United Nations Development Programme

Country: Egypt

PROJECT DOCUMENT[1]

Project Title:	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste.
UN One Plan III Focus area(s):	Focus area 1: Inclusive, Equitable and Sustainable Growth
Expected OP Outcome(s)/Indicator(s):	Outcome 1.4: By 2016, key national and sub-national Agencies, in partnership with the private sector and communities, implement and monitor laws, policies and programmes for more efficient use of natural resources and environmental management, and implement commitments under international conventions Outcome Indicator : Indicator 1.4.3: Number of tonnes of (POPs—obsolete pesticides, pesticide contaminated soils and dioxin contaminated soil - contained and remediated in accordance with international environmental requirements
Expected OP Output(s) and Indicator(s):	Output 1.4.3: Policies, plans and technical skills are strengthened for the sound management of hazardous chemicals and persistent organic pollutants (POPs), in accordance with international conventions.

Executing Entity/Implementing Partner: -Ministry of Environment

Responsible Partner: -UNDP

[1] For UNDP supported GEF funded projects as this includes GEF-specific requirements

Brief Description: The project objective is to prevent and reduce health and environmental risks related to POPs and harmful chemicals through their release reduction achieved by provision of an integrated institutional and regulatory framework covering environmentally sound Health Care Waste and E-waste management. The project will reduce emissions of UPOPs as well as other hazardous releases (e.g. mercury, lead, etc.) resulting from the unsound management, disposal and recycling of a) Health-Care Waste (HCW), in particular due to substandard incineration practice and open burning of HCW; and, b) Electronic Waste, in particular due to the practice of unsound collection and recycling activities and open burning of electronic waste. The project will achieve this by i) determining the baseline for releases of UPOPs and other hazardous substances (e.g. mercury, lead) resulting from unsound HCW and E-waste practices; ii) conducting facility assessments; iii) building capacity among key stakeholders; iv) implementing BEP at selected model hospitals, health-care facilities (HCFs) and a central treatment facility (CTF); v) introducing BAT and BEP to formal and informal E-waste processors; vi) preparing health care facilities for the use/maintenance of non-mercury devices followed by introduction of mercury-free devices; vii) evaluating facilities to ensure that they have successfully implemented BEP; viii) installing and evaluating BAT technology(ies) at one Central Treatment Facility based on a defined evaluation criteria; and, xi) enhancing national HCWM training opportunities to reach out to additional hospitals/HCFs.

Programme Period:	2014-2018
Atlas Award ID:	00083771
Project ID:	00092079
PIMS #	4567
Start date:	Aug 2015
End Date	Aug 2020
Management Arrangements	NIM
PAC Meeting Date	29 March 2015.

Total resources required	US$ 21,668,000
Total allocated resources:	US$ 21,668,000
• Regular	US$ 50,000
○ UNDP in-kind	US$ 50,000
• Other:	
○ GEF	US$ 4,100,000
○ Government in-kind)	US$ 378,000
○ Private/bilateral (Parallel)	US$ 17,090,000*

* Breakdown as an annex in Page 92

Agreed by (Government):

Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

Date/Month/Year

Agreed by (UNDP):

Date/Month/Year

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List of Acronyms

APR	Annual Project Report
AWP	Annual Work Plan
BAT	Best Available Technique
BCRC	Basel Convention Regional Centre
BEP	Best Environmental Procedure
BFR	Brominated Flame Retardants
CO	Country Office
CTF	Central Treatment Facility
EEAA	Egyptian Environmental Affairs Agency
EHSIMS	Egyptian Hazardous Substances Information and Management System
EIA	Environmental Impact Assessment
EOL	End Of Life
FSP	Full Size Project (GEF terminology)
GEF	Global Environment Facility
GoE	Government of Egypt
HCF	Healthcare Facilities
HCW	Healthcare Waste
HCWM	Healthcare Waste Management
ICT	Information and Communication Technologies
IMC	Inter-Ministerial Committee
IP	national Implementing Partner
IR	Inception Report
I-TEQ	Internationally agreed TEQ - 1 g TCDD equals 1 g I-TEQ
IW	Inception Workshop
MoHP	Ministry of Health and Population
MPPI	Mobile Phone Partnership Initiative
MoE	Ministry of Environment
NEOL	Near End of Life
NIP	National Implementation Plan (re Stockholm Convention on POPs)
NPD	National Project Director
PBDEs	Polybrominated diphenyl ethers
PCBs	Polychlorinated biphenyls
PCDD	Polychlorinated dibenzo-pdioxins

PCDF	Polychlorinated dibenzofurans
PIF	Project Identification Form (GEF terminology)
PIR	Project Implementation Review (annual GEF requirement)
PM	Project Manager
PMU	Project Management Unit (PMU)
UPOPs	Unintentionally Produced Persistent Organic Pollutants
POPs	Persistent Organic Pollutants
RAT	Rapid Assessment
SOE	State of Environment
SRF	Strategic Results Framework
STAP	Scientific and Technical Advisory Panel (to GEF)
TTR	Terminal Tripartite Review
UNEP	United Nations Environmental Programme
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Programme
UNDP-CO	United Nations Development Programme Country Office
USD	United States Dollar
WHO	World Health Organization

List of Annexes

I. SITUATION ANALYSIS

Context and global significance

Egypt and the Stockholm Convention

Due to the great concern in protecting human health and the environment from POPs, Egypt signed the Stockholm Convention on 17/5/2002 and ratified it on 2/5/2003. The National Implementation Plan (NIP) proposal for fulfilling the requirements of the Stockholm Convention on Persistent Organic Pollutants (POPs) for Egypt was prepared within the framework of the project "Enabling Activities to facilitate early action in the implementation of the Stockholm SC on POPs" under GEF Project GEF/EGY/02/22.

Egypt's 2005 National Implementation Plan (NIP) with respect to the management of dioxins and furans identifies open burning of wastes, medical waste incinerators and industrial processes as the three largest emitters of Unintentionally Produced Persistent Organic Pollutants (UPOPs). Priorities related to dioxins and furans, which have been included in the National Implementation Plan (NIP) are the following: Prevention of uncontrolled waste combustion; Sound environmental management of waste; Implementation of BAT/BEP measures for the reduction of dioxin and furan emissions; Adjustment of national legislation to adequately address POPs/UPOPs issues; as well as the provision of education and awareness building.

a. Egypt's status of ratification of international conventions on chemicals and environment

In addition to the Stockholm Convention, Egypt has ratified a number of other chemicals related Multi-lateral Environmental Agreements (MEAs), listed in Table 1 below. The country is a Party to the Basel Convention having acceded to this convention in January 1993. The country has not ratified the Rotterdam Convention or signed the Minamata Convention, although both are under consideration by the Government. Similarly, it has not undertaken substantial steps toward the adoption of Global Harmonized System (GHS) for the classification of hazardous substances.

Table 1. International conventions and multilateral agreements signed, ratified and acceded to by Egypt

Multilateral Environmental Agreement	Participation/ Signing Status	Ratification/ Accession (a)	Responsible National Institution
Stockholm Convention on Persistent Organic Pollutants	17/05/2002	02/05/2003	EEAA
Basel Convention on the Trans-boundary Movement of Hazardous Waste and their Disposal		08/01/1993(*)	EEAA
Ban Amendment to the Basel Convention	27/01/2004		EEAA
Rotterdam Convention on Prior Informed Consent for Certain Chemicals and Pesticides in International Trade	Not signed	Not ratified	
Minamata Convention on Mercury	Not signed	Not ratified	

Multilateral Environmental Agreement	Participation/ Signing Status	Ratification/ Accession (a)	Responsible National Institution
Global Harmonized System of Classification and Labelling of Chemicals		Not implemented	
Vienna Convention		09/05/1988	EEAA
Montreal Protocol	16/09/1987	02/08/1988	EEAA
– London Amendment to the Montreal Protocol		13/01/1993	EEAA
– Copenhagen Amendment to the Montreal Protocol		28/06/1994	EEAA
– Montreal Amendment to the Montreal Protocol		20/07/2000	EEAA
– Beijing Amendment to the Montreal Protocol		06/03/2009	EEAA
– Kyoto Protocol	15/03/1999	12/01/2005	EEAA
UN Convention to Combat Desertification	14/10/1994	07/07/1995	EEAA
Convention on Biological Diversity	06/09/1992	06/02 1994	Ministry of Agriculture
– Cartagena Protocol on Bio-safety	20/12/2000	23/12/2003	Ministry of Agriculture
Convention on Chemical Weapon	Not signed	Not ratified	

(*) on 31/01/1995, Egypt attached a declaration to its ratification of the convention with the requirements to oblige ships carrying hazardous waste to ask a permission to the Egyptian government to cross the Egyptian territorial sea. This declaration has been rejected and considered null by some EU countries (UK, Finland, Italy, Netherlands, and Sweden).

b. GEF projects launched in the framework of the Stockholm Convention (SC).

In Egypt beside the currently formulated national project only two (2) GEF national projects in the area of sound management of Persistent Organic Pollutants (POPs) covered by the Stockholm convention have been implemented or are under implementation. Table 2 below provides details.

Table 2. GEF projects on POPs launched or implemented in Egypt.

GEF ID	Project Title	Agency	Type of Project	GEF Grant	Co-financing	Status
1497	Enabling Activities to Facilitate Early Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Egypt	UNIDO	EA	496,500	0	Project Closure
3905	Sustainable Persistent Organic Pollutants Management Project	IBRD	FP	8,100,000	15,500,000	CEO Endorsed

In addition to the nationally implemented GEF financed projects in POPs focal area, the country is also participating in the following regional projects listed in Table 3.

Table 3. GEF regional projects on POPs with Egypt as participating country.

GEF ID	Project Title	Agency	Type of Project	GEF Grant	Co-financing	Status
2865	Promotion of Strategies to Reduce Unintentional Production of POPs in the PERSGA Coastal Zone	UNIDO	MSP	950,000	2,030,000	Project Completion
4886	Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Africa Region	UNEP	FP	4,208,000	8,462,000	Council Approved
2546	Demonstration of Sustainable Alternatives to DDT and Strengthening of National Vector Control Capabilities in Middle East and North Africa	UNEP	FP	4,913,110	8,416,400	Under Implementation

Of these, the GEF-UNEP POPs pesticide project (GEF id. 2546) provides for a limited relevance to this project, whilst the GEF-UNIDO regional project (GEF id. 2865) is at the stage of project completion. The current GEF-UNDP project will therefore seek coordination with the regional GEF-UNEP project on Global POPs Monitoring and the national GEF-IBRD project on Sustainable POPs management.

