;

- Planned engagement of the informal sector within the formal sector is necessary;
- MSEA established a private sector partnership unit (PPP) to facilitate the implementation of large infrastructure projects with the private sector.

Options for improvement

- Adaption of an Integrated Sustainable Waste Management policy and preparing the corresponding master plan and strategy;
- Greening the waste sector requires the articulation of a waste management policy based on the internationally accepted waste hierarchy;
- The national policy should promote the 3Rs;
- Policy development/reform and planned engagement of the informal sector within the formal sector is essential;
- The strategy should include promotion of resource-efficiency, sustainable consumption, waste reduction and recycling, and technology-based treatment and disposal;
- Adapting a decentralized approach for SWM, especially in rural Governorates;
- The Polluter Pay Principles (PPP) should be employed for all waste generators;
- The new SWM law to be drafted should be in association with the proposed national policy on resource recovery and 3Rs, promoting waste reduction, reuse, and recycling;
- Applying the extended producer responsibility to industrial, packaging and post-consumer waste;
- Applying full cost accounting to assist decision makers to better understand constraints and benefits of their SWM systems;
- Initiating a recycling or treatment system for construction and demolition waste and wasted tyres;
- Multi-stakeholders involvement is envisaged in the formulation of the national SWM policy, strategy, preparation of legislation, etc;
- Development and implementation of public awareness and education programmes for SWM.

EXECUTIVE SUMMARY

This report is part of SWEEP-Net efforts to update the main Solid Waste Management Report of Egypt, published in July 2010, and its updated Annex, published in July 2012.

The present report focuses on the recent progress of the solid waste sector within 2013. The report contains the relevant information and data on the SWM situation in Egypt and the major developments and challenges in the period 2012/2013.

The report consists of fourteen chapters and seven related case studies of best practices. It provides detailed informations on municipal, industrial and hazardous, medical, agricultural, packaging, construction and demolition and electronic wastes, in addition to wasted tyres and oil and lubricants.

Moreover, the rules and responsibilities of the newly established Integrated Solid Waste Management Sector (ISWMS) under the Ministry of State for Environmental Affairs, and the National Solid Waste Management Programme (NSWMP) are discussed.

The NSWMP will adopt the Integrated and Sustainable Waste Management (ISWM) concept to reform the municipal solid waste sector. The waste management hierarchy, prioritizing certain waste management practices over others, will be taken into account within the preparation of the new national policy and the solid waste management law that will be drafted.

1 .INTRODUCTION

1.1. SOCIO-ECONOMIC AND POLITICAL SITUATION

Social justice and the provision of basic needs were at the top of the demands of the January, 2011 revolution in Egypt. Egyptians who took to the streets sought to topple a regime which failed to deliver on political and economic reforms and applied policies that increased poverty and inequality. Two years after the revolution, the assessment of the Egyptian government in meeting the socio-economic demands of the revolution is mixed, at best.

Over the past two decades, Egypt showed marked improvements in a number of social indices: infant mortality and malnutrition among children under five both decreased by half and life expectancy rose from 64 to 71 years¹. The economy and the living standards for the vast majority of the population improved although in an uneven manner. The Household Income, Expenditure and Consumption Survey (HIECS) for 2010/2011 showed that the poverty rate increased from 21.6% in 2008/09 to 25.2% in 2010/11. Conversely, the extreme poverty rate declined from 6.1% in 2008/09 to 4.8%. Inequality remained constant over the last 2 years, according to the Gini coefficient recorded with 31% in both 2008/09 and 2010/11. Although only a little over half of the population lives in rural areas, more than 78% of the poor and 80% of the extreme poor live there. These income disparities are reinforced by the gaps in social indicators, where virtually all health indicators and literacy rates are worse in Upper Egypt than in Lower Egypt and worse in rural areas than in urban areas. Illiteracy rates among young women in Upper Egypt are 24%, twice the rates of their male counterparts.

Egypt's economy is still suffering from a severe downturn and the government faces numerous challenges as to how to restore growth, market and investor confidence². Political and institutional uncertainty, a perception of rising insecurity and sporadic unrest continue to negatively affect economic growth. Real GDP growth slowed to just 2.2% year on year in October-December 2012/13 and investments declined to 13% of GDP in July-December 2012. The economic slowdown contributed to a rise in unemployment, which stood at 13% at end-December 2012, with 3.5 million people out of work. Foreign exchange reserves have continued to decline and are now less than 3 months of imports.

The government also needs to reconcile the need for more public spending with the objective of reducing the deficit, which rose to 11% of the GDP in FY11/12². A major challenge the government faces is managing the state budget which includes salaries for public sector and subsidies, items that account for more than half of all public expenditures. Measures to further reduce fuel subsidies planned for April 2013 have now been postponed to later this year. Ongoing political tensions have prolonged Egypt's bid to secure a \$4.8 billion loan from the International Monetary Fund (IMF). The IMF has been discussing a program of support with the government and calling for stronger fiscal adjustment, full disclosure of underlying measures and broader political support.

1- The World Bank (April, 2013), "Egypt Overview", (URL: <http://www.worldbank.org/en/country/egypt/overview>)

2- European Forum for Democracy and Solidarity, Homepage, Country Update, Egypt (<http://www.europeanforum.net/country/egypt>)

1.2. SOLID WASTE FACTS AND FIGURES

Despite the national and local efforts to tackle the solid waste management crisis in Egypt, the improper waste handling, storage, collection, treatment and disposal practices still pose serious environmental and public health risks. The major challenges facing the sector are the inadequate planning and legislation, resource constraints, institutional deficiencies and the lack of stakeholders' participation. Recently, the "Annual Report for Solid Waste Management in Egypt, 2013" studies factors contributing to the SWM systems' failure and recommendations for future perspectives as commissioned by GIZ and the newly established National Solid Waste Management Programme (NSWMP)³.

In 2012, Egypt generated 89.03 million tons of solid waste, including⁴:

- Municipal solid waste, 21 million tons;
- Agricultural waste, 30 million tons;
- Industrial waste, 6 million tons;
- Hazardous medical waste, 28,300 tons;
- Construction and demolition waste, 4 million tons;
- Waterway cleansing waste, 25 million tons; &
- Sludge, 3 million tons.

A major challenge with regards to the management of municipal solid waste is the lack of adequate collection equipment⁵. According to the Ministry of Environment, this is a result of both the poor maintenance and the lack of resources to increase and modernize collection and treatment equipment. Building capacities to better understand the functioning of equipment as well as to develop technical guidelines will need to go hand in hand with securing sufficient funds to manage municipal solid waste in an adequate manner.

Integration of the informal sector in the formal public and private waste management sector, putting in place economic instruments, such as public-private partnerships, and strengthening human resources will be fundamental in the more effective implementation and enforcement of the existing policies. Improving the coordination among governmental entities responsible for regulating and operating MSW management is also required. Raising awareness in the population about the benefits of at-source waste separation will have a crucial role in complementing the efforts undertaken at governmental and company level.

The waste sector produces greenhouse gas emissions from solid waste disposal sites (SWDS), wastewater handling and waste incineration⁶.

Figure 1 presents the amounts and relative shares of emissions from different source categories in the waste sector for the year 2000. The most predominant gas produced in the sector is methane. In 2000, methane contributed to more than 99% of the total emissions of the sector, with solid waste disposal on land being the most predominant source category in the sector. In 2000, the contribution of this source category amounted to 11.694 Mt CO₂e, representing about 67% of the total GHG emissions from the sector.

3- TarekZaki, Abdel GhafourKafafi, MounirBoushra and Abd El-Halim M. A. Gommaa, New center for Integrated studies of Land & Environment (NILE), "Annual Report for Solid Waste Management in Egypt, 2013", (draft), NSWMP/EEAA/GIZ

4- Waste Management Central Department, EEAA, 2012.

5- Global Partnership on Waste Management (GPWM), "Needs Assessment on Capacity Building in Waste Management: Narrative Analysis Report", UNEP, 2012.

6- Egypt Second National Communication Under the United Nations Framework Convention on Climate Change", EEAA, May 2010.

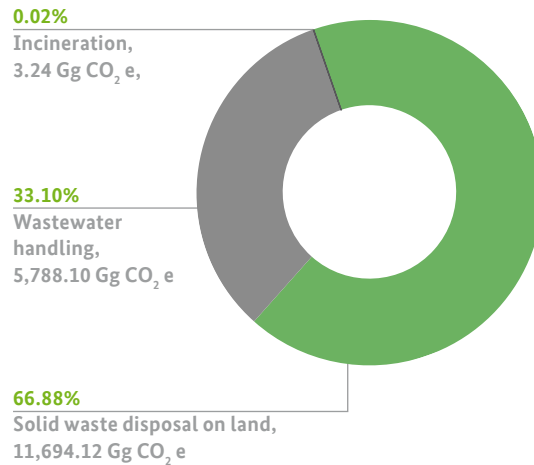


Figure 1: GHGs emissions of the waste sector, 2000

On the other hand, the report “Egypt GHG Emissions, reduction Strategy” also indicated that the total GHG emissions from the waste sector amount to 11 Mt CO₂e in the year 2005⁷. However, it is premature to interpret the constancy of the figures in the years 2000 and 2005, despite an increase in waste generation, as an indication of an improvement in waste management since it could also be a result of a discrepancy in the measurement methodology. In the future, accurate and standard measurement methods of waste generation should be adopted to obtain more consistent and comparable data.

Most of the generated municipal solid waste ends up in open, public and random dumpsites, causing a serious threat to public health and the environment. Table 1 shows the distribution of those dumpsites in the respective Governorates, along with the daily generated municipal solid waste in 2012.

Table 1: The daily generated MSW in 2012 at the governorates and the distribution of dumpsites

Governorate	Generated MSW (tons)	Number of Dumpsites		Governorate	Generated MSW (tons)	Number of Dumpsites	
		Public	Random			Public	Random
Cairo	15,000	5	12	Fayoum	720	5	7
Giza	4,500	1	7	Bani Souwaif	800	2	8
Alexandria	4,000	1	2	Menia	1,300	9	12
Kalyobiya	3,500	5	8	Assiut	700	2	8
Dakahliya	4,500	6	13	Sohag	1,100	11	13
Al Gharbiya	3,500	5	10	Qena	1,080	11	12
Monofiya	2,500	4	14	Aswan	800	5	10
Al-Beheira	3,500	14	16	Luxor	470	2	3
Kafr El-Sheikh	2,500	6	15	Red Sea	450	6	10
Sharqia	2,200	5	10	Matruh	300	8	8
Damietta	1,100	5	12	North Sinai	250	6	8
Ismailia	600	1	7	South Sinai	500	8	10
Port Said	650	1	1	New Valley	100		
Suez	400	1	3				
Total		60	130	Total		75	109

7- McKinsey & Company, “Egypt GHG Emissions, reduction Strategy”, Industrial Modernization Programme. January 2010.

2. NATIONAL MUNICIPAL SOLID WASTE MANAGEMENT POLICIES

2.1. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The legal and institutional framework of SWM in Egypt is weak and there is an urgent need for modernizing the sector. Due to the growing solid waste management crisis, the government established an Inter-Ministerial Committee (IMC) in 2009 to address the situation. The IMC involved representatives from all key Ministries playing a role in the waste management sector, and was charged with tasks including preparing a proposal for the future institutional arrangements to govern the waste management sector across Egypt⁸.

On September, 2013, a decision was made to establish a new “Integrated Solid Waste Management Sector (ISWMS)”, under the Ministry of State for Environmental Affairs (MSEA). The new national authority is intended to take charge of the solid waste sector in Egypt and to implement the National Solid Waste Management Program (NSWMP). The purpose of the NSWMP is to support the establishment of new and effective policies, legislation and institutional arrangements for waste management at the National and Governorate level in Egypt, coupled with enhanced professional capacity, and an investment pipeline for implementation of sectoral projects at the regional and local level⁹.

The objective of the NSWMP is the “protection of public health, environment and quality of the living environment for Egyptian citizens through sustainable development of waste management practices”. The NSWMP shall provide a contribution to reform the solid waste sector of Egypt and the step by step implementation of the related infrastructure. It is intended to make a significant contribution to climate change mitigation.

A national waste management policy will be developed through the NSWMP⁹. The policy will be based around the following principles:

- **Self-sufficiency:** A network of services and facilities is required to ensure that all wastes generated are properly managed;
- **Waste management hierarchy:** Certain waste management practices should be prioritized over others;
- **Proximity principle:** Waste should be managed as close as possible to the source of its generation;
- **Principle of recognition:** Waste management and recycling is an important professional sector, and major future employer of skilled, semi-skilled and unskilled workers; and
- **Polluter pays principle:** Those who manufacture products which lead to waste, and those who generate waste should be responsible for paying the costs for its appropriate management.

The institutional/organizational structures at the regional and local levels are summarized in Figure 2⁹.

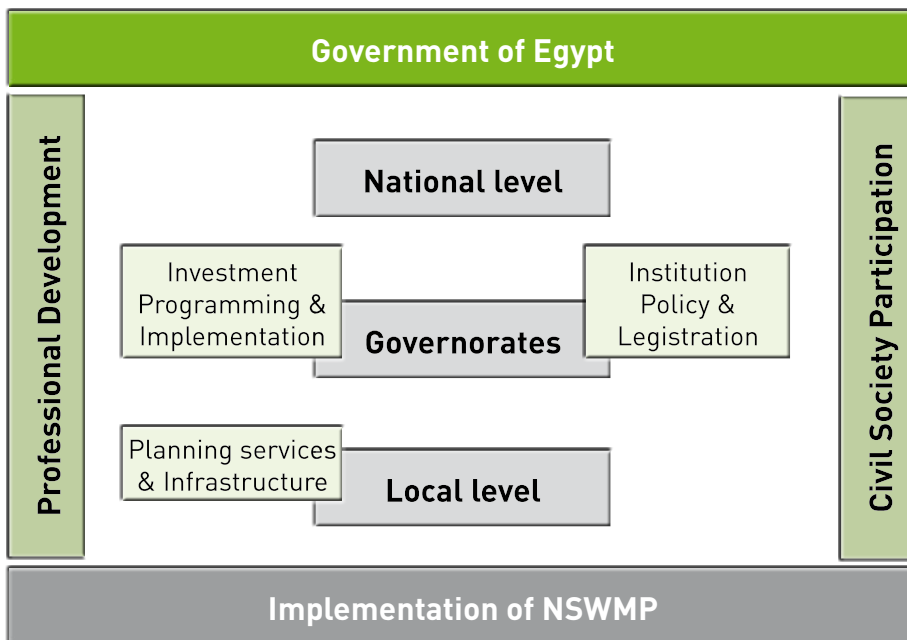
8- Environmental Resource Management and EcoConServ Environmental Solutions (December 2011), “National Solid Waste Management Programme Egypt, Final Report”, MoLD/EEAA/KfW/GIZ.

9- Ahmed Said and Joachim Stretz (2013), “National SWM programme in Egypt”, EEAA and GIZ Egypt, the Third SWEEP-Net Forum on integrated solid waste management, 14 - 16 May 2013, Cairo, Egypt.

Figure 2: Institutional/Organizational structures



Figure 3 shows the intervention levels for the implementation of the NSWMP⁹.



The Public Private Partnership Law (No.67 of 2010 the PPP Law) was passed on May 18th, 2010 as part of the Government’s strategy to reform the country’s economy and increase energy and infrastructure development by leveraging private sector know-how and efficiency in public utility services¹⁰. Before the PPP Law was introduced, the Government’s procurement of previous projects was governed by the Tenders and Bids Law (No. 89 of 1998¹¹). Under Law 89 the procurement of goods or services is carried out by virtue of a tender, competitive negotiation or, in special cases, through direct agreements. Although Law 89 may have been an adequate framework for procuring simple goods and services on a regular basis, the Government realised this was not an adequate framework for large scale complex projects. This led to the new PPP Law which introduces important new features that were much needed in Law 89.

10- The PPP Law No. 67 for 2010. (<http://www.mof.gov.eg/MOFGallerySource/English/PDF/LawNo67fortheyear2010.pdf>)

11- Abt Associates Inc., SCS Engineers, Community & Institutional Development and the Institute for Public-Private Partnerships (May 20, 2003), “Review and Analysis of the Egyptian Tender Law and its Executive Regulations”, Governorates of Alexandria, Cairo and Qalyoubiya / Egyptian Environmental Policy Program / USAID. (URL: http://pdf.usaid.gov/pdf_docs/pnacy313.pdf)

Improving solid waste management infrastructure is one of the main drivers of combating environmental degradation and, accordingly, is central to the government's plans. The private sector's interest in Egyptian infrastructure projects has not waned due to the current political unrest, but there is wide spread consensus in the market that investors will wait and see what the medium to long term policy is in relation to infrastructure before making any significant investments.

2.2. STRATEGIES, ACTION PLANS AND INITIATIVES

The ISWMS Executive Body will be in charge of policy and legal development, national strategy implementation, investment promotion and coordination, and supporting the decentralized implementation of improved services in Governorates, Municipalities and New Housing Communities. It will be the national centre of authority and excellence in waste management policy, investment and practices.

An updated Egyptian waste management strategy is in the process of preparation⁸. Multi-stakeholder consultations will be carried out on this NSWMP document including participation of Governorates, waste management industry, research institutions, community representatives and others. The process of consultation will be led by the ISWMS, supported by independent experts and facilitators.

The ISWMS will progressively develop competence in each of the following functions⁸:

- **Policy:** Setting national waste management policy including objectives and targets;
- **Strategy:** Development, implementation and updating of national waste management strategy and action plan;
- **Legislation:** Drafting waste management legislation, and supporting the passage of legislation through parliament;
- **Economic and financial instruments:** Research and establishment of appropriate economic and financial measures;
- **Parliamentary briefings:** Support to the Minister in Parliamentary briefings and sub-committees;
- **Stakeholder dialogue:** Coordination of inter-sectoral dialogue on SWM issues;
- **Investment planning/promotion:** Investment planning/pipelining, identification and promotion of investment opportunities in the waste management sector;
- **Program management/coordination:** Management of programs financed by government and international development partners;
- **Project identification and design:** Technical assistance to support Governorates and Municipalities in preparing waste management plans and integrated, bankable SWM concepts;
- **Guidelines and standards:** Preparation and dissemination of best practices guidelines; development of technical and environmental standards;
- **Information and data:** Collection and reporting of information and data (e.g. from Governorates and Municipalities);
- **Knowledge management:** Collection and sharing of best practices amongst national and regional networks;
- **National focal point:** Information and advisory service;
- **Monitoring & evaluation:** Collection and publishing of key performance indicators and data;
- **Research & development:** Management of R&D programs;
- **Awareness raising:** Behaviour change, communications and environmental education; and
- **Tariff policy:** Financial regulation, including establishing affordability benchmarks.