In addition, there is a number of other non-GEF, bilateral initiatives that are referenced further in the project document. These include KOICA (Korea International Cooperation Agency) and German-Egyptian EU Twinning Projects on sound mercury management.

The KOICA project was initiated by the Egyptian Environmental Affairs Agency (EEAA), and officially started in 2008 with a total funding of US$ 3 million. Initially it aimed to improve the management of mercury waste nationwide, however later on the focus moved to waste management aspects of Mercury-containing fluorescent lamps. The project aims to:

- establish a recycling unit for fluorescent lamps at Nasriya landfill in Borg El Arab, Alexandria (Mediterranean area north of Cairo) governorate with a capacity of 24,000 lamps/day.
- initiate collection of different types of fluorescent lamps from relevant ministries, authorities, producers and consumers for decontamination at Nasriya landfill.

The EU funded German Twinning Project “Development of Integrated Hazardous Substances and Waste Management System for the Egyptian Environmental Affairs Agency (EEAA)” – EG07/AA/EN10 (November 2008 and May 2011).

The objective of the German Twinning Project “Development of Integrated Hazardous Substances and Waste Management System for the Egyptian Environmental Affairs Agency (EEAA) – EG07/AA/EN10” between December 2008 and May 2011 was to:

- develop an integrated system for a more efficient management of hazardous substances and waste;
- strengthen EEAAs institutional and policy capacities;
- adapt relevant EU best practices in the field of waste and hazardous substance management; and
- for mercury, support a limited number of activities as part of the project such as a lecture on sound mercury management.

Baseline analysis

General Environmental legislation.

Ministry of Environment has established a new Department for Solid Waste management including chemical and wastes in the country. It administers related environmental laws and regulations, formulates general policies for the protection and promotion of the solid waste, and implements these in coordination with other authorities.

Law No. 4 for the Protection of the Environment of 1994 and the **Executive Regulation of Law No.4 (the Ministerial Decree No. 338 of 1995)** provide the principal regulatory framework for handling hazardous substances, including permits, storage, transport, packaging and labelling. A number of additional regulations governing importing, manufacturing, trade, and usage of chemicals have been issued under the jurisdiction of other ministries. Consequently the authorities introduced the **Egyptian Hazardous Substances Information and Management System (EHSIMS)**, an online initiative to facilitate the procedure for obtaining licences for handling hazardous substances and provide consistency.

A list of amendments to the Law N° 4 is reported below:

- Egypt: Resolution No. 1095 of 2011 amending some provisions of Decree No. 338 of 1995 issuing the Implementing Regulation of Environment Law No. 4 of 1994. This Resolution amends articles (10, 13, 18, 20, 24-26, 37, 42, 44-46, 59, and 60) of Decree No. 338 of 1995, providing for the main duties of the Egyptian Environment Affairs Agency (EEAA) , environmental monitoring networks, prohibited waste materials, licensing issues and administrative proceedings. The annexes (1, 2, 4-11) appended to the amended Decree are replaced with annexes to this Resolution.
- Resolution No. 1741 of 2005 amending Resolution No. 338 of 1995 issuing the Implementing Regulation of Environment Law. This Resolution amends articles 1, 3-4, 7-8, 10, 12, 17-19, 25-26, 28-29, 31, 34, 36-39, 41-42, 47, 54, and 58-60 of the Implementing Regulation of Environment Law No. 4 of 1994. The amendments deal with the following matters: drainage, compensations, nomination of representatives of different ministries, environmental impact assessment, obligations of license-holders, obligations of installation-owners, competencies of the Environment Apparatus, hospital's hazardous waste, phases of hazardous waste, obligations of hazardous waste producers, suitability of the site for the aforementioned activities, prohibited activities, gathering of solid waste, airing quantity, licensing measures, solid waste and marine environment, and the environmental register for hazardous waste. Amendments have been made to Annexes 1 to 11 dealing with the following: requirements and criteria of liquid waste, installations subject to environmental impact assessment, register of installations, protected wildlife birds and animals, maximum limits of air pollutants, maximum limits of noise, maximum and minimum temperatures and humidity, and requirements for domestic solid waste and dumps.
- Resolution No. 1445 of 2003 defining hazardous substances and prohibiting their handling, importation and trade. This Resolution is composed of 3 articles. The substances indicated in the attached list are to be considered hazardous waste and their importation, commerce and circulation shall be prohibited (art. 1). The treatment of the aforementioned substances shall be executed according to the requirements and conditions established by the Ministry of Environment (art. 2).
- Resolution No. 165 of 2002 prohibiting the importation of dangerous and hazardous substances and waste listed in the attached annexes. This Resolution is composed of 5 articles and 1 Annex. The importation of dangerous and hazardous substances and waste listed in the attached Annex shall be prohibited (art. 1). The Industrial Register must authorize the use, storage, transport, circulation and recycling of these substances in the establishments (art. 2). The circulation and

transport of these substances outside the establishments must be authorized by the Industrial Control Department (art. 3). The revision and updating of the list of hazardous substances and waste shall be carried out every two years (art. 4).

- Egypt: Resolution No. 495 of 2001 amending Decree No. 338 of 1995 issuing the Implementing Regulation of Law No. 4 of 1994. This Resolution amends Resolution No. 338 of 1995 issuing the Implementing Regulation of Law No. 4 of 1994 on environment as follows: "addition of a new paragraph to clause (e) of article 42 concerning the definition of maximum emissions from chimneys of clay and thermal brick industries as well as from steam boilers".

- Decree No. 338 of 1995 issuing the Implementing Regulation of Environment Law No. 4 of 1994. The Implementing Regulation is composed of 5 Sections and 10 Annexes. Section I contains the following matters: general provisions; Environmental Affairs Administration; Environmental Protection Fund; and incentives. Section II deals with provisions in matter of soil pollution control, development and environment, dangerous and waste materials. Section III regards air pollution protection. Section IV on water pollution control including pollution caused by ships, oil, waste water and discharge; pollution from land-based sources; and legal and administrative proceedings. Section V contains final provisions. The Regulations are completed by ten Annexes regarding inter alia: Standards and list of permitted discharges into the sea (I); establishments subject to environmental impact assessment (II); environmental impact assessment registration forms (III); protected wild animals and birds (IV); list of forbidden sea discharges (V).

b. Waste regulation.

Although Egypt ratified the Basel Convention, in its legislation there is no transposition or direct equivalence correlation with the national system for either the waste definitions or of the hazardous waste classification as established by the Convention. Similarly, no provisions for tracking through a hazardous waste manifest system for hazardous waste is provided for. As a consequence, the implementation of the relevant legal measures is uncertain and inconsistent throughout the country.

- The two most significant pieces of legislations are Law No. 38/1967 on General Public Cleaning and Law No. 4/1994 for the Protection of the Environment and their amendments. In addition, Decree number 273/2010 is a ministerial decree issuing the executive regulation for the safe disposal of HCW

The main updates of legislations within 2005-2010 are:

- Law No. 9/2009 amending Law 4/1994 and regulating collection, treatment and disposal of hazardous waste ;

- Presidential Decree No. 86/2010 regulating the closure of existing dumping sites and the landfill at Greater Cairo and allocation of five new sites outside the residential and commercial belt of Greater Cairo.

- Resolution No. 1352 of 2007 of the Ministry of Petroleum on the waste produced by petroleum installations. The aim of this Resolution is to regulate the circulation of wastes produced by petroleum installations. It is composed of 6 articles and 1 List. Article 1 considers the wastes listed in the attached List produced by petroleum installations as dangerous wastes, which necessitate a previous license for their circulation. Article 2 entrusts the General Egyptian Authority for Petroleum to issue licenses for the aforementioned wastes. Article 4 prohibits the importation of the aforementioned wastes. Article 5 entrusts the General Egyptian Authority for Petroleum and the Environment Body to revise and modify the List periodically. The List contains the names of the dangerous wastes.

- Law No.10/2005 establishing a solid waste collection fee system ;
- Prime Minister Decree No. 1741/2005 amending the Executive Regulations of Law 4/1994 and covering regulations for the selection of sites for recycling and landfilling and equipment requirements for waste collection and transfer ;

Under the Law # 4, hazardous waste are defined as "*Hazardous Waste*" and as **"***Waste of activities and processes or its ashes which retain the properties of hazardous substances and have no subsequent original or alternative uses, like clinical waste from medical treatments or the waste resulting from the manufacture of any pharmaceutical products, drugs, organic solvents, printing fluid, dyes and painting materials*". It is worthwhile noticing that the wording of this definition might be interpreted as preventing the recycle of hazardous waste even after pretreatment. A future revision of the law could amend this sentence for clarification, establishing instead references to the standards which should be met for allowing the environmentally sound recycling of specific waste streams

Under the same law, hazardous substances are defined as "*Substances having dangerous properties which are hazardous to human health, or which adversely affect the environment, such as contagious, toxic, explosive or flammable substances or those with ionizing radiation."* This actually clarifies what hazardous is although on case specific instances actual quantified limits on specific hazard characteristics should be identified.

Hazardous waste are regulated by articles 29-33 in the Law #4 as following:

- Article 29 establishes the prohibition of displacing hazardous waste without a license;
- Article 30 delegates the regulation of hazardous waste management to rules and procedures to be developed;
- Article 31 prohibiting the building or operating waste disposal facilities without a license issued by the competent authorities;
- Article 32 prohibiting the introduction in the Egyptian territory of hazardous waste without a permit
- Article 33 regulating pollution of hazardous waste and obligation for decontamination.

There are in addition a number of decrees establishing committees and units in charge of the management of HCW:

- Decree No. 82/96 is a ministerial decree establishing the hazardous waste and substance committee.
- Decree No. 218/2006 reforming the hazardous waste and substance committee
- Decree No. 497/2009 is a ministerial decree establishing the health waste disposal unit at each health directorate. Decree indicated also incentives for the members of the units.
- Decree No. 576/2010 is a ministerial decree establishing central supervisory committee to supervise HCWM system.
- Decree No. 485/2011 amending decree 273/2010 and forming HCWM committee at health directorate level
- Decree No. 265/2013 substituting Decree number 485/2011 and forming new HCWM committee as well, amending the financial arrangements and rates.

c. Regulations on chemical management including POPs.

In addition of the Law # 4, the Egyptian regulatory system includes a number of regulations dealing with the management of chemicals which in some cases also include certain obligations on POPs. In most cases, these legislations need however to be updated to be made fully compliant with the Stockholm and the Basel Convention requirements.

- Resolution No. 85 of 2008 defining the competent authority for the issuance of licenses for chemical material stores. This Resolution is composed of 3 articles. Article 1 entrusts the Industrial Development Authority to issue licenses for chemical material stores. Article 2 charges the Internal Trade Sector and the Industrial Control department to inspect and monitor chemical material stores.
- Resolution No. 851 of 2006 on hazardous and dangerous chemical substances. The aim of this Resolution is to protect public health and the environment. This Resolution is composed of 4 articles and 1 Table. Article 1 considers the chemical substances listed in the attached Table as hazardous and dangerous materials to be added to the substances provided for in Resolution No. 7 of 1999. Article 2 bans the circulation of the aforementioned substances unless obtaining a previous license from the General Authority for Industrial Development. Article 3 recommends the revision and updating of the hazardous substances list every 5 years. Table I contains the names of hazardous and dangerous substances. None of the substance listed is a POP.
- Decree No. 151/1999 of the Ministry of Industry that covers hazardous industrial chemicals and lists chemicals which cannot be used without license.
- Decree No. 55/96 of the Ministry of Supply and Internal Trade that bans the use, import and production of 88 hazardous pesticides, which include all the substances under Annex (A) of the Stockholm Convention,
- Decree No. 874/1996 of the Ministry of Agriculture that regulates importing, handling and use of pesticides.
- Decree No. 413/1996 of the Ministry of Health and Population that requires hazardous chemicals & wastes handlers to obtain a license.
- Decree no. 60/86 of the Ministry of Agriculture and Land Reclamation, which bans the use of some pesticides harmful to health and the environment.
- Decree No. 55/1983 of Ministry of Manpower and Immigration, that regulates and controls handling and storage of all chemicals used in industry (this was later included in the Unified Labor Law No. 12/2003.
- Decree No. 480/1971 of the Ministry of Health and Population that covers Air pollution with industrial chemicals criteria for industrial establishment.
- Decree No. 50/1967 of the Ministry of Agriculture that covers toxic properties of pesticides and procedures for registration.
- Decree No. 91/1959 of the Ministry of Industry that sets rules for regulating production, handling and importing of chemicals.
- Law No. 21/1958 of the Ministry of Industry that sets rules for regulating industry and production, handling and importing of industrial chemicals.

d. Specific policies and regulations on Health Care Waste

Over the course of the past few years, the government of Egypt has taken important steps towards improving the policy and regulatory framework governing HCWM.

In 2010, a HCWM strategy was finalized and adopted (April 2010). Priority interventions included in the strategy were:

1. establishment of centralized treatment facilities in lieu of small-scale treatment units located on health-care premises.
2. revision of the Code of Practice and use of centralized treatment technologies under the supervision of MoHP and the Ministry of State for Environmental Affairs (MSEA).
3. revitalizing the medical waste management situation in health-care establishments (training, separation, collection, storage and transportation) according to new guidelines.

Since adoption of the strategy, centralized HCW treatment stations have been established in some governorates (priority no. 1). The proposed code of practice under the 2010 strategy has not yet been revised (priority no. 2), however the following ministerial decrees were issued (priority no. 3):

- 273/2010 (issued in 27.05.2010) on Regulatory bylaws;
- 576/ 2010 (issued in 27.10.2010) on formation of central committee for supervising and follow up the HCWM strategy;
- 485/ 2011 (issued in 25.06.2011) on updating the regulatory bylaws;
- 265/ 2013 (issued in 19.05. 2013) on updating the regulatory bylaws, and substituting decree no. 485/ 2011.

On November 15th, 2013, Egypt's Ex-Vice Prime Minister and the Minister of Higher Education, established a HCWM Inter-Ministerial Committee (IMC) with the Minister of Health and Population, the State-Minister of Environmental Affairs, and the Secretary General of the Supreme Council of Universities. The Committee has the responsibility to discuss the current HCWM situation and establish an integrated HCWM system to serve all Egyptian hospitals and healthcare facilities, whatever their affiliation.

Representatives of the shared ministries adopted a preliminary agenda, aiming at launching a strategic framework and a two-year plan to integrate HCWM activities all over the country.

To support the work of the preparation, three assessment reports[2] (in Arabic) were produced describing the current situation and future needs: A first report, issued on November, 30th, 2013 on "*preliminary HCWM situation*", a second report, issued on December, 15th, 2013 on "*Incineration capacity currently present in Egypt*", and a third report, issued on February 15th, 2014, on "*Response of various Egyptian Governorates on HCWM*". These reports contain valuable information for the analysis of the baseline situation of this project.

As explained above, the **Environment Law 4/1994 and its Executive Regulation (EEAA, 1994),** governs the management of hazardous waste, including healthcare ("infectious / clinical") wastes.

[2] The first report, issued on November, 30th, 2013 on "preliminary HCWM situation", the second report, issued on December, 15th, 2013 on "Incineration capacity currently present in Egypt", and the third report, issued on February 15th, 2014, on "Response of various Egyptian Governorates on HCWM".

The Executive Regulation to Law 4/1994 stipulates in Article 25 that it is forbidden to displace and use hazardous substances and dispose of hazardous wastes without a license from a competent authority. The environmental law (article 38) states that:

- "*Infectious waste from hospitals and health centres shall be burned on site in incinerators especially designed for that purpose and capable of absorbing the collected quantities without congestion or storing near the incinerator. In case of necessity, and with the approval of the competent municipal authorities and the EEAA, the waste of such units may be transported to the nearest hospital equipped with one or more incinerators, provided they can absorb the waste transported thereto. Such waste is transported in sealed containers which do not allow the dispersal of their contents in the air and the containers are incinerated together with their contents"*.

- In all cases, the incinerators shall be fitted with adequate technical methods to prevent the dispersal of ashes or the emission of gases except within the permissible limits as prescribed in Annex (6) of these Executive Regulations (The current national regulation requires that incinerators fulfil a concentration of PCDD/F at the stack of 0.1ngTeq/Nm3[3]).

From the above, the following observations have been made as a part of establishing the project baseline:

- The Environmental Law (4/1994) on the one hand prescribes HCFs to treat infectious health-care waste on their premises by incineration, on the other the law states that hazardous waste needs to be treated at least 3.5 km from communities. This contradiction in the law needs to be addressed;
- Although quite a number of HCFs apply non-incineration technologies to treat HCW (~ 30) or use CTFs for the treatment of HCW, such options are not reflected in the law. Regulations would preferably be changed to allow HCFs to select the technologies/treatment approaches that best fit their needs best as long as they meet environmental emission standards set by EEAA;
- Although recycling of hazardous waste in the law is allowed for certain waste streams, the scope/potential for the recycling of disinfected and shredded plastics is not provided. A recommendation would be to clarify the standards for recycling activities in a future amendment of the law, while leaving the details to the executive regulations of the amended law.

e. Specific regulations on electric and electronic waste

In Egypt, there are currently no laws/regulations on the management of E-waste or even a hypothetical proposal. Therefore, there is are currently no legal requirements which guide the collection of WEEE as an input to a formal business or industry. The only formal requirement is that E-waste collectors and disposers need to be licensed to carry out their business under article 29, 30 and 31 of Law # 4.

However, there are a number of regulations aimed at controlling the import of used electronic equipment to prevent E-waste to enter in Egypt under the coverage of used equipment or beneficence:

- The Telecommunications Regulation Law # 10 of 2003 -Article 46 stated that "It is prohibited to import used Telecommunication Terminal Equipment for the purpose of trading". The definition

[3] This is in line with both the BAT/BEP guidance of the Stockholm Convention (Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practice relevant to article 5 and annex C of the Stockholm Convention on Persistent Organic Pollutants). The same value (0.1ngTeq/Nm3) has been adopted by the EU regulation on the incineration of hazardous waste materials.

of the telecommunication equipment here is telecommunication equipment used by a user to connect with a public or private telecommunication network

The situation of Health-Care Waste in Egypt

The generation of health-care waste (HCW) is rapidly increasing in Egypt, as a result of expanding healthcare systems, increased utilization of single-use items, and poor segregation practices. As an unintended consequence, the resulting larger healthcare waste quantities and their subsequent treatment and disposal are resulting in increased releases of UPOPs as well as volatile heavy metals and other pollutants. Increased UPOPs releases are the consequence of HCW treatment in low technology incinerators that do not meet standards established under the Stockholm Convention and Basel Convention BAT/BEP guidance[4] (predominant treatment applied in Egypt), or the open burning of such waste when they are mixed with regular municipal waste and end up on uncontrolled dumpsites.

Healthcare facilities (HCFs) in Egypt are also a significant source of atmospheric releases of Mercury. Mercury spills and the breakage/disposal of Mercury-containing devices, such as thermometers and sphygmomanometers, are the principal ways by which Mercury from health facilities enters the environment. The use of Mercury-containing devices in the healthcare sector in Egypt is widespread, mostly due to limited availability of low cost Mercury-free devices, and unfamiliarity with their use. Mercury is also used in the healthcare sector in the form of dental amalgam, and enters the environment when amalgam waste is discharged into the sewerage, as there are often no solutions available to deal with such waste streams.

a. Health Care Waste Management (HCWM)

As mentioned above, an inter-ministerial committee (IMC)[5] on HCWM was instituted in November 2013 to advance the current HCWM situation and establish an integrated HCWM system. In order to support the work of the IMC on HCWM, three reports[6] were commissioned. As part of the PPG phase of the proposed project, a fourth assessment was commissioned by UNDP and the GoE entitled "*Assessment Study of HCW in Egypt*[7]" which summarized relevant sections of the three reports, reported on the situation pertaining to non-incineration technologies and Mercury management as well as prepared estimation of UPOPs and Hg releases from the health sector. Findings and results from the four reports constitute the project's baseline.