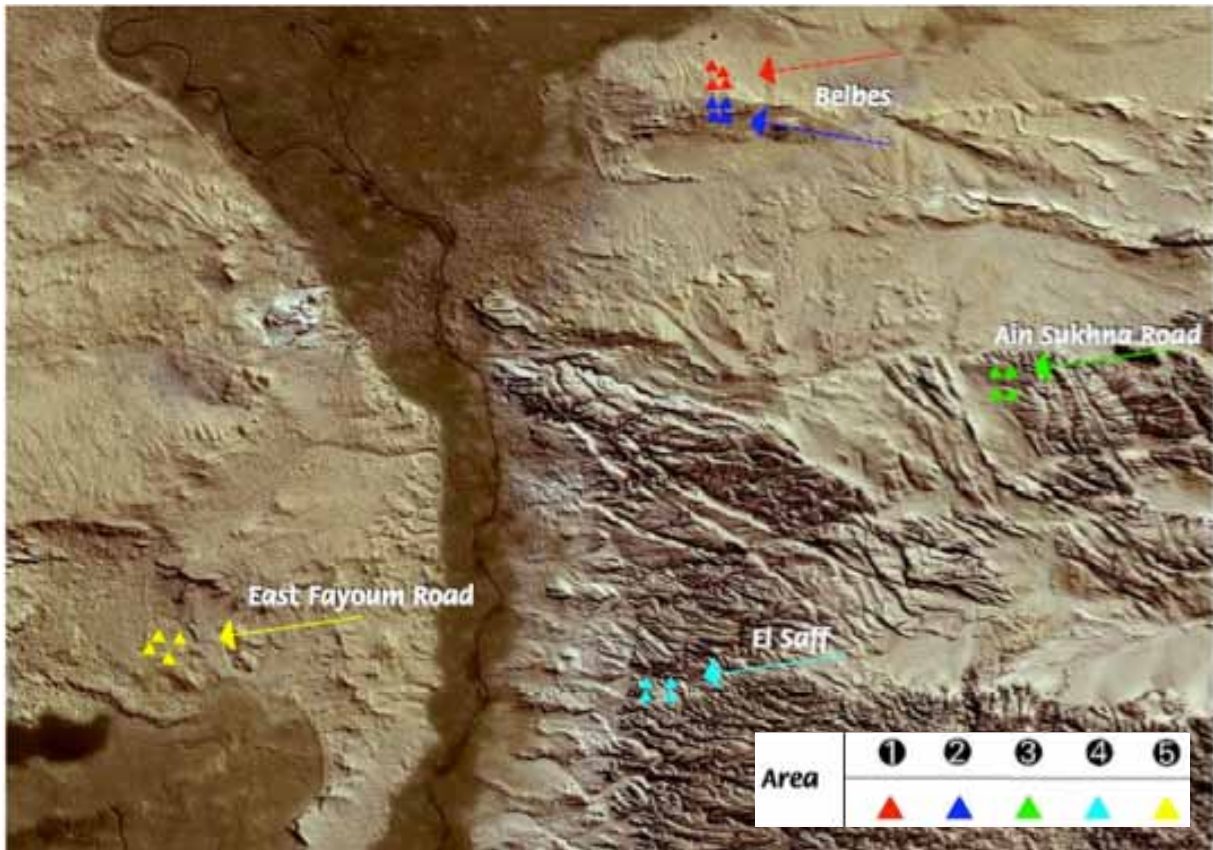


Figure 4: Location of the selected sites for separation, recycling and disposal

In accordance with MSEA's plan to develop the solid waste management system in Greater Cairo and to establish sites for recycling, treatment and safe disposal of waste outside the residential areas, the Head of the Supreme Council of the Armed Forces allocated an area of 5,339 feddan for establishing five new sites in April 2011. Figure 4 shows the locations of the selected sites. As a result, MSEA plans to close current public dumpsites to reduce sources of air pollution in Greater Cairo within residential areas. A rehabilitation process for EL-Wafaa and Al-Amall dumpsite located in Nasr City in coordination with Cairo Governorate and the Reconstruction Agency of the Ministry of Housing was initiated.

Recently, a committee was established comprising of the Ministers of Environment, Local Development and Finance, in addition to the Governors of Greater Cairo Governorates (Cairo, Giza and Kalyobiya Governorates) to prepare an implementation plan for the development of the municipal solid waste management sector in Greater Cairo, which will be extended to other Governorates as well.

Recognizing the need for concerted actions to effectively deal with the SWM problem, the ISWMS has to initiate a program aimed at improving SWM, by adapting a "Decentralized system" and community participation functioning with roles and responsibilities clearly identified to each stakeholder. The main driver of the plan is to involve citizen and community organizations in WM. Community groups should be involved in various activities including collection, segregation, processing, dissemination of information and awareness building. Units should be set up to process the organic waste locally generated into compost. All issues relating to this have to be tied up to ensure the continuity of capacity utilization in operation and maintenance.

2.3. PLANNING AND INVESTMENTS

The NSWMP will adopt the Integrated Sustainable Waste Management (ISWM) concept to reform the sector. The core concept of Integrated Sustainable Waste Management (ISWM) has been developed out of experience, to address certain common problems with municipal waste management in low- and middle-income countries, and also in countries in transition¹². ISWM recognizes three important dimensions in waste management: (1) stakeholders, (2) waste system elements and (3) sustainability aspects. The waste management hierarchy – a policy guideline that is part of many national environmental laws and policies – is also a cornerstone of the ISWM approach.

The ISWM concept takes as a point of departure four basic principles¹¹:

- i) Equity: all citizens are entitled to an appropriate waste management system for environmental health reasons;
- ii) Effectiveness: the waste management model applied should lead to the safe removal of all waste;
- iii) Efficiency: the management of all waste is done by maximizing the benefits, minimizing the costs and optimizing the use of resources, taking into account equity, effectiveness and sustainability; and
- iv) Sustainability: the waste management system is appropriate to the local conditions and feasible from a technical, environmental, social, economic, financial, institutional and political perspective. It can maintain itself over time without exhausting the resources upon which it depends.

Moreover, a steering committee will shortly be established for the NSWMP. The program is planning to achieve⁸:

- Stakeholder dialogue on sector development and National SWM policy;
- The establishment of SWM units in 4 governorates;
- Updating/developing master Plans in 4 governorates;
- Developing and promoting economic instruments, including Extended Producer Responsibility; and
- Capacity Development Programs.

The technical cooperation will support the development and implementation of the institutional and legal framework for the solid waste management sector including cost recovery mechanisms. The technical support to the Egyptian partners will be provided on the national, Governorate and local level.

2.4. MONITORING

In August 2012, the trial operation of the Environmental Observatory Units project was launched in 8 neighbourhoods of Cairo as a first phase. The project is a result of cooperation between the Ministry of Communications and Information Technology (MCIT) and Cairo Governorate. The project is based on using IT to monitor the performance of waste management and city leisure companies. The project reflects the importance of introducing Information Technology in all State bodies in order to enhance their performance. The project supports the efforts of Cairo Governorate towards providing the best services to the society and citizens.

The project's objective is to establish an integrated control system on the waste management companies' performance and to link the central management of performance control and the Environmental Observatory Units in various districts of Cairo. MCIT provided all necessary communication devices, equipment and networks to activate the project's field follow-up. The project provides updated and accurate data about the performance of waste management, allowing to record violations by image, date

¹²- Arnold van de Klundert and Justine Anshütz (2001), "Integrated Sustainable Waste Management - the Concept", Waste. (http://www.waste.nl/sites/waste.nl/files/product/files/tools_iswm_concept_eng1.pdf)

and site coordinates online. The project also provides mechanisms of data exchange between the central management in the Governorate and the various Environmental Observatory Units, a step considered one of the main outputs of the project after developing the automated system of monitoring performance. Moreover, a solid waste Complaints Tracking Information System (CTIS) was established in Alexandria Governorate¹³. The CTIS objective is to provide an easy tool for storing and retrieving information concerning complaints received by Alexandria Governorate solid wastes complaints contact centre. The CTIS provides different types of outputs that assist decision-makers and technical staff by reliable and accurate information about the complaints and their status. CTIS assists in the analysis of the complaints received and provides complete information about the frequency and type of complaints. The information system has an Arabic Interface as requested by the Governorate of Alexandria.

2.5. FISCAL, FINANCE AND ECONOMICAL STEERING INSTRUMENTS

In Egypt, financing the solid waste management system is a problem, due to the inadequate and often uncertain resources available. The sustainability and development of a proper and efficient municipal solid waste management system is hindered by the lack of adequate financial allocations.

The principal financial objectives of the municipalities' waste services are¹⁴ :

- Establishing practical systems of budgeting and cost accounting for all waste management actions, a matter which yields transparency with regard to the real costs of waste management and provides a basis for planning and improving operational economic efficiency;
- Mobilizing the required resources for investment in waste management facilities and equipment and for the operation of the service, including capital cost and technical depreciation;
- Generating cost oriented revenues for waste management operations, which should be based on user (or polluter) charges, and to ensure that the collected revenues are applied to the intended purposes of waste management; and
- Reducing the costs and improving the efficiency of waste management operations.

In urban areas, the waste collection cost per ton is about 125 L.E. and the corresponding cost for disposal is 100 L.E./ton (1 USD = 7 L.E.). Law 10/2005 mandates that all households and trading associations have to pay fixed waste collection fees according to the districts they are located in. The cost of municipal solid waste management is only partially recoverable, as the revenue from the waste collection fees is not enough to cover the expenses needed to sustain the waste management system¹⁵. A wide gap between the available/ allocated funding and the actual requirements exists and is expected to increase due to increasing population, urbanization, waste generation, and the heavy burden on the national budget that may reprioritize the justifiable waste management financial requests.

The Central Department of Waste Management in EEAA, proposed an executive program to improve the municipal solid waste services in Egypt, in July 2012. The proposed program covers: removal of accumulated solid waste; improving the efficiency of collection and transport to prevent further accumulations; establishing mobile and stationary transfer stations; improving the efficiency of controlled dumpsites; establishing waste recycling centres; and establishing sanitary landfills. The estimated financial allocations required to execute the proposed program are 3,270.4 million EGP, as given in Table 2. Due to budget constraints, the program was not implemented.

13-The Ministry of Communications and Information Technology (MCIT), "Egypt's Information Society», Fourth Edition, October 2005. (http://www.mcit.gov.eg/Upcont/Documents/EgyInfo_Society.pdf)

14- ISR/EWC and MEDCITIES, "Guidelines for Municipal Solid Waste Management in the Mediterranean Region, Chapter 14: Financing", SMAP Programme of the European Commission and UNDP, 2003.

15-Tarek Zaki, "Country Report on the Solid Waste Management Situation in Egypt", SWEEP-Net, GIZ, 2012

Table 2: Financial allocations required to improve the municipal solid waste services

Governorate	Cost (Million LE)						Total (Million LE)
	Removal of accumulated waste	Improving collection / transport efficiency	Establishing mobile and stationary transfer stations	Establishing recycling centres	Improving controlled dumpsites	Establishing sanitary landfills	
Cairo	-	13	193	30	40	30	306
Giza	-	30	96	10	10	30	196
Alexandria	10.3	17	46	5	-	-	78.3
Kalyobiya		19.5	73.5	10	10	30	143
Dakahliya	112	56.5	124	10	-	30	332.5
Al Gharbiya	30	31.5	64	10	-	30	165.5
Monofiya	5.6	30	70	10	-	30	148.6
Al-Beheira	12	47	97	10	-	40	206
Kafr El-Sheikh	4.5	27	70	10	-	30	141.5
Sharqia	10	48.5	70	10	-	30	168.5
Damietta	3	26	40	10	-	15	94
Ismailia	7	17.5	27	5	-	15	71.5
Port Said	6	7	14.5	10	5	-	42.5
Suez	3.5	7.5	14.5	5	5	-	35.5
Fayoum	4.5	20	34	5	-	30	94
BaniSouwaif	2.25	22	47	5	-	30	106.25
Menia	10	28.5	60	10	-	30	138.5
Assiut	3.75	28.5	60	5	-	30	127.25
Sohag	4.5	35	73	10	-	30	152.5
Qena	4.5	30.5	43	10	-	30	118
Aswan	6	17	33.5	5	-	15	76.5
Luxor	2	2	15	5	-	15	39
Red Sea	7.5	14	20	5	-	15	61.5
Matruh	-	26	29	5	-	15	75
North Sinai	-	31	16	5	-	15	67
South Sinai	7.5	15	21	5	-	30	78.5
New Valley	-	15	2	-	-	15	32
TOTAL	256.4	666	1453	215	70	610	3270.4

The current tariff structure in Egypt should be reviewed and other possible scenarios that could achieve a more efficient solid waste management system and simultaneously raise the revenues have to be explored⁴. Pay-As-You-Throw (PAYT) is a system where households pay for garbage collection by the

amount of trash discarded, rather than a flat fee. This provides a financial incentive to recycle and reduce the amount of waste. Under the traditional solid waste collection and disposal system, residents pay indirectly for the service through a flat fee attached to their electricity bill. With a PAYT Program, residents pay directly for collection services based on the amount of waste thrown away. Some communities that have instituted PAYT systems have seen their overall waste disposal rate decline by 25-45%¹⁶.

Tax incentives can be granted by way of full tax holidays, partial tax holidays where only a portion of profits and income will be exempted, concessionary tax rates, accelerated depreciation allowances and enhanced deduction of expenditure or combination of more than one of these methods⁴. Tax holidays should be extended to the solid waste management sector for developing urban infrastructure.

In terms of financial management, the ISWMS will⁸ :

- Facilitate the investment programming and implementation component of the NSWMP;
- Coordinate investments, guide and assist the process of decentralized implementation of improved infrastructure and services;
- Provide guidelines for sound financial management practices for SWM at the local level;
- Assess in detail, and consult with development and commercial banks to establish seed financing to put in place a solid waste management SME fund;
- Assess and put in place other mechanisms for stimulating development of the national waste management industry, for example operator models which favour participation of smaller companies, pro-SME contract clauses, tax relief for start-up enterprises, recycling parks, and other support measures.

On the other hand, economic instruments for solid waste management can increase the capacity of municipalities to secure sufficient financial resources for adequate service provision¹⁷. Cost recovery is an important requirement for sustainable approaches to SWM, but it is not the only aspect of economic instruments. More importantly, at each stage of the WM process, different economic instruments may be appropriate to further the respective environmental objectives. In the waste generation stage waste charges can create incentives for behavioural changes such as waste reduction and improved separation. Moreover, Deposit-refund systems may create incentives for better collection. In the waste treatment stage, Advanced Recycling Fees (ARFs) can provide increased incentives to recycle certain products. Finally, in the waste disposal stage, landfill taxes form a disincentive for landfill disposal and encourage the diversion of waste streams to other waste management methods such as recycling.

Designing, introducing, discussing, planning, implementing and monitoring a set of market based instruments where revenues are realized, policies are supported, and the sustainability of activities is significantly achieved, are all needed tasks parallel to investment mobilization³.

An Extended Producer Responsibility (EPR) program should be initiated and implemented, involving a range of possible alternative policy instruments, such as¹⁸:

- Product take-back;
- End-of-life waste management fees;
- Advanced disposal fee;
- Mandatory deposit-refund system;
- Recycling incentives; and/or
- Disposal disincentives.

16- US EPA, URL. (http://www.epa.gov/region7/waste/solidwaste/reduce_waste.htm)

17- Joachim Stretz, "Economic Instruments in Solid Waste Management: Case Study Maputo, Mozambique", GIZ, August 2012.

18- Working Group on Waste Prevention and Recycling, "Analytical Framework for Evaluating the Costs and Benefits of Extended Producer Responsibility Programmes", Organisation for Economic Co-operation and Development (OECD), March 2005.

2.6.PRIVATE SECTOR PARTICIPATION POLICY

Since the inception and implementation of private sector participation in municipal solid waste management, the overall experience and results were less than adequate³. The reasons are varied and controversial, and government interventions were again prevalent while lacking the basic technical, institutional and financial means to face and manage the mammoth waste management problem.

Table 3 provides a comparison between the executive stance of SWM projects and public cleaning in the Governorates in 2004, based on EEAA State of the Environment Report, and the current situation in 2013.

Table 3: The executive stance of swm projects and public cleaning in the governorates

Governorate	Executive Stance from Privatization in 2004 ¹⁷	Current Situation*
Alexandria	Onyx French Company	Veolia terminated the contract in Oct. 2011. Currently Egypt Renaissance Co. (Arab Contractors Co.)
North Sinai	Hilo Care Company of Al Areesh region	Al Areesh region: Care Service Co.; other cities in the Governorate: General administration of cleanliness and beautification of the cities
Suez	Kuwaiti Tanzifco	The Governorate terminated the contract in March 31, 2012 and established Suez Cleanliness and Beautification Unit
Port Said	Misr Service Company	General administration of cleanliness and beautification of the city
Cairo	Northern area: Om Al Arab and the Arab Contractors companies	Northern area: AMA Arab Environment Co
	Western area: Europe Seir Spanish Company	Western area: AMA Arab Environment Co
	Eastern area: FCC Spanish Company	Eastern area: FCC Spanish Company
Cairo	Southern area: Europe 2000 and Al Fostat companies	Sayeda Zeinab, Misr EL Kadima, Khalipha, Mokattam, Dar el Salaam, EL Basateen districts: Al Fostat CO. Maadi and Torra: Europa 2000; EL-Marg: Misr Service; 15th May: ECARU; Helwan, EL Maasara and EL Tebeen: Egypt Renaissance Co.; Manshiyat Nasser: Ertecaa
	Aswan	Care Service Company, a Spanish Company and Dala Company (working in Aswan, Edfo and Kom Umbo cities)
Giza	Southern area: Al Giza Company for Environmental Services (FCC Spanish Company)	Al Haram district: Enviro Master Co.
	Northern area: The International Company for Environmental Services (Jackros Italian Company)	Northern area, Doki and Agouza districts: International Environmental Services
	Abu Al Nomros, Al Hawamdiya, Al Badrasheen, Al Warak, Awsim councils and cities: Giza Cleanliness and Beautification Authority. There is current work ongoing in other city and markaz councils.	Other areas and districts: Giza Cleanliness and Beautification Authority
Qena	The project is self-implemented in Qena city and other Governorate cities and youth graduates are being employed	SWM activities is implemented by the Governorate and local councils
Luxor	Amoun Cleanliness and Beautification	General administration of cleanliness and beautification in Luxor city
Al Gharbia	Cairo Service Company in Tanta city and Al Nagar service Company in Mahla	SWM activities is implemented by a Cleanliness and Beautification Unit
New Valley	The project is self-implemented and youth graduates are being employed	General administration of cleanliness and beautification in the cities
Damietta	Hilo Care Service Company in Tanta and Ras El Bar cities (It works in Ras El Bar during summer)	General councils in the cities
Dakahliya	SWM process not privatized and implemented by the Governorate	The Ministry of Local Development contracted ECARU Co. and Retsi Land Co. as of 7/1/2013

Governorate	Executive Stance from Privatization in 2004 ¹⁷	Current Situation*
Sharkiya	SWM process not privatized and implemented by the Governorate	General councils in the cities
Fayoum	SWM process not privatized and implemented by the Governorate	General councils in the cities
Assiut	SWM process not privatized and implemented by the Governorate	SWM activities is implemented by the general councils Governorate except for East Assiut district
Kafr Al Sheikh	SWM process not privatized and implemented by the Governorate	Kafr Al Sheikh Cleanliness and Beautification Unit established in 2012
Menoufia	SWM process not privatized and implemented by the Governorate	General councils in the cities
South Sinai	SWM process not privatized and implemented by the Governorate	Sharm El Sheikh city: Sharm Environmental Services Co.; Dahab and Nuweiba cities: Hemaia NGO; other cities: general councils
Ismailiya	SWM process not privatized and implemented by the Governorate	General councils in the cities
Red Sea	SWM process not privatized and implemented by the Governorate	HEPCA company covers the area from Port Ghalib to Beranice; Ras Gharib city: Egyptian environmental services Co.; Safaga and Koser cities: EL-Noor cleansing Co.; and Shalateen: Association for the protection of the Red Sea
BeniSuef	SWM process not privatized and implemented by the Governorate	General councils in the cities
Sohag	SWM process not privatized and implemented by the Governorate	General councils in the cities
Matrouh	SWM process not privatized and implemented by the Governorate	General councils in the cities
Kalyobiya	SWM process not privatized and implemented by the Governorate	SWM activities is implemented by the local councils, except Shubra EL-Kheima Markez that use private contractors
Al Behira	SWM process not privatized and implemented by the Governorate	General councils in the cities

*Source: Central Department of SWM, EEAA

When addressing private sector participation (PSP) in solid waste services the efficiency, accountability, management, legislation, finance, and costs should be involved¹⁹. Cost effective and adequate service standards can only be reached by creating effective competition amongst several private sector contractors, transparent bidding procedures, and fair competition; accountability for both contract parties; and the comprehensive monitoring of contracted services. The following measures are necessary for the effective involvement of the private sector in solid waste services:

- Building local capacity to develop technical specifications and to tender competitively;
- Building local capacity to enable the local governments to provide contestable services;
- Building local capacity to generate revenues, and operate as a cost centre with segregated accounts;
- Creating a level playing field by means of a regulatory framework;
- Specifying worker safety and environmental requirements;
- Providing mechanisms to assure flow control;
- Defining sanctions and enforcement mechanisms that discourage non-performance;
- Preparing for agreements that are long enough to allow full depreciation of investment;
- Preparing separate agreements for different activities to optimize expertise;
- Preparing agreements that are large enough in scope to allow economies of scale;
- Ensuring contestability, enabling the participation of small to medium sized businesses, and setting up decentralized monitoring;

19- Sandra Cointreau-Levine (2000), "Guidance Pack: Private Sector Participation in Municipal Solid Waste Management – Part II: Guidance Note", SKAT (Swiss Centre for Development Cooperation in Technology and Management).

- Including price indexing to allow adequate cash flow and continuous profitability;
- Including public consensus in all key decisions;
- Ensuring competitive, transparent procurement, with several competing tenders to obtain efficiency;
- Quantifying outputs to enable comparative performance monitoring;
- Enlisting public cooperation;
- Licensing and controlling all private sector involvement; and
- Monitoring performance to compare service providers.

To attract private investment, the authorities need to establish a strategic framework tailored to local conditions and based on consultation with all local stakeholders³. This must take into account the type of waste involved, the resources available and the institutional setting. For a public waste management policy to be sustainable, a pragmatic, customized and progressive approach is essential.

Moreover, the solid waste informal sector is an integral and dynamic player in the national effort³. Policy development/reform and planned engagement within the formal sector are essential. Public and private sectors have a major role in streamlining the informal activities through continued dialogue, negotiations and phased relationship development.

2.7. PUBLIC AWARENESS, EDUCATION AND COMMUNITY PARTICIPATION

Recently, the Ministry of State for Environmental Affairs established a private sector partnership (PPP) unit to facilitate the operation of huge environmental projects to be implemented with the private sector. PPP operates in accordance to the state's policy towards supporting partnerships with the private sector and activating the articles of law No. 67 for the year 2010 regulating the private sector partnership in state's developmental projects. Major projects that will be prioritized include the conversion of municipal solid waste to fertilizer, fuel, and/or electricity. The next few months will witness the first tender to convert municipal solid waste into energy. The central unit of PPP in the Ministry of Finance has prepared the preliminary studies for investments. The proposed sites in seven Governorates of Egypt are currently being selected. The projects will be operated with BOT system (construction and operation by the private sector and then reboot to the government) through a duration ranging between 20-30 years.

A key factor for rallying support from the communities is creating public awareness²⁰. Well-designed public awareness campaigns would lead to an increased and active public participation in facing the chronic solid waste management problems³. To open people's eyes towards a problem is one important factor – more important, however, is the development of understandable and transparent solutions that could be shared and supported by the community. The general public is evidently resentful of the impacts of poor management of solid waste and seems ready and willing to assist in effective solutions providing the seriousness of public authorities in addressing, assisting and implementing viable management programs and projects.

Currently, MSEA is organizing an awareness campaign, promoting source separation of house-hold waste, with different authorities including civil society organizations, media outlets and schools.

Community participation is the process by which individuals and families understand responsibility for their own health and welfare of societies²¹. Communities should be motivated to solve their common problems themselves. This enables them to become agents of their own development instead of positive beneficiaries of development aid. The key to the success of a solid waste management system is the cooperation of

20- SWEEP-Net Team, "The Month of March Theme: Public Awareness, Education and Community Participation", Monthly Theme Review, SWEEP-Net, March 2013. ([http://www.sweep-net.org/sites/default/files/files/MARCH\(1\).pdf](http://www.sweep-net.org/sites/default/files/files/MARCH(1).pdf))

21- Gurdeep Singh, Tauseef Zia Siddiqui and Anshul Jain, "Community Participation through Information, Education, Communication and Capacity Building of ULB for Solid Waste Management", Proceedings of the International Conference on Sustainable Solid Waste Management, 5 - 7 September 2007, Chennai, India. pp.504-507.

citizens. Citizens ought to be involved in proper storage, collection and safe disposal of waste. Community should also be made aware of health risks associated with improper solid waste management.

It is essential for the success of the solid waste management system to understand the requirement of community participation and support. In the past there have been no major efforts to create community awareness for citizens, which is a vital component of a solid waste management system. The community participation can be strengthened through multidisciplinary information, education and communication for the citizens in one side and capacity building programs for the officials and staff in another side.

Community participation refers primarily to what the general public can do to assist in solid waste management. The main aspects for which citizen participation is desired are:

- Managing wastes within the household and removing them from the premises;
- Reducing waste production (through consumer choices, reuse and repair) and facilitating recovery for recycling (through source separation);
- Keeping public areas of the neighbourhood clean;
- Supporting city or regional projects for improvement;
- Allowing rational decisions on suitable disposal sites or methods; and
- Supporting value changes in industry, government and citizenry that impact on solid waste problems.

An important tool to stimulate community participation is public education. According to a recent report of the World Bank, public education is necessary to inform people about their options to reduce waste generation and increase recycling and composting²². Public education and a range of regulatory and non-regulatory incentives can be utilized to encourage industries and consumers to choose types of packaging that can be safely reused. Moreover, it can also encourage industry to change product design and reduce industrial process wastes through cleaner production technologies and good housekeeping practices.

A strategy for public education must be developed in close cooperation with professionals knowledgeable of local conditions, relying on all methods of communication popular in a specific area (TV, radio, etc.), supported by well-prepared NGOs and must be executed continually over several years²³. Public education should:

- Use simple language (illiterates, pictograms);
- Use local dialect as needed;
- Leverage participation of school children and universities;
- Involve media, business leaders, community leaders, and NGOs.

2.8. NATIONAL CAPACITY BUILDING AND TRAINING INITIATIVES

Egyptian officials attended the Horizon 2020 Capacity Building/Mediterranean Environment Program on "Solid Waste Management with particular focus on private sector participation (collection, institutional, legal instruments)", held in Morocco, 7-9 December, 2011. The main objective of the course was to increase the trainees' understanding of the challenges and opportunities of allowing private sector participation in the field of waste management and developing their decision making skills with regards to Solid Waste Management with an emphasis on private sector participation.

More than 10 awareness workshops were conducted by the CDM APU team of EEAA to identify CDM opportunities in different sectors including municipal solid waste, cement, fertilizer, oil and gas, iron

22- Daniel Hoornweg and Perinaz Bhada-Tata, "WHAT A WASTE: A Global Review of Solid Waste Management", Urban Development Series Knowledge Papers, The World Bank, March 2012, No. 15.

23- L.F. Diaz, CalRecovery, Inc., "Solid Waste Management in Developing Countries: Status, Perspectives and Capacity Building", Intergovernmental Preparatory Meeting for CSD-19, United Nations Headquarters, New York, USA - March 3, 2011.

etc²⁴. Therefore, participants from various entities were invited to attend these training workshops. The main objective of the awareness workshops was to create awareness, build capacity, and identify CDM opportunities in different sectors. Moreover, a workshop on estimation and methodologies of GHG emissions in the waste sector was provided. The workshop covered an overview of waste types generation and management data in Egypt; level and trends in GHG emissions from the waste sector in Egypt; emissions from landfills; solid waste disposal; utilization of the GHGs emission factors database (EFDB), IPCC; overview of the baseline and monitoring methodologies in waste sector; and case studies.

In March 2013, The Urban Training and Studies Institute (UTI) of the Housing and Building National Research Center provided two five-day training courses titled "Integrated Solid Waste Management" and "Nano-technology Applications in Solid waste recycling"²⁵. UTI organizes training programs in cooperation with many international organizations such as the Institute for Housing and Urban Development Studies (IHS), and the Faculty of Geo-Information Science and Earth Observation (ITC) in the Netherlands. UTI also signed cooperation protocols, exchange programs, and expertise and training programs with a number of international bodies such as GIZ and the UN-Habitat.

2.9. CAPACITY BUILDING REQUIREMENTS

In developing countries, the waste management sector depends on primitive technology and is usually operated by unskilled workers²⁶. With 3Rs (Reduce, Reuse, Recycle) gaining momentum, it is essential to transform the waste management industry from grime to green. This could be done by division of labor and specialization, where the former implies creating a dedicated trained workforce and the latter requires imparting essential knowledge. Targeted capacity building, education and training provides the necessary impetus in creating the workforce and imparting knowledge. It is essential to identify the stakeholders to 3Rs and place recommendations for appropriate capacity building, education and training activities.

The capacity of the recipients should be analyzed in terms of its characteristics at three different levels²⁷:

- i) Individuals: the knowledge and skills of individuals engaged in waste management services;
- ii) Organizations: physical, human and intellectual assets, leadership, organizational management frameworks, and organizational cultures that are all needed for organizations involved in waste management to achieve their objectives; and
- iii) Institutions and societies: the environment, conditions and mechanisms that are all required to ensure that waste management systems work; policies, institutions, frameworks, customs and norms.

The lack of skilled and trained human resources should be considered when planning improvements in the solid waste management systems. Moreover, capacity building programs are needed for all the staff dealing with municipal solid waste management.

It is important to put in place and enforce an effective regulatory and policy framework on waste management²⁸. The coordination between different governmental entities and public industries is of particular importance in Egypt. Capacity building, policy making and coordination require the training of

24- Ernst and Young, "Assessment of the Activities, Operations, and Areas of Improvement for the CDM Awareness and Promotion Unit (CDM APU)", EEAA, April 2013.

25- URL: <http://www.uti.gov.eg/euti/uti2012-2013.pdf>

26- C. Visvanathan and A. PremAnanth, "Higher Education Needs for Solid Waste Management through 3R in Asian Developing Countries", 2012. (<http://www.faculty.ait.ac.th/visu/images/pdf/capacity%20building%20for%203r%20-visu.pdf>)

27- Institute for International Cooperation, "Supporting Capacity Development in Solid Waste Management in Developing Countries: Towards Improving Solid Waste Management Capacity of Entire Society", Japan International Cooperation Agency, July 2005.

28- Global Partnership on Waste Management, "Egypt: Country Needs Assessment Analysis", UNEP. URL: <http://www.unep.org/gpwm/InformationPlatform/CountryNeedsAssessmentAnalysis/Egypt/tabid/106022/Default.aspx>

human resources in public administrations to deal with the technical, regulatory and financial aspects of all relevant waste streams. This process will need to be complemented by substantial efforts that aim at creating economic instruments and involving the private sector, through schemes such as public-private partnerships. In particular regarding the management of municipal solid waste, healthcare and e-waste, it is emphasized that raising awareness on health risks and involving communities in improving the waste management system are essential factors.

Community participation and support are essential for the success of solid waste management projects. Community participation can be strengthened through multidisciplinary nature of information, education and communication for the citizens on one side and capacity building programs for the urban local bodies' officials and staff on the other.

Up till now, no serious effort has been made to include the informal recycling sector into the formal solid waste management system. The ISWMS should actively facilitate organizing the informal recycling sector, providing them with an access to source separated waste, promoting their recognition and acceptance, and providing capacity building programs for them.

Moreover, the NGOs working in rural areas are in need of capacity building, awareness and financial support to upgrade their equipment and waste transportation trucks.

To encourage the engagement of Egyptian financial institutions in participating in sustainable solid waste management projects, personnel capacity building in SWM projects' evaluation is needed. Moreover, international development organizations can participate in capacity building support for financial institutions in SWM projects' evaluations.

The most important requirements is to provide financial and technical support to carry out the necessary training mentioned above.

2.10. NATIONAL INITIATIVES MULTI STAKEHOLDER EXCHANGE

Complexity, costs and coordination of waste management has necessitated multi-stakeholder involvement in every stage of the waste stream. This calls for an integrated sustainable approach to waste management.

The sustainability of a particular project is attributed to a number of factors, of these factors, stakeholder participation takes primacy. Public participation, or stakeholder participation, seeks and facilitates the involvement of those whose interests are affected²⁹. The World Bank defines stakeholder engagement as a process through which stakeholders influence and share control over priority setting, policy-making, resource allocations and access to public goods and services³⁰.

The integrated sustainable waste management approach differs from conventional approaches towards waste management by seeking stakeholder participation, including waste prevention and resource recovery explicitly, encouraging the analysis of interactions with other urban systems and promoting an integration of different habitat scales (city, neighbourhood, household)³¹. The best-functioning solid waste systems involve all the stakeholders in planning, implementing and monitoring the changes³².

29- Peachie Ann Aquino, Laurence Delina, Charlemagne Fernandez and Armando Baguio, Jr., "Mobilizing Public Support for a Sustainable Solid Waste Management: The Case Study of Santo Tomas Municipality, Philippines", 2008.

(http://www.apfed.net/ki/awards/winners/pdf/2008/2008_3_Case_Study_Rport_on_ESWM_Programme.pdf)

30- World Bank, Participation at project, program, and policy level. Accessed 17 April 2009 from:

<http://go.worldbank.org/1S57LH08E0>

31- Arnold van de Klundert and Justine Anschütz (2000), "The Sustainability of Alliance between Stakeholders in Waste Management", Working paper for UWEP/CWG.

32- UN-Habitat (2010) Solid Waste in the World's Cities. In UN-Habitat's State of Water and Sanitation in the World's Cities Series. London and Washington DC: Earthscan for UN-Habitat.

Multi-stakeholders involvement is envisaged in the formulation of the national solid waste management policy, strategy, preparation of legislation, and the planning and implementation of services. The ISWMS will consult with stakeholders to define policies which will help gradually formalize the recycling sector and assist in the growth of the Egyptian recycling businesses. Moreover, the ISWMS will consolidate and prepare a waste framework law in the framework of public and stakeholders' consultations. The final draft of the law will be used to establish a basis for identifying SWM secondary legislation and decrees.

Participation of key stakeholders during the strategic planning provides a major opportunity to link the strategic plan firmly to reality and mobilize stakeholder involvement³³. A structured series of participatory workshops provides a vehicle to develop consensus between stakeholders, inspire contributions and secure broad-based ownership.

2.11.CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

An NGO, HEPCA, is solely responsible for all aspects of SWM in the southern Egyptian Red Sea Governorate. HEPCA was selected as a case study of best practices in municipal solid waste management. Another example of best practices is the 15th of May project for landfilling and processing services for the Southern Zone of Cairo Governorate. (Details are provided in the relevant Annex).

2.12.UPCOMING INITIATIVES

The National Solid Waste Management Programme (NSWMP) shall provide a contribution to reform the solid waste sector of Egypt and to implement the related infrastructure step by step. It is intended to make a significant contribution to the sustainable protection of the environment and natural resources, climate change mitigation and the reduction of health risks for the population of Egypt.

Moreover, the cement manufacturing company ECOCEM/Lafarge, GIZ/the Participatory Development Programme in Urban Areas (PDP) and the NSWMP signed an agreement (iEPW) to promote co-processing in Egypt, as a treatment option in solid waste management³³. The objective of Lafarge is to substitute 30% of the fossil fuel used as source of energy by Alternative Fuel and Raw Material (AFR) in the next 5 years. The corresponding objective of GIZ/PDP is to increase the revenues for the Integrated Resource Recovery Centre (IRRC) in Khosooos city, at Kalyobiya Governorate by producing AFR. Moreover, the NSWMP participated in this project for the dissemination of co-processing as a waste treatment option in Egypt. The value of the iEPW agreement is 2 million Euros and the AFR production will Begin in 2014.

Tourism has been considered one of the pillars of economic development in the North Sinai Governorate, as the area enjoys many advantages of location and historical archaeological sites. A solid waste management system has been identified as a critical need in North Sinai³⁴. In September 2010, an Assistance Agreement was signed between USAID and the Egyptian Ministry of International Cooperation (MIC) for the development of North Sinai under the name of "the North Sinai Initiative". The agreement focuses on activities and projects in the areas of Infrastructure, Private Sector Competitiveness and Economic Opportunities in the North Sinai Governorate. One proposed activity is the development of solid waste management system, with emphasis on recycling. Such a system would create additional jobs through collection, sorting and recycling. It also has synergies with other proposed activities and projects including tourism and fisheries, as both will generate additional waste. This initiative is currently in the process of implementation.

33- Gunther Wehenpohl, "Co-processing: A Treatment Option in SWM", *Participatory Development Programme in Urban Areas and GIZ Egypt, the Third SWEEP-Net Forum on integrated solid waste management, 14 - 16 May 2013, Cairo, Egypt.*

34- USAID Assistance Agreement No. 263-0297, September 16, 2010.

(<http://www.state.gov/documents/organization/152690.pdf>)

3. INDUSTRIAL & HAZARDOUS WASTE MANAGEMENT

3.1. LEGAL AND INSTITUTIONAL FRAMEWORK

Egypt lacks a specific regulatory and policy framework for industrial waste management. Even though some legislative provisions are in place, enforcement is weak, causing industrial waste to end up in open dumpsites mixed with municipal solid waste. Therefore, building capacities for the enforcement of regulations and for the creation of economic instruments is required. In order to overcome the weak coordination among responsible institutions it is recommended to clarify the roles of the authorities responsible for industrial waste and strengthen them considerably. A priority for MSEA lies in the improvement of technical and scientific capacities in private companies, public industries and administrations. Raising awareness and increasing knowledge on resource efficiency and sustainable consumption and production are critical in this regard. With governments allocating only scarce resources to the management of industrial wastes, it lies within the responsibilities of the state-owned companies to treat and dispose waste in an environmentally sound manner.

MSEA held the final workshop for the Institutional Twinning Project "Integrated Management of Hazardous Substance and Waste", which was launched in October 2008 and lasted until March 2011 with an estimated budget of 1.6 million Euros.

The workshop reviewed the project's achievements in the field of institutional development, evaluation of available hazardous waste and substances database and their update, proposed amendment to the executive regulations, local laws and legislations to be lined with international standards, apply relevant European Union best practices, capacity building of EEAA and its Regional Branches' staff, support NGOs in Cairo, Alexandria and Aswan Governorates with some activities such as conducting workshops and awareness seminars.

The project conducted 11 training courses aimed at training more than 500 participants in the fields of hazardous substances and their integrated management, cleaner production, legislations and laws related to electrical and electronic products and waste; in addition to Globally Harmonized System for Chemicals, legislations and laws related to hazardous substances and waste, databases of hazardous substances and waste, risk assessment and exchange of experiences.

3.2. STRATEGIES AND PLANNING

Egypt lacks an industrial waste management strategy and action plan for implementation.