Egypt counts approximately 2,352 hospitals and 150,740 healthcare facilities (without beds) providing primary, secondary and tertiary healthcare services in all Egyptian governorates.

Table 4 illustrates the capacity of the Egyptian hospitals, while Table 5 provides data on the number of the Egyptian HCFs (according to their affiliation). In total Egypt counts approximately 135,478 hospital beds.

[4] Basel Convention Guidance document - Updated general technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants (POPs)
Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practices relevant to article 5 and annex C of the Stockholm Convention on Persistent Organic Pollutants.

[6] The first report, issued on November, 30th, 2013 on "preliminary HCWM situation", the second report, issued on December, 15th, 2013 on "Incineration capacity currently present in Egypt", and the third report, issued on February 15th, 2014, on "Response of various Egyptian Governorates on HCWM".
[7] Assessment Study of Healthcare Waste in Egypt, Integrated Development Consultants (IDC), May 2014.

Table 4: Number of various categories of hospitals and their bed capacity in Egypt

Hospital categories		All MOHP hospitals and branches	All MOHP-related hospitals	University hospitals	Public Sector's hospitals	Police and prisons' hospitals	Private hospitals	All hospitals
Total	No.	842	110	83	26	26	1,265	2,352
	%	35.8	4.7	3.5	1.1	1.1	53.8	≈100.0
	Beds	51,007	18,430	33,168	2,478	1,382	29,013	135,478
	%	37.6	13.6	24.5	1.8	1.0	21.4	≈100.0

[*Source*: The National Statistical Centre on Health and Population (2012)]

Table 4 shows that although the private hospitals accounted for the highest number of hospitals (1265, 53.8%), their bed capacity accounts for only 21.4%. On the other hand, hospitals affiliated with MoHP and related agencies account for only 40.5% but represent the highest bed capacity (69,437- 51.2%), followed by university hospitals (83 hospitals- 3.5% with 33,168 beds- 24.5%).

Table 5: Number of various categories of health care facilities in Egypt (without beds)

HCFs Categories	MOHP and related HCFs (1)	Private clinics (registered)	Dental clinics (registered)	Laboratories (registered)	Pharmacies (2)	All Healthcare Facilities (3)
Total No.	28,622	47,420	5,501	6,137	63,060	150,740
%	19	31	4	4	42	≈100.0

[*Source*: The National Statistical Centre on Health and Population (2012)]

b. Estimation of Hazardous HCW Generation Rates

For the purposes of the project document, the WHO description and classification of hazardous HCW is applied, as taken up in the 2013 WHO second edition of "*Safe management of wastes from health-care activities*"[8].

Most hospitals and HCFs in Egypt do not monitor/report the amount of hazardous HCW generated. Therefore, for the purposes of establishing a project baseline, the hazardous waste generation rate[9] from the Egyptian health sector was estimated using a number of assumptions (see table 6). These assumptions were based on previously conducted healthcare waste studies.[10]

[8] Available online at: http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf

[9] Although a list of hazardous HCW is included in the Minister of Health decree no. 192/2001, the current legislation on hazardous waste in Egypt does not provide a definition for hazardous HCW. The analysis below is therefore based on the WHO's definition of hazardous healthcare waste in Chapter 2 of the WHO guidelines (Definition and characterization of health-care waste).

[10] Ismailia project funded by ESP-DANIDA, Beni-Suef project funded by SDEM-DANIDA, Sohag and Qena schemes implemented through SEAM project, Dakahlia feasibility study prepared by Swiss Centre for International Health.

Table 6: Assumptions used in estimating the hazardous component of HCW generation rates and their justification

Assumptions for hazardous healthcare waste generation rates	Value (kg/day)	Notes / Justification
Average generation rate per bed for hospitals with beds	0.275	Used in many projects. Includes all generated hazardous waste from the hospital except waste generated by the kidney dialysis units
Average generation rate per kidney dialysis machine	2.0	Used in many projects. Assuming each machine will work 2 shifts per day
Average generation rate per rural health units and other establishments without beds	0.8	Used in Beni Suef project - and confirmed from waste register of health units in Ismailia Fever Hospital[11]
Average generation rates for clinics - Category 1[12]	0.4	Used in many projects.
Average generation rates for clinics - Category 2[13]	0.2	Used in many projects.
Average generation rate for pharmacies (kg/d)	50% of clinics	Estimate used in Ismailia project.

Based on the assumptions presented in Table 6, the estimated hazardous HCW generation rate from all hospital categories all over the country comes to 24.9 tons per day.

Table 7 presents the estimated daily quantity of hazardous HCW in all Egyptian hospitals, according to their affiliation.

Table 7: Estimated quantities of hazardous healthcare waste – in Kg/day - Generated from all Egyptian hospitals.

Hospitals' categories	**All MOHP hospitals and branches**	**All MOHP-related hospitals**	**University hospitals**	**Public Sector's hospitals**	**Police and prisons' hospitals**	**Private hospitals**	**All hospitals**
Quantities in Kg/day	5,977	4,079	11,426	341	190	2,952	24,964
%	23.9	16.3	45.8	1.4	0.8	11.8	≈100.00

[*Source: Assessment Study of HCW in Egypt (IDC May 2014)*]

Table 7 shows that university hospitals generate about 45.8% of all hazardous HCW, hospitals and branches affiliated to MoHP and related agencies generate about 40% of the estimated quantities of hazardous HCW, while private hospitals generate approximately 11.8 %.

The estimated hazardous HCW generation rates from all Healthcare Facilities (HCFs) of various categories and affiliations all over the country amount to 65.3 tons per day. Table 8 illustrates the quantity of hazardous HCW in the Egyptian HCFs, according to their affiliation.

[11] Waste registers reviewed by the Environmental Health department at the Central Administration of Environmental Affairs at MoHP. It is confirmed that the 0.8 kg/d is a reasonable average figure for healthcare units

[12] Category 1 includes surgery, obstetrics, dental, dermatology and laboratories

[13] Category 2 includes other types of clinics

Table 8: Estimated quantities of hazardous healthcare waste – in Kg/day - generated by healthcare facilities.

HCFs Categories	MOHP and related HCFs	Private clinics (registered)	Dental clinics (registered)	laboratories	Pharmacies	Dialysis machines (Registered)	All Healthcare Facilities
Quantities in Kg/day	22,353	14,226	2,200	12,274	6,306	7,894	65,253
%	34	22	3	19	10	12	~100.0

[*Source: Assessment Study of HCW in Egypt (IDC May 2014)*]

Table 8 shows that the healthcare facilities – without beds - affiliated to the MoHP and related agencies generate about 34.3% of hazardous HCW, followed by the private registered clinics (21.3%), laboratories (18.9%), dialysis machines (12.1%), and pharmacies (9.7%). The dental clinics ranked last, with about 3.4% of the hazardous HCW generated in HCFs without beds.

Table 9 presents the total hazardous HCW generation rates in Egyptian hospitals and HCFs, according to their affiliation. The overall estimated quantities of hazardous HCW generated from all hospitals and HCFs of various categories and affiliations is 103.8 tons a day.

Table 9: Estimated quantities of hazardous healthcare waste – in kg/day - generated from all hospitals and healthcare facilities- (HCFs), in Egypt.

Hospitals and HCFs Categories	Hospitals and their branches	Healthcare Facilities- HCFs other than hospitals	All Hospitals and HCFs	Contingency- ≈ 15%[14]	Estimated HCW quantity- Kg/day
Quantities in Kg/day	24,964	65,265	90,228	13,534	103,763
%	24.1	62.9	87.0	13.0	~100.0

[*Source: Assessment Study of HCW in Egypt (IDC May 2014)*]

c. Existing treatment technologies for Health Care Waste in Egypt

In Egypt, the main treatment method for hazardous HCW is incineration (either on-site, or off-site), however, a considerable number of non-incineration technologies (steam sterilizers with shredding mechanisms) are also in use.

Table 10 provides an overview (prepared during the course of the PPG project's preparation phase) of the number and capacity of treatment technologies (incinerators and steam sterilizers with shredding mechanism) in Egypt. In total there are 296 treatment facilities/technologies, of which 253 incinerators (85.5%) and 43 steam sterilizers with shredding mechanism (14.5%), which are currently installed on the premises or outside of the premises of various healthcare facilities in all governorates (technology details on HCW treatment technologies are provided in Annex III).

[14] A contingency of about 15% was included, for the hospitals and HCFs that could not be accounted for during the course of data gathering.

About 75.7% of the engineering capacity of the treatment technologies is owned by MoHP facilities, while the remainder (24.3%) is installed at facilities not affiliated with the MoHP (e.g. university, public and private entities).

The total 'treatment capacity' is approximately 25,722 kg/hour. However, about 35.1% of that capacity **is not currently working** (see section on "Barriers"), while working technologies only operate for an average of 2.5 hrs/day. The reasons behind such low capacity utilization is the rudimentary status of the treatment facilities, unavailability of trained operators, inadequate maintenance and lack of supervision. Therefore, it is estimated that the overall treatment capacity is in the order of 45 t/day.

Table 10: Number and capacity of various treatment mechanisms available in Egypt

Treatment options		Incineration facilities				Steam Sterilization (with shredding)				**TOTAL** (Steam + Incineration)				Total
Affiliation		MOHP*		Non-MoHP		MoHP		Non-MoHP		MoHP		Non-MoHP		
Work or not		work	Not	work	not	work	Not	work	not	work	Not	work	Not	
Total	No.	111	92	44	6	9	3	29	2	120	95	73	8	296
	%	37.5	31.1	14.9	2.0	3.0	1.0	9.8	0.7	40.5	32.1	24.7	2.7	≈100
	Capacity In kg/hr.	10,870	8,305	4,350	630	203	83	1,193	90	11,073	8,388	5543	720	25,722
	as %	42	32	17	2	1	0.3	5	0.3	43	33	22	3	≈100

[*Source: Assessment Study of HCW in Egypt (IDC May 2014)*]

Table 10 indicates that the functioning incinerators, present all over the country, represent about 59.2% of the engineering capacity of all available treatment technologies while functioning steam sterilizers with shredders represent only 5.4% of the engineering capacity of all available treatment technologies. On the other hand, the engineering capacity of the non-working treatment technologies represents 34.7% and 0.6% for the incinerators and the sterilizers, respectively. Also noted is the concentration of non-incineration capacity outside the system operated by the MOHP and the concentration of non-working capacity within the MOHP system including a significant amount of non-incineration capacity.