3.3. FINANCING

In the Country Report on the Solid Waste Management Situation in Egypt, 2012³⁵, the Egyptian Pollution Abatement Project (EPAP II) was discussed. It is managed by EEAA and financed by the European Investment Bank, French Development Agency, Japan Bank for International Cooperation and the World

³⁵-Tarek Zaki (2012), "Country Report on the Solid Waste Management Situation in Egypt", SWEEP-Net / GIZ

Bank, which provide funding for industrial activities in Greater Cairo and Alexandria, including hazardous waste management.

Another financial package for industrial compliance is the Private Public Sector Industry (PPSI) package³⁶. The PPSI is available to eligible private and public companies (excluding multinationals) in Upper and Lower Egypt (excluding Greater Cairo and Alexandria) that wish to implement pollution abatement projects. PPSI is supported by KfW with a grant facility of 6.7 million Euros for project implementation and 0.6 million Euros for institutional and advisory support. Preferential financing is available to SMEs with an annual turnover of less than L.E. 20 M.

Grants for eligible sub-projects should result in the industrial establishment being fully compliant with the environmental law in at least one of the air, water, solid waste and work place environment areas. The sub-projects should be technically and economically feasible and fall in several areas, including hazardous waste management and process/recycling of agricultural waste.

3.4.COLLECTION, TREATMENT AND DISPOSAL

In 2012, the industrial sector accounted for 20% of Egypt's GDP and about 23% of the employment. According to the estimates of the Central Department of Solid Waste at EEAA, Egypt generated about 6 million tons of industrial non-hazardous solid waste in 2012. In 2009, the estimated generated industrial hazardous waste is about 260,000 tons³⁷. Another estimated figure for the generated industrial hazardous waste is 300,000 – 500,000 tons, in 2011³⁸. This broad range highlights the general lack of information available on the actual amount of industrial hazardous waste generated in Egypt.

For industrial non-hazardous waste collection, the service area may include industrial waste generators of all sizes and types³. A key decision is what level of industrial waste collection service will be provided by the contractor. For example, depending on the quantity and physical characteristics of the industrial solid waste from small generators, a combined waste stream may be collected as part of the MSW collection program. Small generators whose waste would be collected under the industrial or MSW collection program must be made to conform to the collection requirements inherent to either program.

The Egyptian National Cleaner Production Centre (ENCPC) was established in 2005 by the Ministry of Trading and Industry in cooperation with UNIDO as a service provider for the Egyptian industry³⁹. ENCPC services involve implementation of waste management systems and recycling initiatives in the industry. The services include assessment of generated waste in terms of quantity and characteristics and identification of the best options for waste handling and management. This adds value to the industry and creates further economic opportunities from newly developed products based on the sustainable use of generated waste from the production process. Reuse and recycling of industrial waste saves costs and creates both economic and environmental opportunities.

The Nasreya Hazardous Waste Treatment Center (NHWTC) provides collection, transportation, treatment and final disposal services for hazardous industrial waste⁴⁰. Details on the activities of the centre were discussed in the 2012 report³⁴.

36- URL: <http://industry.eeaa.gov.eg/>

37- Enviro Associates International, Inc. (2009), "Feasibility Study for Hazardous Waste Management in Egypt", U.S. Trade and Development Agency (USTDA)/MSEA.

38- Adel El-Shafei, "Hazardous Waste Management in Egypt – Current State of Play and Opportunities for Information Sharing", Shared Environmental Information System "[ENPI-SEIS] Project" Workshop, 3-4 May 2011, Cairo House, EEAA/CAPMAS/CEDARE/ European Environment Agency.

39- The Egyptian National Cleaner Production Centre, URL (<http://encpc.org/en/services/technical-assistance/waste-management-recycling.html>)

40-URL: <http://nasreya.com/HomeEn.html>

3.5. PRIVATE SECTOR INVOLVEMENT SECTOR INVOLVEMENT

With regards to private sector participation in industrial and hazardous waste management, no changes have occurred since 2012, please refer to the cited report³⁴.

3.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

“Green Growth: Industrial Waste Management and SME Entrepreneurship Hub in Egypt” is the selected case study of best practices in the industrial waste sector, given in the corresponding Annex.

3.7. UPCOMING INITIATIVES

The Egyptian Ministry of Planning and International Cooperation submitted the proposal “Green Growth: Industrial Waste Management and SME Entrepreneurship Hub” to the MENA Transition Fund in the African Development Bank⁴¹.

The proposal builds on the ability to develop entrepreneurship and create green jobs through the establishment of a suitable industrial waste exchange system that links waste generators to waste users and recyclers to enhance resource efficiency across the different industrial sectors. The project will also contribute to reducing the adverse environmental impacts from inappropriate disposal of industrial and hazardous wastes, thereby reducing greenhouse gas emissions as well as contributing to the reduction of health related expenditures.

The proposal is closely aligned with Egypt’s National Development Plan and the sector strategy. It will contribute to the enhancement of resource efficiency across different industries, the improvement of industrial productivity and the increased competitiveness of Egyptian products in global markets while promoting the creation of new innovative SMEs and job opportunities.

The African Development Bank has endorsed the project and is prepared to play the role of the implementation support agency. The project will contribute to the development of a sustainable and integrated industrial waste exchange system in the pilot area positioned as a Green Entrepreneurship Hub, linking industrial waste generators, potential users and recyclers to improve cross-industry resource efficiency.

Moreover, the Ministry of Foreign Trade and Industry has current and future activity plans for waste treatment. These include projects for collection and onsite separation of industrial wastes, relocation of lead smelters, tanneries and textiles from Cairo to new industrial zones, recycle, reuse, and safe landfill of industrial wastes⁴².

Further initiatives should include adapting a plan for industrial waste minimization, reuse and recycling; and use of economic tools such as discharge fees and tax exemption.

41- URL: http://www.menatransitionfund.org/sites/mena_trans_fund/files/documents/EG%20AfDB%20Green%20Growth%20through%20Industrial%20Waste%20Management%20EL.pdf

42- Implementation of the Stockholm Convention: National Implementation Plan – Egypt, July 2005.

4. MEDICAL WASTE MANAGEMENT

4.1. LEGAL AND INSTITUTIONAL FRAMEWORK

The legal and institutional frameworks of hazardous medical waste management have been discussed in detail in the 2012 report³². No further actions were initiated since that time.

As a result of the expansion of medical waste treatment using incineration systems, MSEA validated and set maximum limits for emissions from medical waste incineration units and published them in the amended copy of the Executive Regulations of Law 4/1994 to avoid air pollution.

4.2. STRATEGIES AND PLANNING

MSEA took the initiative to develop a strategy to address the safe disposal of hazardous medical waste, in coordination with the Ministry of Health and Population and other relevant stakeholders, taking into consideration the legislative systems, technical standards, and the comprehensive development process requirements⁴³.

4.3. FINANCING

A limited portion of the governmental financial allocations to public health care facilities is directed to medical waste management. Such allocations are insufficient for managing hazardous medical waste in a safe and sustainable manner.

4.4. COLLECTION, TREATMENT AND DISPOSAL

Egypt generated 28,300 tons of hazardous medical waste in 2010⁴⁴. As indicated earlier, collection, treatment and disposal of hazardous medical waste are the responsibility of the Governorates, either directly or by contracting private companies, contractors, or NGOs³².

The poor collection, treatment and disposal of medical waste in Egypt constitute a serious health and environmental problem. The study by TarekEed and Ehab Attia⁴³ revealed that the treated portion of hazardous medical waste in Greater Cairo (Cairo, Giza and Kalyobiya Governorates) is about 27%. The untreated hazardous medical waste is either mixed with municipal solid waste or illegally traded for recycling. The problem is currently handled in Egypt through MSEA coordination with Ministry of Health and Population and Ministry of Local Development to control the comprehensive system (segregation at source, collection, transfer, and final disposal processes).

Hazardous medical waste treatment is generally conducted by thermal incineration. About 188 incinerators are distributed across the Governorates, in addition to 48 units of shredding autoclaves. Table 4 provides information on the daily generated hazardous medical waste in the Governorates and the distribution of incinerators there⁴³.

43- EEAA, *Implementing the Strategy for Safe Disposal of Hazardous Medical Waste in cooperation with Swiss Environmental Protection Agency, April 2010*

(http://www.eeaa.gov.eg/english/main/allnews.asp?Article_Id=220)

44- TarekEed and EhabAttia (2010), "Integrated Hazardous Medical Waste Management System", MSEA/EEAA and Ministry of Health and Population

Table 4: Daily generated hazardous medical waste³⁸

Governorate	No. of Beds	Generated Waste (Kgs/Day)	No. of Incinerators	Governorate	No. of Beds	Generated Waste (Kgs/Day)	No. of Incinerators
Cairo	34,603	17,301	13	Fayoum	2,496	1,248	3
Giza	13,080	6,540	15	BaniSouwaif	2,527	1,263	5
Alexandria	12,534	6,267	1	Menia	6,450	3,270	17
Kalyobiya	10,165	5,082	5	Assiut	7,256	3,628	8
Dakahliya	9,328	4,664	15	Sohag	4,952	2,476	4
Al Gharbya	8,451	4,225	5	Qena	3,387	1,693	3
Monufia	5,987	2,993	11	Aswan	2,758	1,379	2
El-Beheira	5,292	2,646	15	Luxor	857	428	9
Kafr El-Sheikh	3,865	1,932	3	Red Sea	826	314	3
Sharqeia	8,668	4,334	16	Matruh	1,136	568	9
Damietta	2,709	1,354	4	North Sinai	716	358	2
Ismailia	2,168	1,084	9	South Sinai	560	280	8
Port Said	1,771	885	2	New Valley	848	424	2
Suez	1,683	841	1				
Total	No. of Beds: 154,965	Generated Hazardous Medical Waste: 77,477 Kg/Day				No. of Incinerators: 188	

Moreover, EEAA in cooperation with the Ministry of Health and Population and Cairo University had developed a pilot facility project supported by DANIDA for an integrated environmentally sound management of health care wastes.

4.5. PRIVATE SECTOR INVOLVEMENT

MSEA encourages and facilitates national and foreign private sector contribution to the medical waste safe management system. Ambitious proposals have been presented by some experienced investors to carry out comprehensive projects for medical waste management using state-of-the-art technologies.

4.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

As indicated in section 4.4, Egypt lacks a proper system for hazardous medical waste management. No case study of best practices was identified in that sector.

4.7. UPCOMING INITIATIVES

MESA is surveying the requirements of each governorate to provide them with incinerators for hazardous medical waste.

5. GREEN WASTE & AGRICULTURAL WASTE

5.1. LEGAL AND INSTITUTIONAL FRAMEWORK

The main responsibility for providing oversight of the agricultural waste sector lies in the hands of the Ministry of Agriculture and Land Reclamation in coordination with MSEA/EEAA. Environmental Law 4/1994, and amendments in Law 9/2009 mandate that farmers who practice rice straw burning would be fined up to LE 20,000 and dumping of waste in residential, industrial and agricultural areas and waterways is prohibited. Moreover, Directive 63/2002 of MALC prohibits the growing and burning of rice in the Kalyobiya Governorate to minimize air pollution in Greater Cairo.

The Ministry of Agriculture Decree 100/1967 required that fertilisers made from waste should meet the following specifications:

- Nitrogen content: not less than 0.5%;
- Organic content: not less than 18%;
- Moisture content: not more than 30%;
- Sodium chloride: not more than 5%; and
- Carbon to nitrogen ratio: in the range 1:17- 1:25.

5.2. STRATEGIES AND PLANNING

Although the Ministry of Agriculture leads on many aspects of the agricultural waste sector, it is clear that cross-departmental collaboration is needed to support the industrial development opportunities that agricultural waste offers. Moreover, the Ministry of Trade and Industry is well positioned to play a role in promoting awareness of the industrial opportunities associated with agricultural waste, develop a market development strategy, and to help establish a network of relevant stakeholders, including the agribusiness industry, and to make linkages between different parts of the supply chain in order to stimulate market development.

The most obvious way to create a more enabling environment for the development of the agricultural waste sector would be to reduce energy and fuel subsidies, and to a lesser extent fertilizer subsidies, which would generate increased demand for alternative sources of fuel, energy and compost, and thus stimulate demand for agricultural waste as an input⁴⁵. Another way would be to more strictly enforce the ban on the burning or unauthorized dumping of agricultural waste, which would increase the supply. In combination with this, the removal of fees on authorized dumping sites in agricultural areas could be one way of increasing their use, and the cost of provision by local government could potentially be recouped by the sale of that accumulated waste for industrial purposes.

5.3. FINANCING

The U.S. Trade and Development Agency (USTDA) helps companies create U.S. jobs through the export of U.S. goods and services for priority development projects in emerging economies. USTDA is providing USD283,000 to Energy Allied Egypt to fund a feasibility study that will support the development of the

⁴⁵-Karen Ellis, with inputs from Smita Nakhooda, "Green Growth Opportunities and Requirements in Egypt", GIZ, 2012.

Egypt Biodigesters Corporation (EBC) project in Egypt⁴⁶. The objective of the project is to construct 10 biodigester units in six key locations throughout Egypt that will utilize agricultural, animal and organic solid waste for production of liquid and solid fertilizers and biogas for power generation. The implementation of the project will result in the offset of greenhouse gas emissions from existing landfills and unauthorized burns and will represent a significant improvement over the current agricultural waste management practices in Egypt.

5.4. COLLECTION, TREATMENT AND DISPOSAL

Egypt generated about 30 million tons of agriculture waste in 2012. Burning of crop residues is a problem in Egypt, especially rice straw. According to the Ministry of Local Development statistics, 12 Governorates cultivated rice in 2009/2010. After harvesting, the produced rice straw was 2,189,086 tons of which 1,969,701 tons were recycled⁴⁷.

The main problems facing agricultural waste management are the shortage of the combining, raking and baling machines, insufficient trucks to transport the ready waste bales and un-paved roads that makes the transportation between farms and markets difficult. Therefore, agricultural co-operations have to work to provide a storage place for the ready bales, in addition to trucks and some mechanical equipment to overcome the previous obstacles⁴⁸.

There are numerous advantages to be achieved from using agricultural residues, mainly⁴⁹ :

- Creating new small agro industries in rural areas;
- Generating new job opportunities, particularly for women in rural areas;
- Using compost for land reclamation, contributing to addition of new cultivated areas;
- Fostering organic agriculture, thus promoting export;
- Reducing both chemical fertilisers and irrigation water;
- Substituting for fodder production, thus reduce imports of feedstuff; and
- Supporting environmental sanitation, thus increasing the opportunity for new clean environmentally friendly source of energy.

For several years now the Government has promoted and established some small demonstration units for the generation of biogas from agricultural residues. Moreover, China provided technical and financial assistance for the establishment of two Government-funded plants that produce gas and pipe it, free of charge, into local houses in the villages for cooking usage. If this technology is to be implemented in other Egyptian villages it has the potential to create immense value.

Recently, five rice straw pellet plants were established in three major rice producing regions in the Nile Delta^{50,51}. The production is exported to the Netherlands and co-fired there in coal-fired power plants. Calculation of CO₂ emissions of the chain operations from traders buying straw from contractors and farmers till co-firing in Dutch electricity plants meet the requirements for net emission savings set by the RED and NTA 8080 standards. With 79,94% of savings, the biomass chain operations stay clear of the minimum emission savings of 70%. This result may hold promise for future biomass based business

46- URL: <http://www.ustda.gov/program/regions/menae/>

47- Egypt in Figures, Central Agency for Public Mobilization and Statistics, 2012. Source: Ministry of Local Development.

48- Samir A.El-Shimi, International Resources Group (2005), "Design and Cost Analysis of Agricultural Waste Recycling Alternatives for Sinbo Village, Gharbiya Governorate", Ministry of Water Resources and Irrigation/Life/USAID.

49- Mohamed El-Tamzini, Hassan El-Shaer and Nabil Hegazi (2008), "Proceedings - Expert Consultation on the Utilization of Agricultural Residues, Cairo, Egypt", FAO.

50- Rob Bakker, WolterElbersen, Ronald Poppens and Jan Peter Lesschen, "Rice straw and Wheat straw. Potential feedstocks for the Bio-based Economy", Wageningen UR, Food &Biobased Research, NL Agency, June 2013.

51- Ronald Poppens and Rob Bakker, "Greenhouse gas emission analysis of an Egyptian rice straw biomass-to-energy chain", Wageningen UR, Food &Biobased Research, NL Agency, September 2011.

development in Egypt, and the possibility of certifying biomass operations against international sustainability standards for improved market access.

5.5. PRIVATE SECTOR INVOLVEMENT

Most of agricultural waste collection, transportation and treatment is conducted by the private sector. Moreover, MSEA cooperated with the private sector to operate 4 agriculture waste recycling centres where the private sector showed a great success and the Ministry is planning to extend this collaboration in the future.

5.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

The Annex of case studies for best practices includes a case study of using rice straw residues for the production of pellets⁴⁹. Moreover, a case study of agricultural and municipal waste management through community involvement, in El Katta Village, Giza Governorate, is provided.

5.7. UPCOMING INITIATIVES

In light of the considerable uncertainty about future market demand, the private players would be facing several risks in their attempt to develop new markets and technologies. Scaling up or developing some of the already established pilot projects that explore the uses of agricultural waste (e.g. for briquetting, gasification, etc.) can help mitigate some of the risks and encourage new public/private partnerships and the expansion of the sector. Moreover, it should also be investigated whether these industries could qualify for different forms of climate finance e.g. carbon credits through the Clean Development Mechanism, or grants through mechanisms such as the Global Environment Facility which would in turn encourage investments in the agricultural waste sector.

One of the limiting factors in raising cattle in Egypt is the high cost of fodder. In June 2012, a proposal for building resilient food security systems to benefit the Southern Egypt region was submitted by the World Food Programme (WFP), which is a Multilateral Implementing Entity of the Adaptation Fund. The project will introduce an innovative technique that uses agricultural waste as a main constituent, upon supplementation with low-cost additives (molasses and bran), for the improvement of the nutritional value in animal fodder⁵². The cost of preparing the mix is estimated at L.E. 250/ton. A daily intake of 2 kg will reduce an animal's need of traditional fodder by 30%, increase profitability for smallholders, reduce the demand for berseem and maize, and consequently availing its cultivation land and water for other crops and contributing to relieving climate-induced pressures on resources. The technique will also utilize agricultural waste that would otherwise be disposed of by burning. The project was approved and is scheduled to receive 6,904,318 USD of funding.

⁵²- Adaptation Fund, "Proposal for Egypt", Adaptation Fund Board, Project and Programme Review Committee. Ninth Meeting, Bonn, Germany, 26-27 June 2012.

6. PACKAGING WASTE

6.1. LEGAL AND INSTITUTIONAL FRAMEWORK

Packaging is defined in the regulations of the European Commission as «all products made of any materials of any nature to be used for the containment, protection, handling, delivery and preservation of goods from the producer to the user or consumer»⁵³. The main packaging materials included in the regulations are: paper/fibreboard; plastic; glass; steel; and aluminium. Wood packaging and packaging made from other materials (for example hessian, jute, cork, ceramics and so on) are also included.

The Egyptian legislation doesn't include a directive similar to the European Commission (EC) directive on packaging and packaging waste. Comprehensive legislation, which avoids the duplication of responsibilities, fills in the gaps of important regulatory functions, and enforcement is required for sustainable development of the solid waste management system in general and packaging waste management in particular.

The institutional framework lacks: the necessary administrative capacities to manage, follow up and monitor the packaging waste management, and coordination between the main actors; and involves overlapping of duties.

6.2. STRATEGIES AND PLANNING

There is need for establishing a national strategy and an implementation plan for packaging waste management.