Based on the findings of the baseline assessment study, and the total capacity of treatment technologies in operation (45.1 tons/day), it is estimated that 53.4 tons/day[15] of hazardous HCW is left untreated every day. It is assumed that such HCW is disposed of at municipal dumpsites/landfills without any prior treatment and burned in the open posing serious threats to human health.

d. Planned treatment technologies for HCW

An additional 47 incinerators have recently been installed in 7 central treatment locations, mostly outside the healthcare facilities, and nearby the existing municipal wastes dumpsites. However, some CTFs have encountered problems facing the start up of their operation, namely: Gharbia, Behira, Assuit, Alexandria, Menia, Fayoum, Dameitta, and Dakahlia:

- The CTF in Sadat City owned by Gharbia governorate lacks the EIA approval normally issued by the EEAA. In addition the CTF is facing the objection of the Sadat City Authorities for its operation. These problems ought to be addressed with EEAA and the Ministry of Housing.

[15] However, there is an excess treatment capacity in 5 governorates: Suez (750.7 Kg/day), Assuit (126.2 Kg/day), South Sinai (151.4 Kg/day), Red Sea (2.9 Kg/ day), and Matrouh (869.32 Kg/day).

- The CTFs in Behira and Assuit governorates are awaiting the completion followed by final approval of their EIAs by EEAA.
- The CTFs in Alexandria and Menia governorates are awaiting relocation to another environmentally suitable site, due to residents' objection.
- The CTF in Fayoum governorate is facing a problem with the construction contractor who has stopped working following objections of residents.
- Dameitta governorate has not yet started construction of the CTF at the environmentally compliant site.
- Dakahlia governorate has not yet been allocated a site for the CTF, while residents are currently objecting to the present site.

The already working CTFs are located in Guiza (11 incinerators), Kaluobia (8 incinerators), Sohag (8 incinerators), Beni Suef (5 incinerators), Aswan (2 incinerators), and Assuit (7 incinerators).

According to MoHP, 23 new incinerators will be also installed to replace old incinerators in various governorates' health directorates (16 governorates). The 23 incinerators have already been purchased by MoHP and are locally made[16]. Of the 23, 7 incinerators will be installed in 2014-2015 in CTFs in the governorates of South Sinai, Behira, Kaliobia, Port-Said, Aswan and Dameitta.

Furthermore, the Supreme Council of Universities (SCU), is currently providing university hospitals with 11 additional incinerators. These, already purchased[17], will be established in the following university hospitals: Cairo, Benha- at Kalubia, Aswan, Fayoum, Kafr El-Sheikh, Menoufia, Suez, Port Said, Qena, Helwan, and Mansoura at Dakahlia.

Evaluation of the specifications associated with the above mentioned new purchase of incinerators from local and French suppliers suggests that they employ basic fixed grate "fire box" technology with a secondary combustion chamber but only rudimentary Air pollution Control (APC) systems. As a consequence there would be questions as to their capability to meet the basic UPOPs related emission requirement for PCDD/F included in national regulations and generally accepted internationally.

The Guidelines on BAT?BEP of the Stockholm Convention[18], as well as the EU BREF[19] on waste incineration very clearly indicate, based on analysis of monitoring data conducted on a large number of plants worldwide, that in order to fulfil the limit of 0.1 ngTeq/Nm3, both primary measures and secondary measures are necessary. Primary measures alone (which includes as a minimum the presence of a primary and secondary combustion chambers, temperature above 850°C in the primary chambers, temperature above 1100°C in the secondary chamber with a minimum residence of flue gas of 2sec) are **not** sufficient to ensure to meet the 0.1ngTeq limit. Even the presence of secondary measures (encompassing gas pre-cooling, rapid quenching, chlorine removal, bag filters and activated charcoal reactors) may be not sufficient to reach the regulatory limit if these are not well designed, operated and maintained.

With the exception of the incinerator at CUH (which based on available information[20] seems however not capable to fulfil the regulatory limit even when completely functional), all the Massara and ATI

[16] Manufactured by Al-Masara Engineering Industries' company, each incinerator has a capacity of 100Kg/hour. The combined value of the 23 incinerators is LE 13.11 million.
[17] French made (type LC100/12-24/1S- infigroupsasu), each with a capacity of 100Kg/hour, with a combined value of LE10.12 million
[18] Idem
[19] European Commission. Integrated Pollution Prevention and Control Reference Document on the Best Available Techniques for Waste Incineration, August 2006
[20] Tabbin Institute for Metallurgical Studies, Energy and Environment Research Center. Final Report. Exhaust Stack Emission

incinerators, which have been or are being procured include only incomplete primary measures for air pollution control. More specifically both the Massada incinerators and the ATI incinerators, based on the information received, are simple "furnace boxes" equipped with a secondary combustion chamber, and, in the best case, temperature control. There is no Air Pollution Control System (APCS) whatsoever. For this reason is expected that these type of incinerators would emit a large amount of dust, PCDD/F and other toxic pollutants (including mercury), although both vendors claim these equipment would be capable to achieve the Egyptian or the EU emission limits. However, in the EU this type of facilities would not be authorized.

The above is clearly reflected in the emission factor adopted in the UNEP toolkit[21] for controlled, batch type incinerators with minimal Air Pollution Control System: the amount of emission for this type of incinerator in term of quantity of PCDD/F released per tons of waste processed is 3000 thousands higher than the amount released by high technology incinerator (3000 µgTeq/ton instead of 1 µgTeq T) but may be as much as 40000 times higher in case of absence of minimal APCS.

The use of small batch incinerators like the ones proposed by Massara or ATI should therefore be in general avoided for the disposal of healthcare waste. In line with SC recommendation, this kind of incineration can be temporarily tolerated only for processing healthcare waste which cannot be processed by autoclaving, provided that the waste to be processed do not contain any plastic or materials containing chlorine, or toxic metals. Therefore, the use of this kind of batch incinerators, either at hospital facilities or in centralized treatment facilities should always be preceded with a very effective segregation of waste. The establishment and enforcement of rules specifying clearly what are the type of wastes which can be provisionally treated by this equipment, pending the establishment of a more environmentally sound disposal facilities, is highly recommended.

e. Mercury Management

Mercury, either in its elemental, silvery liquid form, or as a compound, is found in myriad of products used in healthcare settings, such as thermometers, sphygmomanometers, other medical devices, numerous laboratory chemicals, fluorescent bulbs, and in other, non-medical products like thermostats and switches. Mercury is also used in the healthcare sector in the form of dental amalgam[22].

Healthcare facilities (HCFs) are considered a significant source of atmospheric releases of Mercury. Mercury spills and the breakage of Mercury-containing devices, such as thermometers and sphygmomanometers, are the principal ways by which Mercury from health facilities enters the environment and exposes health care workers and patients to the acute effects of the metal itself.

In Egypt, most Mercury containing waste is discarded along with infectious waste streams and is subsequently incinerated, releasing mercury into the atmosphere, while dental (scrap) amalgam waste is predominantly discharged with wastewater into the sewerage system, as there are often no solutions available to deal with such waste streams separately.

Because of the global threats to human health and the environment from Mercury, the Minamata Convention on Mercury, which was adopted in October 2013, aims to reduce releases of Mercury. The Convention aims to reduce Mercury emissions from all sources, including gold mining, dental amalgam,

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Measurement, CUH incineration plant.

[21] United Nations Environment Programme (2005).Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases.

[22] Dental mercury should also be considered a source of air borne emissions from cremation of dental amalgam.

chlor-alkali plants, coal combustion, waste incineration, smelting and many products containing mercury, such as thermometers and sphygmomanometers.

Considering the harmful effect of Mercury, the phase-out of medical devices containing Mercury is anticipated under the Minamata Convention by 2020. The Government of Egypt has not (yet) signed the Minamata Convention. However, when it does, the Minamata Convention has been ratified/acceded to, and the Convention has been domesticated, Mercury-added products, such as thermometers and sphygmomanometers, will have to be phased out by 2020 in accordance with Article 4 – paragraph 1[23] of the Convention. From that date onwards, the manufacture, import and export of Mercury-added products will no longer be allowed. The Convention also expects countries to introduce a minimum of 2 measures with the objective to phase down the use of dental amalgam, in accordance with article 4 – paragraph 3[24].

To date, Egypt has only undertaken a few activities to improve the management of Mercury (e.g. KOICA project and some interventions as part of the German-Egyptian EU Twinning Project – more information on the projects in provided above), however no considerable efforts have been undertaken to improve the sound management of Mercury and Mercury containing products and their wastes in the Egyptian healthcare sector, even though the 2010 State of the Environment (SoE) Report states as one of its priorities "*Finalize inventory with mercury's different sources in Egypt, such as medical equipment, to identify size of the problem*"[25].

Egypt has not (yet) undertaken a detailed Mercury Inventory or started a Minamata Initial Assessment (MIA), but it is expected it will do so once it has signed the Minamata Convention. At that point in time data resulting from the MIA can be applied to constitute the baseline of the project, and vice-versa data collected as part of the project facility baseline assessments can be used to complete the MIA assessment.

f. UPOPs and Mercury Releases from the health sector

National Level: The NIP (July 2005[26]) indicates that medical waste incinerators, of which over 140 in 27 cities were accounted at the time of the inventory, were among the top three categories of emitters, amounting to 10 g-TEQ/yr (air) and 11.44 g-TEQ/year (residue). However, data on UPOPs emissions as included in the NIP seemed unrealistically low in comparison to the UPOPs release estimations undertaken during the course of the project's preparation phase (applying the UNEP Toolkit for identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs under Article 5 of the Stockholm Convention on POPs).

In Annex II, detailed UPOPs release estimates from HCW treatment have been presented. In total, UPOPs releases from hospitals and HCFs amounted to 1172 g-TEQ/yr (air: 1,166 g-TEQ/yr, ash: 6.5 g-TEQ/yr). Highest UPOPs emissions were estimated for the governorates of Cairo, Alexandria, Dakahlia, Sharkia, Guiza, Kalubia, Gharbia, Behira, Assuit, and Menia. While the lowest UPOPs emissions were estimated for the governorates of Wadi-Gadeed, North Sinai, Suez, Red Sea, South Sinai, Matrou, Port Said, Kena, Luxor, and Ismailia.