A strategic framework for enhancing solid waste recycling in Egypt was prepared in 2005⁵⁴. It involved a special focus on plastic waste recycling; however, none of its recommendations were adopted.

Since the Extended Producer Responsibility (EPR) was introduced and the German packaging take-back law was passed in the early 1990s, the EPR concept has become an established principle of environmental policy in many countries⁵⁵. The policy instruments that lie under the EPR umbrella include different types of product fees and taxes commonly called "advance recycling fees" (ARFs), product take-back mandates, virgin material taxes, and combinations of these instruments. EPR has to be applied to packaging waste in Egypt.

6.3. FINANCING

Egypt does not have a packaging waste management program. Financing the packaging waste is included in the municipal waste stream.

Up till now, only glass bottle beverages can be returned for a refund.

53- The European Commission (EC) Directive on Packaging and Packaging Waste (94/62 EC) (as amended).

54- NILE, CEDARE and FICHTNER Consulting, "Strategic Framework for Enhancing Solid Waste Recycling in Egypt", EEAA, METAP, EC and the World Bank, December 2005.

55- Working Group on Waste Prevention and Recycling, "EPR Policies and Product Design: Economic Theory and Selected Case Studies", Organisation for Economic Co-operation and Development (OECD), Feb. 2006

6.4. COLLECTION, TREATMENT AND DISPOSAL

According to the Central Department of Solid Waste, at EEAA, the estimated composition of municipal solid waste, in 2012, includes 13% plastics, 10% paper/cardboard, 4% glass and 2% metals. This means that about 29% of the municipal solid waste could be partly packaging waste. This large per cent corresponds to about 6 million tons of the municipal solid waste stream. If a separation at source program would be implemented, packaging waste could be a substantial source of recyclable materials and revenue generation.

At present, packaging waste is collected with the mixed municipal solid waste. The public sector generally provides municipal solid waste management services in most of the Egyptian Governorates. The role of the formal private sector is limited.

In Egypt, there is large informal sector of traditional waste collectors (zabaleen), waste pickers and recyclers. The waste pickers carry out source separation of municipal solid waste and collect the dry recyclables such as plastics, paper, glass, metals and textile. They perform their sorting work on the dumped waste in the streets, collection bins, collection points, transfer stations and dumpsites. Since their livelihoods depend on it, they achieve high recovery rates (up to 80%) which can be further processed in accordance with new demands and technological advancements in the recycling industries⁵⁶.

6.5. PRIVATE SECTOR INVOLVEMENT

As indicated in the above section, the formal private sector involvement in packaging waste management is limited. However, the informal private sector plays a key role in that sector in Egypt.

6.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

Cairo's informal garbage collectors "zabaleen" and scavengers collect and sort packaging recyclables, such as paper, plastics, metals and glass, from the municipal solid waste stream, and sell the sorted recyclables to middlemen or partially recycle it.

A paper mill is currently under construction, located 60 kilometres outside Cairo in the Sadat city industrial zone. The plant is expected to use recycled fiber from local waste paper as the main raw material to produce duplex board, which is used to package many products.

Scrap metals, wasted glass and some types of plastics are recycled locally; whereas most wasted PET bottles are exported for recycling.

6.7. UPCOMING INITIATIVES

IFC, a member of the World Bank Group, is investing to complete the construction of a new paper mill, to help create jobs and reduce greenhouse gas emissions in Egypt⁵⁷. IFC will invest up to USD 10 million in equity and provide a loan of up to USD 15.5 million to help complete the paper plant, which will be located in the Sadat City industrial zone. The plant is expected to use recycled fiber from local wastepaper as the main raw material to produce duplex board, which is used to package many products. The mill will create an estimated 300 direct manufacturing jobs and 550 indirect jobs through the collection and transport of wastepaper.

56- Ellen Gunsilius, " Role of the Informal Sector in SWM and Enabling Conditions for its Integration - Experience from GTZ", GTZ, 2010. (<http://www.transwaste.eu/file/001441.pdf>)

57- International Finance Cooperation, IFC Invests in new El Motaheda Paper Mill to Support Egypt Industry and Recycling. (<http://ifcext.ifc.org/IFCExt/pressroom/IFCPressRoom.nsf/0/98655836E43918AD85257862005236A8?OpenDocument>)

7. CONSTRUCTION & DEMOLITION WASTE

7.1. LEGAL AND INSTITUTIONAL FRAMEWORK

Article 39 of the Law of Environment 4/1994 and Article 41 of the executive regulations (Prime Minister Decree Number 338/1995) address construction and demolition waste management. They necessitate that all persons involved in exploration, excavation, construction and demolition should take the necessary actions to safely store, transport and dispose the waste generated by those activities. This article contains the specifications and requires local authorities to incorporate them into permits for exploration, excavation, construction and demolition.

Moreover, Laws 106/1976 and 101/1996 allow local governments to include the management of construction and demolition waste in the permits required for construction activities⁵⁸. This law also allows local governments to collect a fee from contractors and owners to, among other things, provide or pay for construction and demolition waste collection and/or disposal. However, it is usually cheaper for a contractor to haul the waste to a nearby unapproved site and forfeit already paid-for disposal services at an approved, but more distant, site. However, the existing legislation is not effective due to:

- The presence of construction activities without a permit;
- The limited enforcement of these regulations;
- Only a few local governments provide construction and demolition waste collection and disposal services; and
- The 1% building permit fee is usually committed to other services.

7.2. STRATEGIES AND PLANNING

Based on conclusions inferred from two instructed surveys, published literature and reviews of selected prominent national and multinational construction organizations in Egypt, it was proposed to add practical guidelines to the Egyptian Executive Regulations 338/1995 of Law 4/1994 to manage the amount and types of construction and demolition waste⁵⁹. The proposed guidelines covered:

- The waste management hierarchy based on the '4Rs' Golden Rule of Reducing, Reusing, Recycling and Recovering of waste;
- The different implementation stages, which start from the early planning phase, followed by the tendering and contract formulation phase, and finally the execution phase;
- The various techniques, methodologies, procedures and strategies recommended to reduce the amount of waste; and
- The degree of involvement of all the construction industry parties (owner, engineer, designer, and contractor) in the implementation of the guidelines.

58- Abt Associates, Inc., SCS Engineers, Community & Institutional Development, and the Institute for Public-Private Partnerships, Inc. "SWM Privatization Procedural Manual - Chapter 9: Construction and Demolition Debris Management", Solid Waste Technical Assistance, Egyptian Environmental Policy Program/MSEA/USAID, 2001.

59- Marwa Al-Ansary, Salah El-Haggag, and Mahmoud Taha, "Sustainable Guidelines for Managing Demolition Waste in Egypt", Paper presented at Forum Barcelona International RILEM Conference on the "Use of Recycled Materials in Buildings and Structures", November, 2004.

7.3. FINANCING

No financial allocation is directed to construction and demolition waste management in Egypt. Large construction companies handle the collection, transportation and disposal of their waste themselves. Governorates and municipalities occasionally collect the dumped waste from roadsides and open areas and transfer it to the dumpsites as a part of their other responsibilities.

7.4. COLLECTION, TREATMENT AND DISPOSAL

EEAA estimates the generation of 4.0 million tons of construction and demolition waste in Egypt in 2012. The problems associated with construction and demolition waste stem from the steady increase of construction activities which leads to increasing amounts of construction waste. Since construction often goes along with demolition, and since lifetime spans of buildings in developing countries are comparatively short, waste from demolition also increases⁶⁰.

In general, large construction companies fulfil the requirements of proper collection and disposal of such waste. However, small contractors and the public dump construction and demolition waste on public roads, highways, undeveloped land and beside residential areas. Such common practice poses a problem to the local governments.

The recycling industry of construction and demolition waste in Egypt is limited, highly selective and uses a very small portion of the total generated waste. Useful information on construction and demolition waste management is extremely limited in Egypt. Proper management of such waste would result in cleaner sites around construction areas, reduce airborne pollution, reduce demand on disposal sites and provide additional job opportunities for unskilled and manual labour. Sustainable solutions to the construction and demolition waste problems have yet to be introduced.

7.5. PRIVATE SECTOR INVOLVEMENT

As indicated above, large construction companies handle the collection and disposal of their generated waste. Local governments collect the dumped the construction and demolition waste and transport it mainly to open dumpsites. To date, there are no private companies specialized and involved in construction and demolition waste management.

7.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

No case study of best practices is identified for construction and demolition waste management.

7.7. UPCOMING INITIATIVES

To solve the problem of escalating quantities of generated construction and demolition waste in Egypt, a national program should be adopted to reduce waste production by diverting it for reprocessing. Moreover, specific measures should be used to minimize waste generation, such as the careful selection of design and construction methods that minimize waste production.

⁶⁰- Holcim-GTZ, "Reuse and Recycling of Construction and Demolition Waste", October, 2007.

8. WASTE TYRES

8.1. LEGAL AND INSTITUTIONAL FRAMEWORK

Egypt lacks a legal and institutional framework for used tyres management. However, the recycling or reuse facilities should be included in the environmental register.

8.2. STRATEGIES AND PLANNING

There is a need to initiate a national program and strategy for wasted tyres collection, treatment and disposal.

8.3. FINANCING

No financial allocations are directed for wasted tyres collection, treatment and disposal. Trading of wasted tyres is conducted by the informal and formal private sector.

8.4. COLLECTION, TREATMENT AND DISPOSAL

There is no special program for wasted tyres collection in Egypt. A part of this waste is collected with the municipal solid waste. The majority of tire waste is collected by tire dealers and sold to mediators for recycling.

In Cairo, most recovered rubber comes from automobile tubes, which are valued for their pliable and elastic properties⁶¹. About 1% of waste tyres in Cairo are re-treaded, remoulded, or directly used in the secondary manufacture of new products. Nylon cord beaded tyres are recycled by removing the nylon cords, which are then used for baling various materials, including waste paper. The recovered rubber is shaped into semi-final and final products such as gaskets, small swivel wheels for office chairs and tables, and briefcase handles. Moreover, tyres or tire covers are directly used to line the wheels of the animal-drawn carts used by waste collectors. Tyres are also split into layers, in a longitudinal or radial manner, for direct use in the manual production of certain rubber products including sandals, gaskets, pieces of conveyer belts, stool seats, carrier straps, bed springs, and door mats. Tyres are also burned for a number of reasons, both as a means to obtain the steel wires, which are then used for binding paper bales, and for the calorific value of the rubber for asphalt melting vehicles.

8.5. PRIVATE SECTOR INVOLVEMENT

A private company in BurgEl Arab, Alexandria, processes over 2 million tyres annually and produces over 16,000 tons of fine grind mesh crumb rubber. Sizes range from 3/16» granular to 40 mesh, completely wire, fiber, moisture and contaminant free. Moreover, the company manufactures floor coverings and

⁶¹ - Environmental Quality International, "The Recycling of Solid Waste in Cairo, Egypt", WAREN Project Report, WASTE, Gouda, the Netherlands, July 1991; Rehan Ahmed, Arnold van de Klundert and IngeLardinois (editors), "Rubber Waste Options for Small-scale Resource Recovery", Urban Solid Waste Series 3, WASTE, Gouda, the Netherlands, 1996. (<http://www.bvsde.paho.org/bvsacd/cd48/rubber-waste.pdf>)

mats made of vulcanized rubber.

Furthermore, several small private companies handle waste tire recycling and export shredded and powdered tyres, crumb and grinded rubber, recycled powder from inner tubes and nylon cord.

To reduce the use of pollutant fossil fuels, some cement companies in Egypt are now opting to use solid waste as an alternative environmentally-friendly fuel. This process eliminates two major environmental problems: namely, greenhouse gases and solid waste disposal. In addition, it is profitable and creates job opportunities. CEMEX cement project in Assiut Governorate allowed the factory to upgrade its process, through replacing fossil fuel with old tires, agricultural waste, industrial waste and other household wastes. This project was made possible by CDM. The CDM-APU was set up by the joint programme on Climate Change Risk Management (CCRMP).

8.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

Recently, Marso Company installed a tire recycling line consisting of a heavy duty mill to grind wasted tires to crumbs of 20-25 mm, at the 10th of Ramadan industrial zone. A magnetic separator is used for steel separation from the rubber. Marso has branches for manufacturing rubber products, including rubber car mats and parts, as well as water pipes.

Moreover, an Egyptian Italian investment company was established at Burg El Arab, Alexandria. The company manufactures crumb rubber from whole waste tires, using fully automated whole tire processing and crumb rubber production system.

8.7. UPCOMING INITIATIVES

Egypt needs to adopt a scrap tire program similar to those applied in US⁶². A waste tire management and recycling legislation would be issued, requiring a surcharge of fixed fee per tire, that is applied to a waste tire and recycling management fund, which would be dedicated to market development programs for scrap tires.

⁶²-US EPA, Scrap Tires Programs. (http://www.epa.gov/region2/waste/scrap_tires.htm)

9. OIL & LUBRICANTS WASTE

9.1. LEGAL AND INSTITUTIONAL FRAMEWORK

EEAA had taken a number of measures towards protecting the public from the impact of oil and lubricants waste. At the top of these was its assistance in promulgating the environment law 4/1994, under which waste oil is classified as a hazardous waste. EEAA and the Ministry of Petroleum prepared a list of hazardous wastes resulting from the activities of the petroleum industry. Oil marketing companies are not granted a license to operate unless they present a sound strategy for the safe disposal of waste oil. To support the EEAA goals, the Egyptian General Petroleum Corporation (EGPC) has made it mandatory for filling stations to have a collection tank for waste oil. Moreover, the Egyptian Organization for Standardization and Quality (EOS) identified the Egyptian standards of regenerated lubricant oils characteristics⁶³.

9.2. STRATEGIES AND PLANNING

Currently, there is no national program and strategy for oil and lubricants waste management in place and it is needed.

9.3. FINANCING

No financial allocations are directed for oil and lubricants waste management. Generally, oil marketing companies buy wasted oil and lubricants from their customers and transport it to the waste oil recycling facility in Alexandria.

9.4. COLLECTION, TREATMENT AND DISPOSAL

Egypt generated about 240,000 tons of oil waste in 2012, of which 80,000 tons were recycled, and the rest was exported⁶⁴.

A waste oil recycling facility was established on the site of the Alexandria Petroleum Company. The initiative was undertaken by EGPC after conducting a feasibility study. EGPC estimated that the actual amount of waste oil that could be collected annually is 150,000 tons and recycling this quantity of waste oil would produce approximately 120,000 tons. The cost of establishing the waste oil recycling facility was L.E. 185 million.

As part of the feasibility study, oil marketing companies were canvassed to find out how much waste oil each would be able to contribute. Many were ready to volunteer their tank trucks, which collect waste oil from filling stations to transport the substance to the Alexandria Petroleum Company. However, the facility has received far less than its intended capacity.

63- Egyptian Organization for standardization & Quality (EOS), "Regeneration Lubricating Oils", No.1082, ICS: 75, 2005. <http://www.eos.org.eg/public/ar-eg/>

64- Adel EL Shafei, "Hazardous Waste Management in Egypt – Current State of Play.....Opportunities for Information Sharing", National coordinator for Basel Convention, EEAA, 2012.

In some cases waste oil is dumped into the desert or the sewage system which would destroy the whole network. Waste oil is also sold illegally as a new product after adding some chemicals to it, and sometimes to bakeries in poor neighbourhoods that use it as an energy source.

9.5. PRIVATE SECTOR INVOLVEMENT

Alexandria Petroleum Company which is one of the Egyptian General Petroleum Corporation handles re-refining of used oil in Egypt.

9.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

The re-refining of used lubricant oil in Alexandria Petroleum Company was selected as a case study of best practices. Details are given in the corresponding Annex.

9.7. UPCOMING INITIATIVES

In section 9.4, it was pointed out to the feasibility study conducted by the Egyptian General Petroleum Corporation (EGPC), that the actual amount of used lubricant oil that could be collected annually is 150,000 tons. However, Alexandria Petroleum Company only recycles 30,000 tons per year of wasted oil. A gap of about 120,000 tons of wasted oil should be recycled annually. Expansion of the treatment facility at Alexandria Petroleum Company is required.

10. E-WASTE

10.1. LEGAL AND INSTITUTIONAL FRAMEWORK

There is no overall integrated environmental policy regarding WEEE in Egypt, but the legal framework in Egypt includes restrictions on imports of WEEE and restrictions by virtue of commitments to international conventions, specifically the Basel Convention⁶⁵.

Law 4/1994 and its amendment Law 9/2009 governing environmental protection in Egypt have no special stipulation for information communication technology (ICT) climate change mitigation or adaptation. There are also no policies or regulations governing the use of ICTs to combat or adapt to climate change in Egypt or ICT e-waste management. The closest reference is Law No. 4's provision regarding hazardous waste and materials, covered in Part 1, Chapter 2. At present, there are also no plans to amend Law No. 4 or Law No. 9 to include e-waste.

The regulations controlling ICT e-waste have been set by the Ministry of Trade requiring that imported computers be no more than five-years old from production date⁶⁶. Moreover, the telecommunications regulation law 10/2003, article 46, prohibited the import of used telecommunication terminal equipment for the purpose of trading⁶⁷. The definition of the telecommunication equipment here is the telecommunication equipment used by a user to connect with a public or private telecommunication network.

The Ministry of Industry decree 165/2002 prohibited importing Waste Electrical and Electronic Equipment (WEEE)⁶⁸. Also, there are restrictions in the specific cases of used mobile handsets or computers older than 5 years as explained in the previous section. Another regulation, which is indirectly relevant, requires that any product brought into the country should have a certificate of origin from the country of manufacturing⁶⁹.

10.2. STRATEGIES AND PLANNING

Egypt is lacking specific policies and regulations that give clear directions for e-waste management²⁶. In absence of a comprehensive management system, most of the e-waste is currently managed by the informal sector and civil society organizations or ends up in open dump sites, mixed with municipal solid waste. To improve the current situation it is important to build capacities in the development of waste policies and to reform the policy framework. Building the capacity for enforcing regulations and creating effective economic instruments to support the policies are further steps in establishing an effective management system for e-waste. Raising awareness on e-waste recycling and its economic and environmental benefits will also be required.

In the absence of policies, laws and, in most cases regulations, there are several recent initiatives addressing ICTs, climate change and sustainable environment in the form of loosely defined strategies,

65- <http://www.basel.int/>

66- Decree 703 of year 2007 of the Ministry of Trade and Industry amending parts of the Executive Regulations of the Law of Import and Export and the operational procedures for inspection of goods.

67- Telecommunications Regulation Law No.10 of 2003. (http://www.tra.gov.eg/uploads/law/law_en.pdf)

68- Decree 165 of year 2002. (<http://www.ida.gov.eg/PDF/11.pdf>)

69- Leila Hassanin and Nahla Hassan (2011), "ICTs and environmental sustainability: Mapping national policy contexts - Egypt baseline study", Association for Progressive Communications (APC) and Arabdev. (http://www.apc.org/en/system/files/EgyptFinalReport_May2011.pdf)

roadmaps and memorandums of understanding⁷⁰. But these documents have not yet materialized into substantive work to combat climate change or to manage the growing problem of ICT e-waste.

MCIT launched the Green ICT Strategy in 2010 and signed a memorandum of understanding with MSEA in February 2010. The strategy does not demand the creation of policies to govern the greening of ICTs. It also does not require companies to safely dispose of ICT e-waste, which has allowed scrap-dealers to control the market.

In April 2012, the strategy was renewed with a special focus on achieving sustainable management of e-waste through different activities, which include:

- Raising community awareness on e-waste management threats and opportunities;
- Building capacities in e-waste management;
- Supporting the private sector in initiating projects in e-waste recycling;
- Cooperating with regional and international entities in developing the studies needed for supporting the sustainable management of e-waste in Egypt;
- Issuing the appropriate policies and legislation that support the sustainable management of e-waste.

The sustainable management of e-waste is a new trend for the Egyptian community. MCIT in cooperation with the MSEA and the stakeholders of the Egyptian green ICT strategy initiated several activities to disseminate the concept and approach of sustainable management of e-waste. These activities can be summarized as follows:

- On August 2010, MCIT in cooperation with MSEA & Vodafone-Egypt organized the first Youth camp on “Green ICT” with a special focus on e-waste;
- In February 2010, MCIT and MSEA developed a guide booklet on “Green IT in daily life”;
- During the last 4 years, MCIT conducted several of workshops and session in different Governorates on the sustainable management of e-waste. The target segments of the workshops are school and university students and youth. An awareness session was conducted on e-waste management in North Sinai Governorate in Sinai University. The session was attended by 300 students;
- In October 2012, the first phase of the Egyptian Green ICT portal was launched ⁷¹;
- In cooperation with the Center for Environment and Development for the Arab Region and Europe (CEDARE), MCIT hosted the first and second stakeholder meeting of the “Best of 2 Words” project. The project aims to support the sustainable management of e-waste in Egypt and Uganda;
- In cooperation with CEDARE, MCIT participated in the Training of trainers on “safe dismantling and refurbishment of e-waste”.

10.3. FINANCING

The Government doesn't allocate any financial resources for e-waste management.

10.4. COLLECTION, TREATMENT AND DISPOSAL

No data is available on the generated e-waste and WEEE in Egypt. However, in a recent workshop held at the MCIT, a presentation tackled this issue⁷². Table 5 provides the total number of computers in use.

70- Association for Progressive Communications (APC), “ICTs and environmental sustainability: Mapping national policy contexts in India, Bangladesh, Egypt, Costa Rica and Mexico”, 2011. (http://www.apc.org/en/system/files/ARN_Country_Comparative_Final_August_2011.pdf)

71- <http://www.greenict.gov.eg/Home/HomePage.aspx>

72- Matthias Buchert and Georg Mehlhart, “Global Circular Economy of Strategic Metals”, Best-of-two-Worlds Approach (Bo2W) stakeholder workshop, Oeko-Institut and MCIT, Cairo, 13 May 2013.

Table 5: The total number of computers in use⁷¹

Proportion households using computers (2009)	Computers in households in use (2009)	Computers in offices in use (2009) Estimation by Oeko-Institut	Computers in use in total (2009)
43.9 % [MCIT, 2013]	8.0 million		10.6 million
13.1 % [MCIT, 2009]	2.4 million	2.6 million	5.0 million
31.0 % [ITU, 2012]	5.7 million		8.3 million

- Number of computers in households are calculated on the basis of number of households from ITU

- MCIT, 2013: http://www.new.egyptictindicators.gov.eg/en/Indicators/_layouts/viewer.aspx?id=454

- MCIT, 2009:

<http://www.new.egyptictindicators.gov.eg/en/Publications/PublicationsDoc/The%20Future%20of%20the%20Internet%20Economy%20Version%20II.pdf>

Figure 5 shows the projection of computers in use and in waste in Egypt⁷¹.

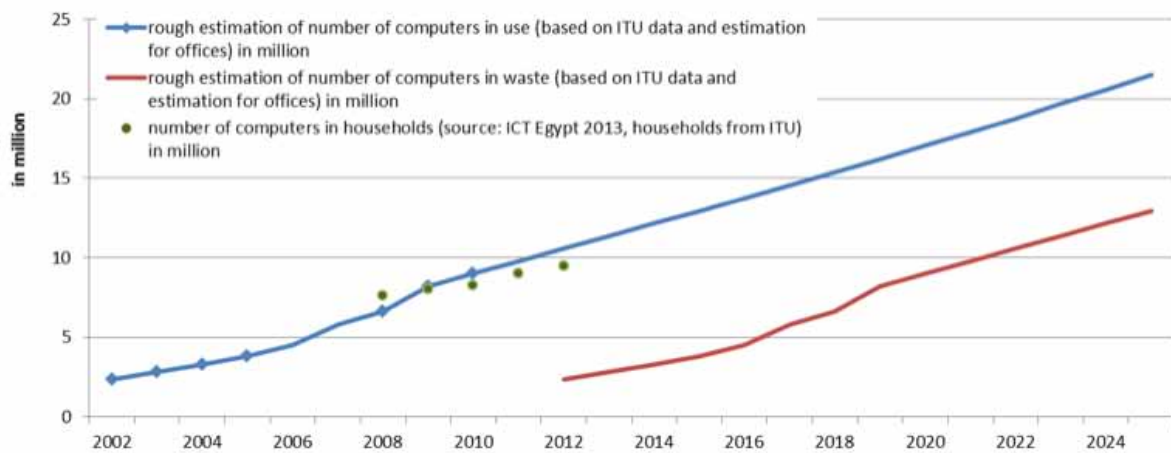


Figure 5: Projection of computers in use and in waste in Egypt⁷¹

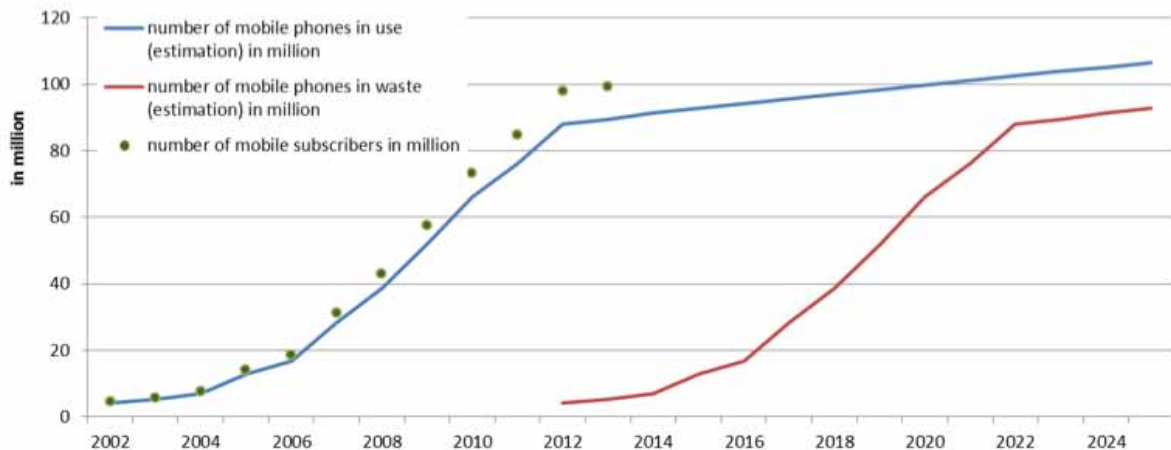


Figure 6: Projection of mobile phones in use and in waste in Egypt⁷¹

A similar projection of mobile phones in use and in waste in Egypt is given in Figure 6⁷¹. The estimations are based on these assumptions: 100 subscriptions equal to 90 mobile phones; the life time of a new mobile phone is 10 years (but less for the battery); and after saturation (year 2012) the number of mobile phones in use will grow with the population.

Egypt lacks a national collection, treatment and disposal program for e-waste. Most of these activities are conducted, unplanned, by the informal and formal sector. Moreover, governmental e-waste is sold

in auction according to the law governing all Government tenders and auction. Over 60% of the e-waste ends up with informal dealers who are not aware of its associated health and environmental risks. Furthermore, citizens are not aware of the hazardous nature of such waste. An example is the disposal of wasted mobile batteries in the municipal solid waste stream.

10.5. PRIVATE SECTOR INVOLVEMENT

MCIT supported the private sector in initiating projects in e-waste recycling in light of its belief in the importance of private sector involvement.

An Egyptian e-waste collection company, RecycloBekia, was set up in April, 2011. The company offers green recycling and data destruction services. The company provides the e-waste collection service for free and sends e-waste to a 100% green recycling factory.

EERC was established in 2010 as an environmentally friendly business for the recycling of e-waste. EERC is operating in cooperation with the informal dealers of e-waste and both public and private organizations. Their current operations involve the refurbishment and dismantling of e-waste, with future plans for material recycling. The company provides collection, transport and treatment of e-waste.

Spear Ink Co., founded in 2006, is a company that refills and re-manufactures inkjet cartridges and toners and sells them. It thereby extends the lifecycle of the end-of-life items. The company also offers a complete line of tools and supplies for the refilling process.

10.6. CASE STUDIES, BEST PRACTICES AND LESSONS LEARNT

RecycloBekia Company for E-Waste Recycling was selected as a case study of best practices in the field of e-waste management. Details are provided in the corresponding Annex.

10.7. UPCOMING INITIATIVES

In cooperation with the United Nation University, Step (Solve the e-waste problem) initiative, MCIT is expected to host the second E-waste Academy on June 2013.

The UNDP and MCIT announced a Request for Proposal (RFP), on the 2nd of July, 2012, for conducting a "Technical Report on the Assessment of E-Waste Management in Egypt (Greater Cairo)". The submitted offers from consultancy firms exceeded the project budget, which lead to cancelling the tender. Currently, MCIT is searching for partners/donors to participate in funding this project.

The Egyptian ICT sector recognized its responsibility in contributing to adaptation and mitigation to environmental challenges and climate change threats, as well as in decreasing the negative environmental impact of ICTs. In this respect, the MCIT has adopted an ambitious program "The Green ICT Initiative" focusing on four main areas of work ⁷³:

- Greening the ICT sector with a special focus on e- Waste Management;
- ICTs and mitigation;
- Awareness raising concerning the potential of ICTs in environmental sustainability.

73- URL:http://www.greenict.gov.eg/Home/About_Us.aspx

11. INTERNATIONAL FINANCIAL ASSISTANCE PROGRAMMES (BI-, & MULTINATIONAL)

Successful partnerships with various international assistance agencies, primarily those of the governments of Germany, Canada, Denmark, Finland, Great Britain, Italy, Japan, Switzerland, and the United States, have resulted in a number of environmental initiatives in Egypt. Further initiatives represent the outcome of successful partnerships between the MSEA with multilateral organizations such as the European Union, the World Bank, KfW and several United Nations organizations.

MSEA/EEAA together with the Ministry for Local Development (MoLD) and under the supervision of the Inter-Ministerial Committee (IMC) initiated an integrated approach for sustainable sector reform, summarized in the National Solid Waste Management Programme (NSWMP), with the support of the German Development Cooperation.

On January 20th, 2013, the official launch of the NSWMP cooperation agreement was signed between the Minister of State for Environmental Affairs and the Ambassador of the Federal Republic of Germany. The Programme receives joint financial and technical support with a total financing of 51 million Euro divided as follows:

- EU: 20 million Euro grant (to be signed in 2013);
- German Cooperation
 - KfW: 12 million Euro loan (payback 30 years, 10 years grace period) and 3 million Euro Grant for accompanying measures
 - GIZ: 3,75 million Euro grant ;
- Egyptian Contribution: 13,1 million Euro (120 million LE).

Moreover, the second phase of the Egyptian-Italian Environmental Cooperation Project (EIECP) for improving the solid waste management in Menia Governorate, started in May, 2012. UNDP handles the administration of the project. The project is financed as part of the Egyptian-Italian debt (SWAP), and its budget is 5.8 million USD (equivalent to about 32.5 million L.E.).

12. INTERNATIONAL ASSISTANCE PROGRAMMES (BI-, & MULTINATIONAL)

As indicated earlier, the newly established National Solid Waste Management Programme (NSWMP) is jointly supported by the EU, SECO, GIZ and KfW.

The cooperation tasks will include but are not limited to:

- The preparation of a national enabling framework for solid waste management in Egypt – including identifying and preparing the necessary policy, legislation and strategic planning documents required to drive the decentralised implementation of improved solid waste management services and sector performance. Key themes will include policy, legislation, strategic planning, appropriate technology, contracting and financing;
- The development of an investment project pipeline;
- The preparation of a manual of procedures with regard to the investment components;
- Supporting the Governorates solid waste management units during the planning and implementation phase;
- The development of technical and environmental standards for related solid waste management facilities; and
- Initiate investment process in four Governorates, namely: Qena, Assiut, Al Gharbya and Kafr El-Sheikh, to be models for other Governorate.

The expected results of the Cooperation will be:

- Establishing the Egyptian Integrated Solid Waste Management Sector (ISWMS) as a national competence centre in SWM;
- Significant increase in investments in the sector;
- Creation of jobs on all qualification levels;
- Improved service delivery and higher recycling rates (significantly in the investment areas); and,
- Inclusive and locally adjusted, sustainable SWM solutions.

Moreover, the second phase of the Egyptian-Italian Environmental Cooperation Project (EIECP) in Minia Governorate, consists of the following components:

- Upgrading waste collection in Minia City and providing technical assistance to upgrade the service in other relevant cities;
- Establishing a waste recycling plant in one of the Marakez of Minia Governorate (Matai is the proposed location of the recycling plant), where organic waste will be turned into high quality compost and the secondary materials will be sorted and sold to waste dealers for further recycling processes;
- Establishing two mobile transfer stations to transport the wastes generated from Samalut and Beni Mazar Marakez;
- Establishing a sanitary landfill in Matai Markez to be a model for the Governorate and Upper Egypt; and
- Remediating and upgrading two open public dumpsites.

There is no international technical assistance support since Solid Waste Management Project-SWMP-GIZ has been suspended in July 2011.

13. NEEDS ASSESSMENT FOR CAPACITY DEVELOPMENT UNTIL 2015

According to the UNDP, capacity development is the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time. The concept of capacity development is aimed at helping developing countries with their endogenous and continuous process of improvement. This makes the concept quite different from donor-led or expert-led capacity-building approaches that are designed to promote the growth of the recipients by filling any void in their capacity with technology transfer and technical cooperation⁷⁴. Capacity development support in SWM constitutes a key concept in exploring future directions for technical cooperation. Table 6 identifies the areas of capacity that need to be developed in the SWM sector.

Table 6: Description of SWM capacities at different levels⁷³

Level	Definition of capacity	SWM capacities
Individuals	The will and ability to set objectives and achieve them using one's own knowledge and skills.	<ul style="list-style-type: none"> - Knowledge, linguistic competence, skills, expertise, wisdom, will and a sense of responsibility on the part of the individuals involved in SWM
Organizations	The decision-making processes and management systems, organizational culture, and frameworks required to achieve a specific objective.	<ul style="list-style-type: none"> - Human assets (human resources in the engineering, management, and planning sections in SWM, including the development of such resources) - Physical assets (facilities, equipment, land, funds and capital that are required to provide SWM services) - Intellectual assets (expertise in SWM systems; statistical information including waste flows; literature; manuals; and research data) - Organization forms, management, leadership and ownership that can put these assets to good use - A shared awareness within organizations
Institutions/ societies	The environment and conditions necessary for demonstrating capabilities at the individual or organizational level, and the decision-making processes, and systems and frameworks necessary for the formation/implementation of policies and strategies that are over and above an individual organization.	<ul style="list-style-type: none"> - Formal legal framework (laws, decrees and ordinances that define wastes and clarify where the responsibility for waste management lies) - Formal regulations and standards (standards on the management, treatment and disposal of wastes; standards on waste generation rates; environmental standards; and legal force) - Policies and politics (articulated SWM policies, policy objectives and politics at central and local government levels) - Social infrastructure for SWM services - Informal institutions (customs, historical institutions, taboos and norms concerning waste) - Social hierarchy involved in SWM (waste pickers, certain castes, etc.) - Social organizations involved in SWM (CBOs, NGOs and other types of associations) - Formal and informal recycling markets and industries - Environmental/waste education - Systems (good governance) or partnerships designed to ensure that the opinions of local residents and communities are taken into account (good governance), involving a partnership between all stakeholders in SWM - Social ownership of the implementation of SWM (public sentiments, consensus or willingness to work together, etc.)

⁷⁴- Mitsuo Yoshida, "Capacity Assessment and Monitoring in CD Support Projects in Solid Waste Management Sector", the LenCD Forum "Addressing the Paris Declaration. Collective Responsibility for Capacity Development: What works and What doesn't", Nairobi, October 3-5, 2006.

14. CONCLUSION & RECOMMENDATION FOR SWEEP-NET ASSISTANCE

For the successful implementation of an integrated sustainable solid waste management approach, integration/coordination between public entities with regard to policy, legislative and institutional building is required, in addition to private sector involvement, multi-stakeholders consultation and active public participation. It is important to put in place and enforce an effective regulatory and policy framework on waste management.

Generally, the methods of waste collection, treatment and disposal are inadequate and the institutional capacity should be strengthened, in addition to identifying gaps in the technical knowledge and socio-economic policy barriers. Identification and implementation of sustainable solutions for waste management are necessary. Reform of the waste management sector should take into account the informal sector, raising awareness, promotion of adequate waste collection and treatment and the economic growth of the sector in a technologically efficient and sustainable way⁷⁵.

It is also important to integrate appropriate low cost and efficient technologies with community based management and their relevant governance, institutional frameworks and socioeconomic constraints, linking waste treatment with poverty reduction and the improvement of the welfare of the population. An in-depth understanding of the strengths, weaknesses, opportunities and threats in the specific local context are fundamental when developing a robust and sustainable solution.

The new national policy for ISWM which is under preparation has to be developed and implemented with the aim of controlling waste generation, by promoting the 3Rs including promotion of waste reduction, separation at source and waste materials recovery. The Green Economy concept goes hand in hand with the 3Rs, as both opt for extracting/using less resources and creating less waste. The policy would promote establishing central SWM treatment and disposal facilities with the appropriate technology that will have the minimum impact on local residents to be shared among municipalities.

The new policy should develop instruments to encourage waste prevention and minimization based on public private partnerships (PPP) and extended producer responsibility (EPR). Moreover, supporting the privatization of services is needed to achieve high efficiency as well as to attract investments from the private sector.

PPP is a long or medium term arrangement between the public and private sectors whereby the public sector transfers a part of its responsibilities to the private sector⁷⁶. These arrangements are typically formed with clear goals and agreements for the delivery of public services or infrastructure. PPP can provide the services that the public sector neither has the resources nor the expertise to supply alone. According to UNESCAP, PPP itself is not a solution option for the service delivery problems but rather a viable project implementation mechanism for a desired solution option⁷⁷.

A strategic plan has to be developed focusing on the 3Rs, aiming to reduce waste generation and enhance waste segregation, reuse, and recycling in every community. Promotion of resource-efficiency, sustainable consumption, waste reduction and recycling, and technology-based treatment and disposal

75- GERHARD SCHÖRIES, "INTEGRATED SUSTAINABLE SOLID WASTE MANAGEMENT IN ASIA: PROJECT FINAL REPORT", VEREIN ZUR FÖRDERUNG DES TECHNOLOGIETRANSFERS AN DER HOCHSCHULE BREMERHAVEN E.V., 2012.

76- World Bank, 2011 (<http://ppp.worldbank.org/public-private-partnership/>).

77- UNESCAP, "A Guidebook on Public Private Partnership in Infrastructure", Economic and Social Commission for Asia and the Pacific, 2011.

should be included. Moreover, the strategy should focus on reducing organic waste composition in the waste directed for disposal, to reduce GHG emissions.

Selection, design and implementation of economic instruments, such as incentives – subsidies, low-interest finance, tax exemption; disincentive fees, charges/fines, are needed for the solid waste management sector. This could be done by instituting a multi-stakeholder process to identify and implement economic instruments for waste management. Moreover, it is necessary to build and strengthen human and institutional capacity in the assessment, design and implementation of economic instruments for solid waste management.