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[23] http://www.mercuryconvention.org/Portals/11/documents/conventionText/Minamata%20Convention%20on%20Mercury_e.pdf

[24] The Minamata Convention stipulates that i) Each party shall not allow, by taking the appropriate measures, the manufacture, import or export of mercury added thermometers and sphygmomanometers by 2020 (Annex A, Part 1)7 and ii) take measures to phase-down the use of dental amalgam by introducing 2 of 8 stipulated measures.

[25] The 2010 and 2011 SoE reports (the most recent SoE reports available), prioritize a number of Mercury related activities, such as awareness raising and training on health and environmental impact of Mercury; improvement of the management, treatment and disposal of Mercury containing light bulbs; and, conducting an Hg inventory.

[26] http://chm.pops.int/Implementation/NIPs/NIPSubmissions/tabid/253/Default.aspx

Project Facility Level: As will be presented in more detail in the Project Document's section "*Strategy*", in consultation with the MoHP and based on national HCWM priorities, two priority governorates, districts and HCFs were identified and selected for project participation in addition to the Cairo University Hospitals (see table 12).

As part of the project's PPG assessment, a detailed HCWM a baseline assessment was conducted at each of the preselected HCFs in Gharbia and Sharkia. The number of beds in the sample hospitals was 809 beds in Gharbia and 997 beds in Sharkia, representing 11.2% and 12.5% of the bed capacity in Gharbia and Sharkia respectively, which is a sufficiently large sample size. A summary of the findings has been presented in table 11 and 12.

Table 11: Preselected governorates and districts and HCFs

Governorate	No. of beds	Quantities of HCW [kg/day]				UPOPs releases [g-TEQ/yr]	Hg releases [kg Hg/yr]
		From Hospitals	From HCFs	Estimated Total (incl. 15% cont.)	Total (based on field work)		
Gharbia	6,770	1,155	3,293	5,115	8,860	**59.6** *(7)*	**18.9**
Sharkia	7,293	1,256	4,409	6,516	9,730	**83.1** *(4)*	**20.4**
Cairo	35,913	8,037	8,996	19,587	N/A	**261** *(1)*	**100.6**

[*Source: Assessment Study of HCW in Egypt (IDC May 2014)*]
Note: the numbers between brackets indicate the ranking among the governorates in terms of UPOPs releases.

Table 12: Average daily quantity of hazardous and municipal waste generated in the surveyed hospitals in Gharbia and Sharqia governorates.

Hospitals	Average weight [Kg/ day]		Bed capacity and occupancy		HCW per bed [Kg/ day]		Total [kg/ day]	Hg releases [kg/Hg/yr]
	Hazardous	Municipal	Bed number	Occupancy %	Hazardous	Municipal		
Tanta fever	37.8	47.7	136	42.4	0.656	0.827	58	0.38
Menshawy	229.3	172.9	185	60.9	2.035	1.535	113	0.52
Mahala Gen	288.6	260.7	158	76.2	2.397	2.165	120	0.44
Mahala Chest	28.3	65.1	330	64.2	0.134	0.307	212	0.92
Mean-Gharbia					1.305	1.209		0.565
Ahrar Zagazig	436.7	457	389	81	1.386	1.450	315	1.09
Zagazig General	150	148.3	158	71	1.337	1.322	112	0.44
Zagazig Chest	25.5	28.1	150	27	0.63	0.694	41	0.42
Fakous General	144.5	105.8	264	54	1.014	0.742	143	0.74
Fakous Fever	6.46	13.96	36	42	0.427	0.923	15	0.1
Mean-Sharqia					0.959	1.026		0.558
Cairo University Hospitals			~ 5,000	~ 85			1,700 – 2,300	14.00

[Source: Assessment Study of Healthcare Waste in Egypt - Fieldwork Report (IDC, 2014)].

Based on the results of the field work, the adjusted estimated quantities of hazardous healthcare waste (including 15% contingency) were equal to 8.86 T/D in Gharbia and 9.73 T/D in Sharqia. Accordingly, the estimated untreated waste will be equal to 6.04 T/D in Gharbia and 7.44 T/D in Sharqia (see Table 11).

Based on the results of the field work, the adjusted estimated quantities of hazardous healthcare waste (including 15% contingency) were equal to 8.86 T/D in Gharbia and 9.73 T/D in Sharqia. Accordingly, the estimated untreated waste will be equal to 6.04 T/D in Gharbia and 7.44 T/D in Sharqia.

Mercury. As no Mercury inventory has been undertaken in the past, UNEP's Simplified Toolkit for Identification and Quantification of Mercury Releases (Level 1)[27] was applied to estimate Mercury releases based on population size (78,684,622) to calculate the amount of Mercury used in dental amalgam (2,565 kg/Hg/yr).

Mercury releases from the breakage of Mercury containing medical devices (thermometers and sphygmomanometers) were calculated using an average release factor of 2.8 g/bed/year[28]. At national level (135,478 beds) this leads to estimations that approximately 380 kg of Mercury is released on a yearly basis. For each of the individual pre-selected HCFs, the results have been presented in Table 12.

It should be noted that during the project's implementation, after the selection of the HCFs has been finalized and MOUs between the HCFs and the project have been signed, the project will undertake Individualized Rapid Assessments for each of the project's HCFs and CTFs, which will provide detailed insights in the amount of UPOPs produced and Mercury released by the project's HCFs and CTFs on a yearly basis. With the use of the Guidance on "Measurements and Documentation" as developed under the Global Medical Waste Project, it will be possible to provide a before and after snapshot of the project's impact.

The situation of Electric and Electronic Waste in Egypt

a. E-waste and substances of concern.

POPs. POPs of concern originating from inadequate E-waste processing are: i) Polychlorinated dibenzo-pdioxins (PCDD) and dibenzofurans (PCDF) originating from smouldering of cables or plastic metal mixes to obtain copper and precious metals as well as from burning of printed circuit boards and plastics in order to reduce the volume of unrecyclable waste; ii) Polybrominated diphenyl ethers (PBDEs) contained as flame retardants in plastics of TV and computer casings, circuit boards.

Other toxic substances from E-waste treatment. Relatively new electric and electronic equipment manufactured for the international market have to fulfil international regulations – like the EU ROHS directive[29], the EU REACH regulation[30] so that in these equipment, the content of heavy metals (Lead, Mercury, Cadmium) is usually low. However in older articles, the content of these metals can be relatively high.

b. E-waste generation in Egypt and POPs release.

Preliminary domestic E-waste generation rates were calculated at PIF submission stage for 2010 to be around 145,000 tonnes/year which are expected to triple in the next 5 years reaching 435,000 tonnes/year. These generation rates are calculated using the WEEE/E-waste Inventory Assessment as applied in the UNEP Inventory Assessment Manual (E-waste volume 1).

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[27] http://www.unep.org/chemicalsandwaste/Mercury/MercuryPublications/GuidanceTrainingMaterialToolkits/MercuryToolkit/tabid/4566/language/en-US/Default.aspx

[28] Mercury releases from the breakage of Mercury containing medical devices (thermometers and sphygmomanometers) were calculated using an average release factor of 2.8 g/bed/year, based on data from seven countries; "Baseline Mercury Data from the Health-care Sector," Annex 3B of "Demonstrating and Promoting Best Techniques and Practices for Reducing Health-care Waste to Avoid Environmental Releases of Dioxins and Mercury," UNDP Project Document, 2007

[29] Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment;

[30] REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006, concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

Generation rates are based on percentage of households with computers (15), with TV sets (95) (Egypt ICT), % of mobile phone subscribers (74.5) and fixed phone subscribers (13.5) (NTRA). It has to be noted that these generation rates do not include white electronics, therefore calculated generation rates can assumed to be underestimated. The volumes of used electronics being imported are not available or included in the above calculations, making it a very conservative estimate of the E-waste volumes.

E-waste production from ICT equipment and CRT monitors and related content of POPs and hazardous material in Egypt. Estimates of E-waste production in Egypt is based on data and methodologies from the following sources:

- Industrial Modernization Center and its website (http://www.egyptictindicators.gov.eg/en/Pages/default33.aspx) for the amount and trends related to mobile subscription;
- EMPA E-waste guide, http://E-wasteguide.info/node/4074) for the relative composition of E-waste;
- Öko-Institut E.V. / CEDARE. BMBF Forschungsvorhaben: Globale Kreislaufführung strategischer Metalle: Best-of-two-Worlds Ansatz. . Darmstadt, February 2014. Workpackage 2.2:Status Analysis Egypt Workpackage 2.4:Generation WEEE and ELV, for the trend analysis and forecasting of weight of wasted mobile phone, computer, notebook and radio equipment up to the year 2025;
- ICTs and environmental sustainability: An overview of policies, stakeholders and advocacy opportunities in Egypt. April 2011, Leila Hassanin & Nahla Hassan, ArabDev
- GSM Association: Mobile Phone Lifecycles Use, Take-back, Reuse and Recycle, for the estimation of mobile phone life expectancies in several countries;
- Recyclobekia and IGT (personnal communication during site visit) for estimation of the overall amount of E-waste generated in Egypt and their relative market share;
- Stockholm Convention Secretariat, UNIDO, UNEP, UNITAR. Guidance for the inventory of polybrominated diphenyl ethers (PBDEs) listed under the Stockholm Convention on Persistent Organic Pollutants (Draft July 2012), for the assumptions related to the content of c-PBDE in selected equipment and materials;
- Stockholm Convention Secretariat, UNIDO, UNEP, UNITAR. Guidance on best available techniques and best environmental practices for the recycling and disposal of articles containing polybrominated diphenyl ethers (PBDEs) listed under the Stockholm Convention on Persistent Organic Pollutants (Draft July 2012);
- Basel Convention Secretariat. Revised guideline on environmentally sound testing, refurbishment and repair of used computing equipment
- Wager P., Schluep M., Műller E., RoHS Substances in Mixed Plastics from Waste Electrical and Electronic Equipment.

PBDEs from end of life ICT equipment (not including CRT monitors), based on the above, the following preliminary figures for POPs generation from E-waste have been assessed:

- Based on information provided by Recyclobekia and IGT, the overall amount of waste circuit board generated in Egypt in the recent years (2012-2013) was in the order of 750 to 1,200 t. These correspond to around 15% of the original weight of the equipment, therefore based on their estimates the overall quantity of these equipment is in the range of 5,000 to 8,000 tons/year.