The new solid waste management law to be drafted should be in association with the proposed national policy on resource recovery and 3Rs, promoting waste reduction, reuse, and recycling.

Multi-stakeholders involvement is foreseen in the formulation of the national solid waste management policy, strategy, drafting of legislation, and the planning and implementation of services. Stakeholder consultation is needed to define policies for the gradual formalization of the recycling sector and to assist in the growth of the Egyptian recycling businesses. Moreover, the ISWMS will consolidate and prepare a waste framework law in the framework of public and stakeholders' consultations³². The final draft of the law will be used to establish a basis for identifying SWM secondary legislation and decrees.

There is a need for developing a strategy for capacity building to increase knowledge of solid waste management to all members of the community, aiming to improve lives and health and to enable local communities to properly store, collect, transport, treat and dispose solid waste. The strategy for public officials would develop and put into practice specific programs for the managerial officials, all "permanent" employees in the Governorates and members of environmental, solid waste management, public health and related areas. Moreover, a strategy for public education would be developed relying on all methods of communication (TV, radio, etc.), supported by well-prepared NGOs, and conducted continually over several years.

On the other hand, one of the solid waste sector problems is the lack of reliable and standardized technical data and the absence of a mechanism for disseminating data when available. An effective technical data system is clearly needed that would gather essential information about the sector and develop it into meaningful data to assist planners, researchers and other decision-makers concerned with solid waste management. Establishing a national Information system within the organizational structure of the ISWMS is essential.

Moreover, SWEEP-Net can participate in building the national network to consolidate information on solid waste management related policies, programmes, documentation, contacts, etc. in a reliable common environment accessible to the practitioners and stakeholders in Egypt.

ANNEX I: CASE STUDIE

EGYPT OCTOBER 2013

HEPCA, AN NGO SOLELY RESPONSIBLE FOR ALL ASPECTS OF SWM IN THE SOUTHERN EGYPTIAN RED SEA

COUNTRY: EGYPT

CITY: HURGHADA AND MARSHA ALAM

DATE OF IMPLEMENTATION: 2009

MAIN ISSUE AND EXPECTED OUTCOMES

- The lack of proper SWM in the Red Sea Governorate led to an unacceptable accumulation of waste throughout the entire area of the Red Sea. To make matters worse, the generally strong winds blowing in the Red Sea resulted in dispersed low density waste throughout the entire ecosystem. Piles of solid waste can be found in the desert and sea, which had devastating impacts on wildlife and their habitats.
- HEPCA implemented an effective and comprehensive SWM plan to save the environment on a local scale by alleviating the disastrous effects of the solid waste on wildlife, and on a global scale through the preservation of the re-usable resources in the solid waste.

NARRATIVE DESCRIPTION OF THE ACTIVITY

- In 2009, HEPCA became solely responsible for the SWM system in the southern Egyptian Red Sea, in accordance to a protocol signed with the Red Sea Governorate. The comprehensive SWM system includes everything from door to door collection to material recovery and a recycling component.
- The collected waste is transported to segregation plots which are simple enclosures fenced off by five meter high fences to trap any waste picked up by the wind. The waste that is classified as organic is re-segregated there, since it is usually waste from the restaurants and kitchens of hotels containing a significant amount of water bottles, yogurt cups, cans etc. The segregated waste is then transported to a Material Recovery and Recycling Facility (MRRF).



- All the collected materials are recycled; plastic bags are recycled on site, while the other materials are sent to specified factories for recycling. The materials that cannot be recycled, which compose less than 20% of the non-organic waste, are transferred to the local landfill.

POLICY/LEGAL/INSTITUTIONAL CONTEXT

- HEPCA's comprehensive solid waste management strategy for the Red Sea was formulated in cooperation with USAID, the EEAA, the National Parks of Egypt and the Association for the Protection of the Environment, and private sponsorships including the Coca Cola Company.
- Hurghada's SWM plan was formulated taking into consideration the specific characteristics of the city and the local environment; the plan reflects the city's sensitive surrounding ecosystems, its urban structure and its socioeconomic structure. The plan stresses on community participation.
- The key for HEPCA as individuals is the 3Rs campaign; Reduce, Reuse and Recycle. Real change in individual's daily practices is a big part of HEPCA's Red Sea solid waste management strategy.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- The project is financially sustainable, serving residents, resorts and businesses against agreed fees;
- In 2010, the Material Recovery and Recycling Facility produced 114,803 Kg paper, 96,664 Kg plastics, 57,746 Kg PET bottles and 29,366 Kg metals.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- The project was met with a great deal of cooperation from the residents, who have continued to work with the HEPCA team on the ground in the reporting of any violations and maintaining the streets waste free;
- In addition to providing SWM services in Hurghada city, HEPCA's services stretch two hundred kilometres, commencing at its northern most point at Port Ghalib and ending in the south at the small town of Beranice. This two hundred kilometre stretch's epicentre is the city of Marsa Alam; it also contains the villages of Abu Ghusun and Hamata;
- The waste collection scheme has over 180 subscribing resorts and businesses.



COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- In February of 2010, HEPCA took on the Hadabacleanup campaign; a yearlong campaign aimed at implementing an efficient solid waste collection system and more importantly, to insight a change in the solid waste disposal habits of the community in this district of Hurghada;
- As each street was cleaned up, a HEPCA team entered with awareness material, and a set of simple directions for the proper practices of waste disposal. Every building was required to have sufficient containers for their



waste output; HEPCA provided branded 120 litre containers at cost price. In parallel to the awareness campaign, door to door collection commenced twice a day.

PUBLIC PRIVATE PARTNERSHIPS

- The project is conducted by an NGO.

LESSONS LEARNED

- Preparing proper strategy and implementation plans for SWM, based on the actual situation of the served areas, is a key pillar for success;
- Specific collection plans, which are environmentally conscious and financially sustainable, have been devised for different districts in Hurghada. They are based on the population density, urban structure, available infra-structure, and the socioeconomics of the community as well as previous practices;
- The cleanup and awareness raising campaign in Hurghada was not simply the removal of existing pileups, but rather the introduction of an efficient sustainable collection methodology coupled with the incitement of a change in the solid waste disposal habits of the community.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- The experiences of HEPCA's SWM project in Red Sea Governorate should be taken into account, when planning similar projects in Egypt and in the SWEEP-Net member countries.

Contact for more information

Hurghada Environmental Protection and Conservation Association (HEPCA)
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References

<http://www.hepca.org/conservation/solid-waste/>

EGYPT OCTOBER 2013

15TH OF MAY PROJECT FOR LANDFILLING & PROCESSING SERVICES FOR THE SOUTHERN ZONE - CAIRO GOVERNORATE

COUNTRY: EGYPT

CITY: 15 MAY, CAIRO GOVERNORATE

DATE OF IMPLEMENTATION: 2005

MAIN ISSUE AND EXPECTED OUTCOMES

- The signed contract with Cairo Governorate requires treating 20% of the waste, and the rest (80%) would be directed to a sanitary landfill;
- ECARU directs the whole incoming waste to a treatment facility (sorting, composting and RDF production units). The rejects (about 40%) are directed to the landfill, leading to a reduction in methane emissions from the landfill;
- The project falls under the approved methodology AM0025; and
- Reduction of CO₂ equivalent is about 200,000 ton per year.

NARRATIVE DESCRIPTION OF THE ACTIVITY

- The municipal solid waste treatment and disposal process consists of five main phases:
 - Phase 1: Waste receiving and pre-sorting;
 - Phase 2: Sorting of recyclables and baling;
 - Phase 3: Treatment of the organic material by bio-logical aerobic process;
 - Phase 4: RDF production; and
 - Phase 5: Landfilling.

POLICY/LEGAL/INSTITUTIONAL CONTEXT

- This project represents a successful case of private sector participation in providing municipal solid waste management services.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- ECARU receives tipping fees from Cairo Governorate against composting and landfilling services; and
- Additional revenues are: compost, recyclables and RDF selling, and CERs.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Municipal solid waste received was 118,822 tons in 2012;
- CO₂ reduction is 200,000 ton/ year;
- Compost quantity is about 25% of the total amount of MSW, while RDF is about 15% of the total amount; and
- Landfill size (all 4 combined cells) capacity is 2,600,000 tons of MSW.

COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

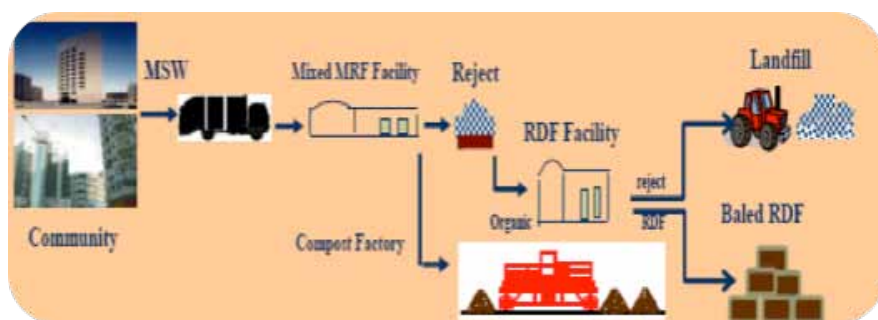
- Participation in workshops and exhibitions related to SWM, which facilitate promoting the company products and projects;
- Regular updates to the company brochures, catalogues and all other printed materials;
- Developing the company website and updating it with the required information on a regular basis;
- Utilizing social media such as Facebook, as a new marketing tool that helps the company in interacting with the outside community;
- The company emphasizes on staff training to improve their awareness and skills required to perform their job effectively.

PUBLIC PRIVATE PARTNERSHIPS

- ECARU was contracted by Cairo Governorate to process 1,500 ton/day of MSW. The contract requires treating only 20% of the incoming waste and the remaining would be to be directed to a sanitary landfill. Currently, 60% of the waste is treated and only 40% of rejected waste is landfilled instead of the contracted 80%; and
- The present carbon credit is 195,000 CER.

LESSONS LEARNED

- Converting waste into valuable resources;
- Avoiding methane emission in the landfill;
- Project revenues are compost, recyclables and RDF selling, in addition to disposal fees;
- Help the community to get rid of residues that can damage the surrounding environment; and
- Natural resource savings as manufacturing recycled products consumes less energy than using raw materials.



OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- ECARU, is open to any information exchange with SWEEP-Net member countries.

Contact for more information

Mr. Rafik Magdy, Business Development Assistant - E-Mail: rafik@entag.net

Ms. Randa Mohamed, Marketing Manager - E-Mail: randa@entag.net

Ms. Nora Ragab, Technical studies coordinator - E-Mail: nora@entag.net

El Obour City – 1st industrial zone, Block no. 12013 District no.5 str., 116 Branch from str. 110

Tel: + 202 4665096/4/2 - Fax: +202 46650965

References

www.entag.net

EGYPT OCTOBER 2013

GREEN GROWTH: INDUSTRIAL WASTE MANAGEMENT AND SME ENTREPRENEURSHIP HUB IN EGYPT

COUNTRY: EGYPT

CITY: CAIRO AND 10TH OF RAMADAN

DATE OF IMPLEMENTATION: 2013

MAIN ISSUE AND EXPECTED OUTCOMES

- Developing entrepreneurship and creating green jobs through the establishment of a sustainable industrial waste exchange (IWEX) system that links waste generators to waste users and recyclers to enhance resource efficiency across the different industrial sectors; and
- The industrial private sector, key stakeholders and entrepreneurs in the pilot area, the 10th of Ramadan city, are the direct beneficiaries of the project.



NARRATIVE DESCRIPTION OF THE ACTIVITY

- The industrial sector accounts for about 20% of GDP, 23% of employment, and generates about 6 million tons of waste annually. If 50% of this waste is recycled, it can create 8,000 jobs in green areas;
- SMEs make up 99% of the non-agriculture private sector;
- Industrial waste includes recyclable items and its use will result in greater financial and environmental benefits;
- Industrial waste is a direct cause of many diseases in Egypt, such as cancer and kidney failure;
- The project includes mapping of the industrial waste at the enterprise level in the selected pilot area (10th of Ramadan, which has 2500 industrial enterprises), including data collection and analysis of the industrial waste and developing an inventory and database of the industrial waste; and
- Establishing the industrial waste exchange (IWEX) will facilitate the cooperation of industrial waste generators and SMEs recyclers.



POLICY/LEGAL/INSTITUTIONAL CONTEXT

- One of the project components is to develop policy recommendations towards an enabling environment for industrial waste exchange in Egypt. This will be performed by reviewing the existing regulations and legislations and international best practices from the United Kingdom and South Africa, consultations with key stakeholders to discuss policy options, and production of policy briefs (PPPs in industrial waste management, incentives, etc.); and
- As indicated in the present country report, Egypt lacks a specific regulatory and policy framework for industrial waste management.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- The African Development Bank (AfDB) is financing the establishment of the SME Entrepreneurship Hub. The project budget is 2 million USD over 3 years; and
- The project aims to facilitate linking SMEs with financial institutions.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Green Entrepreneurship Programme Development through the implementation of 3 demonstration projects in the selected pilot area;
- Identifying 3 pilot projects to exchange specific types of industrial wastes;
- Matching the producer(s) of industrial waste with potential user/recycler and identifying the technology to be used;
- Conducting rapid analysis from the perspective of the generator and recycler of waste (especially SMEs and entrepreneurs) to assess the technical feasibility of the pilot;
- Technical and financial feasibility studies for the projects;
- Providing non-financial technical assistance services for the implementation of the projects and introducing know-how and innovative methods and techniques for the recycling of waste;
- Linking the user/recycler of waste to existing sources of finance; and
- Supporting recyclers in acquiring the necessary certificates that provide their products with a comparative advantage in the local as well as the international market, and linking them with large enterprises.

COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- Awareness raising activities include workshops, marketing campaign, etc;
- Capacity building of stake-holders involving study tours. Participants include the Basel Convention Regional Centre for Training and Technology Transfer for Arab States - Egypt (BCRC-Egypt), Egyptian Environmental Affairs Agency, the Industrial Development Authority (IDA) as well as business and investor associations; and
- Technical training, coaching and mentoring.



PUBLIC PRIVATE PARTNERSHIPS

- The project is implemented and managed by the Egyptian National Cleaner Production Center;
- The project links industrial private companies with SMEs recyclers.

LESSONS LEARNED

- Developing models of green entrepreneurship programmes for SMEs in industrial waste recycling; and
- Organized cooperation of developing agencies, centers of expertise, the private industrial sector and SMEs creates job opportunities.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- The project can be replicated in other SWEEP-Net member countries.

Contact for more information

Egypt National Cleaner Production Center (ENCPC)
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References

<http://encpc.org/en.html>

EGYPT OCTOBER 2013

USING RICE STRAW RESIDUES FOR THE PRODUCTION OF PELLETS

COUNTRY: EGYPT

CITY: NILE DELTA

DATE OF IMPLEMENTATION: 2010

MAIN ISSUE AND EXPECTED OUTCOMES

- Recently, five straw pelleting plants started operating in three major rice producing regions in the Nile Delta (Kafr el Sheikh, Dakahlia and Sharkia Governorates). The produced pellets are exported to be used in electricity plants.
- A significant overall emission reduction is achieved compared to the traditional practice of field burning.



NARRATIVE DESCRIPTION OF THE ACTIVITY

- Traditionally, rice straw was burned in the field, creating economic waste as well as air pollution and smog formation. The resulting "Black Cloud" is a yearly health problem covering Cairo and other urbanised areas in the Egyptian Delta;
- The rice straw production chain consists of the following operations: traders buy straw from contractors and farmers; baled straw is stored decentrally; baled straw is transported to pellet plants where pelletization occurs; Pellets are transported by trucks to the Egyptian port of Alexandria; straw pellets are then shipped in medium-sized carriers to Rotterdam; and finally, pellets are co-fired in coal-fired power plants; and
- The pellet plants combine a number of processes, including dirt removal, straw milling, pelletizing, air cooling and pellet transport for silo storage by conveyer belt.



POLICY/LEGAL/INSTITUTIONAL CONTEXT

- The Ministry of Agriculture and Land Reclamation is the main authority responsible for providing oversight of the agricultural waste, in coordination with MSEA/EEAA;
- Law 4/1994, and amendments in Law 9/2009, fine farmers who practice rice straw burning up to LE 20,000 and prohibit dumping of waste in areas other than those specified. As indicated in the present country report, Egypt lacks a specific regulatory and policy framework for industrial waste management.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- This project provides a win-win situation. Farmers who may burn rice straw, which is a by-product of rice grain cultivation, on their fields now have a better option of selling it to traders who transport it to pelleting plants. The pellets are exported to the Netherlands and used as alternative fuel for co-firing coal-fired power generation plants.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Preventing rice straw burning in the fields;
- Decreasing CO₂ emissions by converting rice straw into pellets and its use as alternative fuel in Dutch coal fired power plants;
- Greenhouse gas emissions were quantified for the principal operations in the biomass-to-energy chain. Also expected emission reductions were calculated, in comparison with the use of fossil fuels; and
- Generating income and new job opportunities.



COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- Due to the efforts of MSEA/EEAA and the Ministry of Agriculture and Land Reclamation, there is a general awareness in Egypt that field burning of rice straw leads to unacceptable air quality;
- The programme is working for raising environmental communication and awareness, including the preparation and distribution of brochures and handouts, as well as establishing a mobile environmental awareness unit, and the organization of meetings and workshops for farmers; and
- The beneficial re-use of agricultural waste is economically profitable for both the farmer and the industry, environmentally sound by better use of the biomass (bio-based economy), and will add to human health as large scale rice straw burning is reduced leading to less air pollution.

PUBLIC PRIVATE PARTNERSHIPS

- The projects are conducted by the private sector.

LESSONS LEARNED

- The technical and economic feasibility of environmentally safe rice straw disposal and utilization methods for Egypt study lead to establishing the straw pelleting plants; and
- The calculated CO₂ emissions along the chain of operations suggest that Egyptian rice straw use for co-firing in Dutch electricity plants may indeed meet the requirements for net emission savings set by the RED and NTA 8080 standards. This result may hold promise for future biomass based business development in Egypt, and the possibility of certifying biomass operations against international sustainability standards for improved market access.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- These projects for production of alternative fuel from agricultural waste can serve as a model to replicate in other SWEEP-Net member countries.

Contact for more information

Rob Bakker, WolterElbersen, Ronald Poppens and Jan Peter Lesschen.

Wageningen UR, Food & Biobased Research.

P.O. Box 17, NL-6700 AA Wageningen.

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References

- Rob Bakker, WolterElbersen, Ronald Poppens and Jan Peter Lesschen, "Rice straw and Wheat straw. Potential feedstocks for the Bio-based Economy", Wageningen UR, Food & Biobased Research, NL Agency, June 2013.
(<http://www.agentschapnl.nl/sites/default/files/Straw%20report%20AgNL%20June%202013.pdf>)
- Ronald Poppens and Rob Bakker, "Greenhouse gas emission analysis of an Egyptian rice straw biomass-to-energy chain", Wageningen UR, Food & Biobased Research, NL Agency, September 2011
(<http://edepot.wur.nl/244979>)

EGYPT OCTOBER 2013

AGRICULTURAL AND MUNICIPAL WASTE MANAGEMENT THROUGH COMMUNITY INVOLVEMENT

COUNTRY: EGYPT

CITY: EL KATTA VILLAGE, GIZA GOVERNORATE

DATE OF IMPLEMENTATION: NOVEMBER 2012

MAIN ISSUE AND EXPECTED OUTCOMES

- Introducing sustainable methods to reduce CO2 emissions in Egypt in order to address climate change concerns and their negative impacts on the environment, health, and human welfare;
- Improving crop productivity due to the use of organic fertilizers;
- Creating employment opportunities for the rural poor and unemployed;
- Eliminating the burning practice of agricultural and organic waste by introducing composting and implementing it;
- Sorting of non-organic waste for recycling to maximize value;
- Connecting members of the community involved in the recycling efforts to buyers of sorted waste and compost; and
- Engaging the different stakeholders across the social levels of the village thus creating a sense of ownership and raising the level of awareness of problems and solutions.