- The amount of End of Life (EOL) mobile phone (without batteries) based on the estimates of Öko Institut is in the order of 262 t in 2012; it is projected to reach 540 t in 2015. The cumulative amount in 2015 is projected at 2,181 t.
- The amount of EOL desktops based on the estimates of Öko institute is in the order of 5,842 t in 2012; it is projected to reach 7,425 t in 2015; the projected cumulative amount at 2015 is 47,571 t.
- The amount of EOL notebooks based on the estimates of Öko Institut is in the order of 369 t in 2012; it is projected to reach 888 t in 2015; the projected cumulative amount in 2015 would be 2,066 t.

Based on the above figures, the amount of E-waste generated from the ICT sector in Egypt in 2012 (not including, therefore, the stock of waste generated in preceding years) ranges from around 5,000 to 8,000 tons, and is estimated to reach around 9,000 tons in 2015.

Following the SC guidelines on PBDEs in plastic, the average amount of plastic in ICT equipment, not including CRT monitors, is 42%. In these fractions, the average concentration of c-PBDEs has been estimated, based on data from EMPA, at 0.225 kg/t. Correspondingly, the estimated amount of c-PCDEs from this category of E-waste would therefore ranges from 472 to 756 kg/y, projected to near 900 kg/y in 2015.

PBDEs from CRT monitors. CRT (cathode-ray tube) monitors are considered "Hot spot" in term of c-PBDE content. The best estimates on the amount of LCD (liquid crystal display) and CRT monitors which will reach their end of life in Egypt derive from the study carried out by the Öko Institut. These are based on the following assumptions:

- Split between CRT-monitors and LCD-monitors: it is assumed that in 2005 around 5% of all monitors in use (in stock) are LCD monitors. For the projection it is further assumed that only LCD monitors will enter into the market after 2009.
- It is projected that the market saturation of CRT monitors is already reached with a strong decreasing market. LCD monitors are projected to replace the EOL CRT monitors.
- The projected cumulative potential of plastics and CRT tube in EOL CRT monitors is illustrated in the following figures.

Öko Institut estimates that in 2012 around 600,000 pieces of CRT monitors reached their end of life in Egypt, for an overall weight of 8,588 tons; whilst 130,000 LCD monitors reached their end of life, for an overall weight of 633 tons.

It is interesting to notice that the cumulative weight of EOL CRT monitors (of which likely a significant fraction is still stored in offices or at homes) was estimated for the year 2012 as 42,172 tons. This is much higher than the cumulative potential for LCD monitor (1,647 tons), which will reach 69,550t in 2014.

Based on Stockholm Convention guidance documents[31], the plastic content in CRT monitors has been estimated in 30% of their weight; the c-PBDE content has been estimate in 2.54% of the weight of the plastic.

In term of POPs PBDEs, based on the figures above, EOL CRT monitors phased out in 2012 may contain around 6.5 tons of c-PBDE. The amount of c-PBDE in the cumulative weight of EOL CRT monitors would be in the order of 32 tons.

[31] UNIDO, UNITAR, Stockholm Convention Secretariat (2012) Case Study on inventory of PBDEs in electrical and electronic equipment (EEE) and related waste (WEE).

Therefore it is confirmed that by preventing the improper disposal of EOL CRT monitors still stored at home or at offices would result in larger global environmental benefit compared to other waste streams; even assuming that PBDE from plastic monitors could be not immediately released, and additional impact may derive from brominated compounds structurally similar to Dioxins, that would be generated during open burning of these waste stream

c. Heavy metals from E-waste.

There is obviously a large variability in the concentration of toxic heavy metals as well as of valuable metals in E-waste, depending on the type and age of equipment, brand, part of the equipment considered, etc.

A summary of the content of heavy metal in the plastic casing of ICT equipment is reported by Wager. Cadmium and Lead are the two substances that can exceed the limits established by the EU RoHS.

EMPA[32] provides data on the concentration of metals in ICT and consumer electronics as follow:

- Lead (excluding lead glass): 0.29%;
- Cadmium: 0.018%;
- Mercury: 0.00007%.

The release of these substances is therefore significant in case of improper management of the waste.

d. U-POPs from the uncontrolled combustion of plastic materials.

The informal sector which processes E-waste is now recognized under the UNEP Tool Kit Source Category 2 (Ferrous and Non-Ferrous Metal Production/Group l (Thermal wire reclamation and E-waste recycling). The relevant emission factors relate to open burning of cables and open burning of circuit boards. In Egypt, whilst open burning of cable may occur, circuit board are considered a valuable material which is sold to national or international recyclers. Plastic from EEE casing may be dumped and accidentally burnt (see picture below). The U-POPs emission factor for open burning of cables are provided in the toolkit with *"with a medium level of confidence, as emission factors are not based on expert judgment but are not derived from a broad geographical coverage. "* The projected amount of ICT end of life equipment in 2015 (mobile phones without batteries, LCD and CRT monitors, desktop and notebook computers) is projected by the Oko Institut to reach 19,265 t. Assuming a plastic content of 42%, and that only 20% of the plastic generated by the E waste stream would be burnt in the open, the PCDD/F emission could reach 16gTEq. In any case, the emission of around 10mgEq/t of PCDD/F can be avoided if a proper disposal technology for wire recycling and plastic disposal is adopted. Therefore, if the project can divert to a proper recycling / disposal scheme around 4000 t of E-waste, the expected reduction of PCDD/F emission from open burning could reach 3.36 g/TeQ (4000t x 0.42 plastic content x 0.2 burnt in the open air x 10 mg/t).

e. Trends

Projecting future trends, either related to E-waste production rates in Egypt or related to the content of PBDEs in future waste streams, is an exercise which brings about a lot of uncertainty. The main drivers to be considered are the following:

- Impact of EU regulation and application of Basel guidance documents. The EU directive on WEEE specifies strict rules for the export of used equipment, including functionality tests, identification of the buyers, packaging rules, guarantee of returning back fault equipment.

[32] EMPA E-waste guide, http://E-wasteguide.info/node/4074)

Therefore, shipment of E-waste, described as "used materials", will become more and more difficult with time.

- Concentration of POPs PBDEs in used EEE and E-waste. In WEEE, a reduction of OctaBDE concentrations due to the reported decrease in its use is to be expected in the next years. For appliances with a high service life (including interim storage before disposal) however, elevated concentrations will probably still be measured for years. For DecaBDE in WEEE, on the other hand, no considerable reduction in concentration is to be expected in the short term, except for product types with a short service life. In the middle- and long-term, a significant reduction should occur, in particular due to the RoHS Directive.
- The enforcement of stricter regulation in Egypt concerning the import of used electric and electronic equipment (EEE) may cause the flow of Near End of Life EEE to shift to other countries with a lower level of enforcement;
- Even though restrictions are in place for new equipment, PBDEs are still contained in current E-waste stocks, and are being released from unsafe E-waste processing; whilst U-POPs are released from uncontrolled combustion of E-waste and during the dismantling of older electronic and household appliances. The amount of old equipment still stored in offices, institutions and homes is still high, though a quantification is very difficult. How this equipment will be disposed in the coming years will definitively influence the release of POPs in the environment.

On top of the above, whilst is known that a significant amount of valuable E-waste components are exported to the EU for recycling metals (including gold and copper), the data collected by interviews in the field and the available literature source seems to confirm the assumption that the plastic component of the E-waste is almost entirely dumped without significant environmental protection measures.

f. E-waste management in Egypt: collection, recycling, disposal.

(Baseline related to the Output 3.1, National mapping of e waste processors and refurbishers and applied practices completed and baseline on POPs and UPOPs releases from E-waste processing determined)

The information on the existing mapping of E-waste processor and re-furbishers in Egypt is still limited or fragmented. There are a number of environmentally sound E-waste management initiatives – more specifically in the voluntary take-back schemes adopted by the major electronic industries – which if better communicated could ensure a significant shifting of waste processing from the informal sector to an environmentally sound waste management. From the available data, it is also evident that local capacity for sound treatment of E-waste is still missing.

The relationships among waste generators, waste collectors and waste disposal actors in Egypt is complex and largely unregulated or informal. Large companies operating in the service sectors (like banks, ICT companies) or institutions (offices of central and local government) generate a substantial amount of E-waste, which is often auctioned mixed together with other material (appliances, furniture). Licensed waste collectors or disposal companies are very rare, and currently only manage a minor percentage of the total volume of E-waste generated.

The so-called informal sector (Robabekia, Zabaleen, Zarabeen) collects the largest amount of E-waste and carries out operations without any environmental protection measures. This generally involves the segregation of the valuable fraction of this waste from the valueless fraction, which is then dumped or burned in the open air. Due to the gaps in the current regulation, the informal sector has the capacity to buy the officially auctioned waste, and sell the valuable fraction of E-waste to national or international licensed companies, which eventually export these waste in compliance with the Basel convention rules. A list of the main actors in the E-waste chain, as resulting from various studies collected in the PPG stage, is reported below.

Informal sector: Robabekia, Zabaleen, Zarabeen[33].

- **"Robabekia"** is an Egyptian word derived from the Italian "Robivecchi" (old stuff). Robabekia collectively refers to the roamers who are buying waste, peddlers who sell wares, and itinerant waste buyers who buy specific waste items. The 'robabekkia-men' are a group of people trading in old, used, and unwanted household items, and exist throughout Greater Cairo in Egypt. They have acquired a vast know-how in bartering, and buying and selling. They have also accumulated knowledge of fixing and repairing old appliances, furniture, house wares, and simple machines by knowing where to get each of the items fixed, where they could be potentially sold, and the markets and valuation of all items. This self-taught knowledge of the trade has helped them create work opportunities for themselves that fall beyond simply trading items from one household to the other, but also involving themselves in the marketplace for such recyclable and reusable items.
- **Zabaleen** are groups of individuals who collect the garbage from the houses. Zabaleen then give the garbage to other groups comprising the informal sector in solid waste management in Egypt. These individuals, who trade in recyclables, carry out informal solid waste management activities. Some often manage to make considerable profits.
- **Zarabeen** are source-segregated waste buyers. By nature of their trade, the roamers and itinerant waste buyers collect and buy already segregated waste. Inherent in their activities is the value of recyclable and reusable waste, and source segregation.

g. National and international policy and regulatory framework on E-waste.