NARRATIVE DESCRIPTION OF THE ACTIVITY

- The project is meant to be a pilot program that promotes good practices in achieving the main objectives stated above that can be replicated in other locations in the country;
- Egypt generates about 30 million tons of agricultural residue per year and about 21 million tons of solid waste annually;
- Converting agricultural and organic waste into compost will transform a growing crisis in El Katta village, which directly impacts the people's livelihoods into a sustainable green practice;



- It will improve agricultural productivity through the reduction of hazardous waste, CO₂ emissions, and pollution, while simultaneously improving agricultural output and quality through the more effective compost fertilizers;
- The heavy usage of chemical fertilizers that negatively impact crops will be mitigated, providing both short and long-term benefits;
- More water would be made available due to improved efficiency in irrigation and agricultural productivity;
- Another major achievement would be the training of community members in El Katta to oversee the composting procedures so that the practice can be replicated in other locations; and
- The project is expected to create employment opportunities, as well as reduce rural to urban migration as a result of improved living conditions and increased opportunities.

POLICY/LEGAL/INSTITUTIONAL CONTEXT

- The Government is giving a high priority to the solid waste management problem in Egypt. The project supports Government efforts with this regard.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- Funding is provided through CSDS and the project is now self-financed through the returns obtained from the sale of sorted solid waste.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Improving the environmental and health conditions of the local community by reducing agricultural residues and municipal solid waste through processing;
- Improving land fertility and crop productivity by providing organic fertilizers from agricultural and municipal solid waste;
- Creating new job opportunities for the local community and improving their livelihood.



COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- Communicating with the local community is an indispensable part of the project through its entire life span. Emphasis is laid on the benefits derived from the proper management of agricultural and municipal solid waste.

PUBLIC PRIVATE PARTNERSHIPS

- The Egyptian Environment Affairs Agency (EEAA) is lending its support to the project through public awareness campaigns and providing basic equipment for the project.

LESSONS LEARNED

- Involvement of the local community is essential for the success of the project;
- Solving environmental problems can be addressed by providing an economic perspective to the issue; and
- Public awareness is an essential component to ensure community engagement.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- There is a need to replicate this project in other MENA countries. This can be achieved through communicating the experience of the project to other countries. Field visits to the project can be facilitated and representatives from El Katta community can share the experience of the project in regional and national events.

Contact for more information

Hussein Abaza

Title/function: Director and Founder of CSDS

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References

EGYPT OCTOBER 2013

RE-REFINING USED LUBRICANT OIL IN ALEXANDRIA PETROLEUM COMPANY

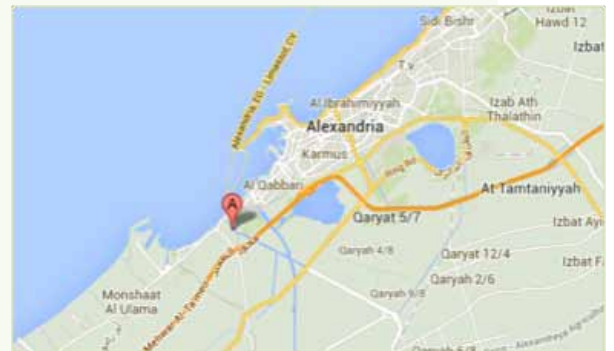
COUNTRY: EGYPT

CITY: ALEXANDRIA

DATE OF IMPLEMENTATION: 1997

MAIN ISSUE AND EXPECTED OUTCOMES

- Dumping used lubricant oil, or any other environmentally unsound disposal practice, can lead to contamination of soil, air and groundwater;
- To protect the environment, Alexandria Petroleum Company established a re-refining unit for used lubricant oil with a feeding capacity of 30,000 tons per year; and
- The unit produces about 23,000 tons per year of neutral oils, minimizing the waste and operating cost, in addition to saving energy.



NARRATIVE DESCRIPTION OF THE ACTIVITY

- The problem of re-refining used oil lies on the process of collecting it from its different resources, which in turn guarantees the availability of the feed necessarily for the unit operations. The oil sector has made good steps to collect the used oil which can be summarized as follows:
 - Cooperation Petroleum Company and Misr Petroleum Company are charged of collecting used oil from distributing companies;
 - Establishing Petrotrade Company to collect used oil from other resources so as to increase the amount of collected oil;
 - Obliging service stations to establish land tanks for collecting used oil;
 - Distributing companies have established central collection tanks in the Governorates for collecting used oil to be supplied to Alexandria Petroleum Company.
- Lubricant oil users should ensure that any used oil generated by their operations is stored securely and safely, and collected on a regular basis. Long term storage is discouraged;
- Different types of used oil should be segregated when they are stored. The mixing of used oil with other contaminants can create fire and health hazards, and should be avoided; and
- Users should organize for the collection of the used oil by a licensed collector company, or otherwise authorized to collect and transport used oil.

POLICY/LEGAL/INSTITUTIONAL CONTEXT

- Conviction of dealing with used oil in faulty ways and not delivering it to the authorized parties; and
- The Environmental Law 4/1994 listed lubricant used oil among the hazardous material which is banned to be used unless there is license from the specialized administrative party, after approval of EEAA.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- The company has a unique position between refining companies as it produces 55% of the national consumption of basic oils; and
- The produced 25,000 tons per year of neutral oils are marketed locally.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Used lubricant oil has an inherent value. To save scarce resources, this inherent value should be recovered, as it is economically justified. This allows recycling of the used lubricant oil back to lubricants, or their conversion into products such as furnace fuels, power station start-up fuels, and diesel fuel extenders.

COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- The company provides environmental training and awareness programs to its workforce; and
- The company uses international modern technology to reduce pollution and implement environmental management systems including :
 - Waste reduction;
 - Using recycling and reusing methods in the processes operations;
 - Environmental protection of air, water and soil, in addition to reducing noise in the work place;
 - Sharing and supporting the scientific research.

PUBLIC PRIVATE PARTNERSHIPS

- Alexandria Petroleum Company is one of the Egyptian General Petroleum Corporation.

LESSONS LEARNED

- Re-refining used oil takes only about one-third the energy of refining crude oil to lubricant quality;
- One gallon of used oil utilized as fuel contains about 140.000 Btu of energy;
- A gallon of used oil from a single oil change can ruin a million gallons of fresh water - a year's supply for 50 people;
- Concentrations of 50 to 100 parts per million (ppm) of used oil can foul sewage treatment processes;
- Oil dumped onto land reduces soil productivity; and

- Toxic effects of used oil on freshwater and marine organisms vary, but significant long-term effects have been found at concentrations of 310 ppm in several freshwater fish species and as low as 1 ppm in marine life forms.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- Alexandria Petroleum Company can provide information and expertise in the field of used lubricant oil recycling to SWEEP-Net member countries.

Contact for more information

Alexandria Petroleum Co.

Project's General Manager

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References

<http://alex-petroleum.com/SiteMap.html>

EGYPT OCTOBER 2013

RECYCLOBEKIA COMPANY FOR E-WASTE RECYCLING

COUNTRY: EGYPT

CITY: CAIRO

DATE OF IMPLEMENTATION: APRIL, 2011

MAIN ISSUE AND EXPECTED OUTCOMES

- Providing e-waste collection, transportation, recycling and data destruction services to corporate and end-users.



NARRATIVE DESCRIPTION OF THE ACTIVITY

- Recyclobekia is an electronic waste recycling company based in Egypt and serving the Middle East and North Africa (MENA) region; and
- Recyclobekia is the first company in the Arab world offering green recycling of electronic waste and safe data destruction services.

POLICY/LEGAL/INSTITUTIONAL CONTEXT

- Egypt lacks policy and specific regulations governing e-waste management;
- The Ministry of Industry decree 165/2002 prohibited importing WEEE; and
- The Ministry of Trade requires that imported computers should not be more than five-years old from production date.

FINANCING, RECURRENT COST AND COST RECOVERY CONTEXT

- No Governmental allocations and financial resources are directed for e-waste management.

ACTUAL RESULTS ACHIEVED BY THE ACTIVITY

- Currently, RecycloBekia conducts e-waste collection, transportation, dismantling\ refurbishing, and sorting;
- The refining process is conducted outside Egypt with a partner company in Europe; and
- Since the establishment of RecycloBekia, the company has recycled around 60 tons of electronic waste.

COMMUNICATION AND COMMUNITY OUTREACH ACTIVITIES

- Awareness campaigns on the importance of green recycling of e-waste and info-graphical videos, such as: <http://www.youtube.com/watch?v=TQuT6oOJa3s>;
- Use of social media - creative designs and environmental tips to spread environmental culture of e-waste recycling, such as the facebook page «<https://www.facebook.com/recyclobekia>» and twitter «<https://twitter.com/RecycloBekia>».

PUBLIC PRIVATE PARTNERSHIPS

- RecycloBekia has contractual agreements to provide e-waste collection and recycling services with some multinational corporations. You can find the logos of oracle, Orange, Mobinil, infofort, etc. as a sort of marketing for their brands at «green companies - <http://recyclobekia.com/index.php/gcompanies>»;
- The company receives e-waste from dealers and SMEs; and
- The company is cooperating with a refining plant in Europe, and cartridges recycling companies in Egypt and Singapore.

LESSONS LEARNED

- According to the CEO of RecycloBekia, "This business is complex and you have to know where you would put your money or you are going to lose it all"
 - You have to know the nature of region you are working on;
 - The business should start small with minimum resources and then grew as you gain experience.

OPPORTUNITIES FOR THE EXCHANGE OF EXPERIENCES AND EXPERTISE (WITHIN SWEEP-NET)

- The company, RecycloBekia, is open to any information exchange forums or initiatives.

Contact for more information

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References

www.recyclobekia.com

Interviews on RecycloBekia in youtube:

-MBC news, http://www.youtube.com/watch?v=YwhDRH6_UZk

-Dream 2 El3ashera Masa2n, http://www.youtube.com/watch?v=Ug-7_rANqIc

ANNEX II: DOCUMENT FACTSHEETS

DOCUMENT FACT SHEET I.

LEARNING & EARNING IN CAIRO'S GARBAGE CITY

COUNTRY: EGYPT

DATE OF ISSUE: 2012

PARTNER ORGANISATION:

SUPPORTING PARTNER: SECTION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT, UNESCO

OTHER PARTNERS:

LANGUAGE: ENGLISH

KEYWORDS: SWM, INFORMAL SECTOR, EDUCATION

MAJOR SECTOR AND TOPICS: SWM AND EDUCATION



ABSTRACT

Cairo Governorate authorities cannot cope with the large amount of daily generated MSW. Consequently, Cairo relies heavily on informal waste collectors (Zabaleen) although they are not contracted by official authorities. There are six Zabaleen communities located on the outskirts of Cairo whose inhabitants earn their living through waste collection, segregation and recycling. The largest settlement is located in Mokattam and has approximately 60,000 inhabitants. It is known as Garbage City. The Zabaleen live in poor conditions and most children in the community lack education. In Mokattam, the Recycling School for Boys stands out as a unique initiative which aims to improve living conditions for the community through non-formal education. To date, the school has taught approximately 350 children. The school implements innovative methods of non-formal basic education specifically designed for those who are caught in the poverty trap and cannot access formal schooling.

MAIN ISSUE AND EXPECTED RESULTS

- The recycling school hours are in place to allow the students to continue working with their parents. Thus, the informal waste-recycling sector has become the setting for non-formal learning and skills acquisition for hundreds of youth in Cairo;
- The Mokattam Recycling school for boys is designed to incorporate education, work experience, environmental protection, poverty alleviation and earning to create a matrix where one project improves an impoverished community on many levels;

- The school's curriculum includes "literacy, numeracy, business math, personal and environmental hygiene, income generation and recycling, computer literacy, principles of project management, bookkeeping and simple accounting, along with recreational theatre arts; and
- In December 2001, CID designed and launched the Recycling School through a USD 500,000 grant from UNESCO and under the auspices of the Association of Garbage Collectors for Community Development. Today, the project is under the auspices of the Spirit of Youth Association for Environmental Services, which was established by youths in Mokattam neighbourhood in 2004.

LESSONS LEARNED

- The school follows a "learn-and earn" programme in line with the non-formal education model. The programme entails the boys collecting empty plastic bottles during their daily garbage collection rounds. They are compensated for each collected bottle that is inventoried and granulated for recycling in the school. This business model necessitated that they learn to read and write, organize information, and perform mathematical functions; and
- In moving forward to improve the lives of informal waste collectors at large, any system would need to factor in the critical aspect of how poor people all over the world have developed the art of making a livelihood out of the materials others throw away. Such people have developed businesses, created jobs, protected the earth from the extraction of more raw materials, all based on the traditional management of waste.

OPPORTUNITIES FOR EXCHANGING EXPERIENCES AND EXPERTISE WITH OTHER SWEEP-NET MEMBER COUNTRIES

- The "learn-and earn" programme could be adapted in other SWEEP-Net member countries of similar circumstances.

FOR MORE INFORMATION

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DOCUMENT FACT SHEET II.

NATIONAL SOLID WASTE MANAGEMENT PROGRAMME EGYPT, MAIN REPORT

COUNTRY: EGYPT

DATE OF ISSUE: DECEMBER, 2011

PARTNER ORGANISATION: MSEA AND MOLD

SUPPORTING PARTNER: KFW AND GIZ

OTHER PARTNERS:

LANGUAGE: ENGLISH

KEYWORDS: SOLID WASTE MANAGEMENT, PROGRAMME

MAJOR SECTOR AND TOPICS: SOLID WASTE MANAGEMENT, PROGRAMME



ABSTRACT

As in all countries, a large diversity of waste-types is generated across Egypt. It is estimated that 40% of the total waste generated is left uncollected, and that only a fraction of this collected waste is treated and disposed in facilities with a generally acceptable level of environmental control. Egypt's waste management policy framework has lagged behind other countries in the MENA region, and investment into the sector is largely stagnant. The National Solid Waste Management Programme (NSWMP) is set up to support the establishment of new and effective policy, legislation and institutional arrangements for waste management at the National and Governorate level in Egypt, coupled with enhanced professional capacity, and an investment pipeline for implementation of sectoral projects at the regional and local level.

MAIN ISSUE AND EXPECTED RESULTS

The Government of Egypt will establish the Egyptian Solid Waste Management Authority (ESWA) to take charge of sector development. Establishing ESWA is a necessary precondition to manage the solid waste management sector in an effective, efficient and sustainable manner. This reform is essential to protecting public health, the quality of the environment, and at the same time developing a new sector of the economy and creating new jobs.

The expected results of the NSWMP are:

- An established waste management policy supported by framework legislation and implementing regulations for priority waste streams, and a developed institutional structure governing the waste management sector at the national and local level;
- An established investment pipeline, with implementation of waste management concepts in 4 governorates designed and implemented with multi-stakeholder participation;
- Enhanced professional capacity to direct, manage and implement policy, legislation, strategy, programs, projects and services;

- Solid waste management plans at the national and local levels, with measures designed and implemented to increase service coverage and performance; and
- Broad involvement of civil society in the elaboration of policies and plans coupled with recognition of waste management & recycling as a profession.

LESSONS LEARNED

- The NSWMP is intended to catalyse development of the waste management sector across Egypt through developing the policy, legal and institutional framework, and making seed investments in infrastructure and services; and
- The implementation of an enhanced waste management system on national and in particular regional and local levels will provide an opportunity to improve the living conditions of Egyptian citizens via the creation of employment as well as upgraded environmental conditions.

OPPORTUNITIES FOR EXCHANGING EXPERIENCES AND EXPERTISE WITH OTHER SWEEP-NET MEMBER COUNTRIES

- The experience gained by the NSWMP could be shared with other SWEEP-Net member countries.

FOR MORE INFORMATION

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DOCUMENT FACT SHEET III.

DEVELOPMENT OF INTEGRATED HAZARDOUS SUBSTANCES AND WASTE MANAGEMENT SYSTEM

COUNTRY: EGYPT

DATE OF ISSUE: 2011

PARTNER ORGANISATION: EEAA

SUPPORTING PARTNER: SUPPORT TO THE EU – EGYPT ASSOCIATION AGREEMENT PROGRAMME (SAAP)

OTHER PARTNERS:

LANGUAGE: ENGLISH

KEYWORDS: HAZARDOUS SUBSTANCES; HAZARDOUS WASTE; MANAGEMENT

MAJOR SECTOR AND TOPICS: HAZARDOUS SUBSTANCES AND HAZARDOUS WASTE MANAGEMENT



ABSTRACT

The twinning project aims to increase the Beneficiary's (EEAA) efficiency to meet its mandate, and international obligations, in the area of hazardous substances and waste life cycle management. This is realized through strengthening EEAA's institutional and policy capacities and adopting relevant EU best practices in this field. This project is in line with the National Development Plan 2007 - 2012 (NDP) that has a main goal to establish an integrated hazardous substance and waste management system over a 5-year period, while covering all stages starting with waste generation and collection from its sources, then storage and handling as well as transport to treatment, recycling and recovery units. The cycle ends with the final disposal stage in a gradual-phased and prioritized manner.

MAIN ISSUE AND EXPECTED RESULTS

Among the serious environmental challenges that the EEAA encounters are hazardous substances (HS) and waste management (WM) which remains a top priority. The project covered strengthening the environmental dimension of public policy and EU-Egypt co-operation: promotion of sustainable development policies and actions, including climate change, waste management, environmental education and awareness and environmental management.

The specific aims of the twinning project include:

- Improving EEAA's institutional structure to achieve better management of hazardous substances and waste;
- Building appropriate capacities within the Beneficiary and key stakeholders to improve the management of HS and solid waste and the implementation and enforcement of pertinent environmental legislation;

- Developing a framework for integrated hazardous substances and waste management that includes the preparation of an integrated strategy, system, and plan for efficient management of solid and other waste; and
- Harmonizing Egyptian legislation pertaining to HS and WM with relevant EU laws and international standards.

LESSONS LEARNED

- In order to establish an integrated hazardous substance and waste management system, a special system must be designed and developed in technical, legislative, institutional and financial terms where a human resource component is a key one;
- It is necessary to adopt and efficiently enforce an adequate and comprehensive legislative and regulatory framework as well as the application of international best practices, particularly in the field of HS and WM.

OPPORTUNITIES FOR EXCHANGING EXPERIENCES AND EXPERTISE WITH OTHER SWEEP-NET MEMBER COUNTRIES

- The outcomes of the report could be adopted in other SWEEP-Net member countries of similar situation.

FOR MORE INFORMATION

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The regional solid waste exchange of information
and expertise network in Mashreq and Maghreb countries

April 2014

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Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices : Bonn and Eschborn, Germany

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As at

April 2014

Design and layout

Kréa - 1002 Tunis

Text

GIZ Tunisia / SWEEP-Net / D-Waste

GIZ is responsible for the content of this publication.

On behalf of the

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and Development (BMZ)

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