(Baseline related to output 3.2.1 (National policy and regulatory framework (incl rules and regulations) on E-waste management reviewed, revised and improved (pertaining to processing, refurbishing, storage, disposal, illegal trade etc.) and fully integrated into the national policy and regulatory framework for waste management).

Institutional arrangements.

- **The Ministry of Environment (MoE)** is a coordinating & regulatory body mandated to set (in cooperation and coordination with the all the development sectors and other involved stockholders in the country) the environmental policies and national environmental action plan. It also has the mandates to prepare draft environmental regulations based on strong rational from the development sectors. In addition it is mandated with inspection roles which cover any violations to the environment law including improper management of WEEE.
- **The Ministry of Communication and Information Technology (MCIT)**.The MCIT and MSEA/EEAA have signed Memorandum of Understanding (MOU) in February 2010 to launch the Egyptian Green ICT Strategy, aiming to reduce adverse environmental impacts of the increasing use of ICT equipment, and introducing safe disposal methods of E-waste
- **Ministry of Trade and Industry:** This Ministry hosts the Egyptian National Cleaner Production Center (ENCPC) and the Technology and Innovation Council. The ENCPC operates through promoting transfer of know-how and technology to the Egyptian industry through international cooperation projects in cooperation with agencies such as UNDP, UNIDO, WB and GIZ, among

[33] E-waste Management in Egypt final report February 2010 EcoConServ Environmental Solutions 12 El Saleh Ayoub St., Zamalek

others. The Technology and Innovation Council acts as an incubator for small and middle businesses. The main pillars of their activities are waste valorization, resource efficiency and process optimization, innovative designs, and product development.

Stockholm Convention and POPs in E-waste. The main POP which may be found in E-waste are the PBDEs. (Polybrominated diphenylethers), listed as hexabromodiphenyl ether, heptabromodiphenyl ether tetrabromodiphenyl ether and pentabromodiphenyl ether in Annex A part IV and part V of the Stockholm Convention. PBDEs are a group of industrial aromatic organobromine chemicals which have been used since the 1970s as additive flame retardants in a wide range of products including mainly consumer products. PBDEs were produced with three different degrees of bromination, and marketed as commercial PentaBDE, commercial OctaBDE and commercial DecaBDE. Commercial DecaBDE has not been found to contain POP BDEs but can form POP BDEs by debromination during its life cycle.

SC requirements for PBDEs in E-waste. "Under the exemption set in Annex A for these substances, parties may allow recycling of articles that "contain or may contain PBDEs", and the use and final disposal of articles manufactured from recycled materials that "contain or may contain" these substances, provided that this is carried out in an environmental sound manner and do not lead to export of articles containing concentrations of these substance at a concentration exceeding the one allowed by the party.

"Low POP waste in the Stockholm convention". The Stockholm convention allows "Low POPs waste" to be disposed without irreversibly destroying or transforming their POPs content in such a way that they do not exhibit anymore the characteristic of Persistent Organic Pollutant. The concentration of POPs under which a waste can be considered a "Low POPs waste" are set by the "Updated guidance[34]" for PCBs (50 mg/kg), PCDDs and PCDFs (15 µg TEQ/kg) and some POPs pesticides (50 mg/kg for each). No limit has however been established yet for brominated POPs.

EU regulation.

The EU regulation is of relevance in Egypt as a large amount of E-waste is entering EU for treatment, at the same time a large amount of used and near EOL EEE is exported from Europe to Egypt.

EU Weee directive. In the EU, the WEEE Directive requires the separation of component containing PCBs (transformers, capacitors) and plastics containing brominated flame-retardants prior to recycling, energy recovery or disposal. No quantitative limit is set under the WEEE directive of PBDE. The recent amendment of the WEEE directive includes strict requirements aimed at avoiding the illegal export of waste (WEEE) under the status of used equipment (used EEE). This amendment is rather new and apparently the level of enforcement is still low.

EU RoHS directive. The EU RoHS directive places a 0.1% limit on PBDE content (including DecaBDE) as maximum concentration values tolerated by weight in homogeneous materials.

EU REACH regulation. Under the entry 44 and 45 of the annex XVII to the EU REACh regulation, a restriction has been set for the placing on the market of preparation (mixtures) or articles containing more than 0.1% of pentabromodiphenylether or octabromodiphenylether derivatives.

Egyptian policy and regulation related to E-WASTE

The 2005 NIP does not include specific priorities with respect to E-waste, most likely due to the fact that directions and tools used throughout NIP development did not yet include guidance on how to determine UPOPs and PCB releases from this waste sector, while PBDEs were at the time of NIP development not yet included under the Stockholm Convention. .

[34] Updated general technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants (POPs).

Currently, there are no available information relevant to the submission to the GEF by the Egyptian Government of any Enabling Activity project on NIP review and update.

Nevertheless, the situation with respect to E-waste has changed dramatically over the past few years and will even pose greater challenges in the years to come. Egypt's E-waste volumes as well generation rates are growing very fast and are expected to triple in the next five years as a result of the increasing affordability of electronic products, sharp increases in mobile phone and internet subscribers and a rapidly growing IT sector. Egypt, like nations such as China, Vietnam, India, Nigeria and Ivory Coast, has become a recipient of significant quantities of used electronics from Europe, spawned by its repair capability and raw material demand. The majority of the processing of this E-waste is taking place in the informal sector, where inadequate methods during recovering procedures are responsible for much of the harmful releases including those listed under the Stockholm Convention on POPs, threatening the health of E-waste collectors/processers, local communities and the global environment.

There are 2 main drivers in the country policy on E-waste:

1) The country is trying to limit the massive import of near end of life used computers, as these goods become waste in a very short period of time. The import of used mobile phones is already forbidden under the Law on Communication. For the PCs, currently there is a policy, under the Ministry of Trade and Industry that prohibits used computers older than 3 years to be imported as goods, whilst computers can be imported as donations if not older than 5 years.

2) Article 32 of the National Environment Law established that "It is forbidden to import hazardous waste or to allow its introduction into or its passage through Egyptian territories. It is forbidden without a permit from the competent authority to allow the passage of ships carrying hazardous waste in territorial seas or in the exclusive maritime economic zone of the Arab Republic of Egypt." , as the country classifies E-waste as hazardous waste under the Basel convention, the import of E-waste is prohibited.

The two above measures however are not effectively enforced, and have been unable in preventing a large amount of obsolete electric equipment entering the country.

In addition, a coherent regulatory framework for E-waste management is missing, as there are no waste manifest requirements under the current law and the licensing scheme for E-waste managers is weak. This situation makes informal waste collectors and recyclers unfairly competitive compared with companies which are trying to establish an official business internalizing the costs of environmentally sound E-waste management.

For these reasons, investors are reluctant to enter the formal business of E-waste management, and the few companies operating in the sector are facing challenges in finding a sufficient amount of waste to sustain their business.

BAT/BEP for the sound management of E-waste in Egypt.

(Baseline related to Output / Activity 3.1.3 Introduction of BEP/BAT to priority municipalities, selected formal and informal E-waste processors/refurbishers) Although in general the reuse / recycling of plastic is considered a best available procedure, in the case of PBDE contaminated plastic, reuse or recycle may lead to significant exposure of workers and the final consumers to these toxic compounds, and therefore should be avoided. Best available procedures for these materials are therefore the ones which allow the separation of PBDE plastic from non-contaminated plastic. In case of recovery of valuable metal from E-waste, BAT/BEP are generally the ones allowing for an efficient recovery of these materials without releasing pollutant in the environment or increasing health risk for the workers or the population. This is specifically applicable to cable and circuit boards.

In Egypt there are no E-waste refineries capable to recover the valuable metallic fraction (gold, silver, copper, other metals) from E-waste. At the same time, despite a certain number of initiative aimed at

ensuring safe collection of E-waste (see for instance the already mentioned take-back initiatives put forward by mobile phone operators, producers of mobile phones and computers, NGOs and the few pioneering companies) a large fraction of E-waste, including CRT monitors and ICT equipment, is still separated by the informal sector, which subsequently sell the valuable part (mother boards, metal casing, etc.) and dump or even burn in the open the valueless or even dangerous component.

Currently there are no facilities in Egypt for the ESM recycling of E-waste: the ITG factory described below has just started and is currently only performing shredding and exporting of shredded material to EU refineries; the other company (Recyclobekia) collects or buys waste and resells it to EU refineries after dismantling and sorting. Both the companies still face significant challenges in gathering enough material to sustain their business, and buy a significant amount of E-waste from the informal sector to survive, playing therefore the role of "grey broker". Reportedly, there are international companies acting as "grey brokers" buying from the informal sector in Egypt and reselling to EU E-waste refineries. Therefore it seems that E-waste enters Egypt mostly as Near End of Life (NEOL) electrical equipment which will either reach very quickly their end of life or are already non-functional at the time of their import. This equipment is subsequently dismantled by the informal sectors, which re-sell the valuable components of these E-wastes to national or international "grey brokers" that in turn resell them to EU or Chinese refineries. Although the processing of E-waste would require a license under the Law N°4, such a procedure is not yet established, therefore the illegal sector operates in a "grey" zone of the regulation: is either not completely legal or illegal.

The so-called informal sector monopolizes therefore the collection of E-waste and is currently the main provider of valuable E-waste stream to EU refineries of E-waste, of which UMICORE is the largest. Rough estimates gathered during the consultant visit report about 60t/month of scrapped mother boards are exported each month for recycling, equivalent to around 600 t of waste which are therefore dismantled illegally somewhere; Recyclobekia export around 10-20t/month.

The informal sector, although reportedly carries out only a limited refining of electric waste, still performs the collection, sorting and reselling of waste; the waste which are not re-sold are illegally dumped in the mountains nearby Cairo, and often burnt. That means that if 60 t/months are exported, around 540 t/months of plastics and other remains are disposed illegally in Egypt (burnt, landfilled, abandoned).

Baseline project

Health-Care Waste Management

A. Projects supported by the National Government:

Over the course of the past few years, the Government of Egypt has taken important steps towards improving the policy and regulatory framework governing HCWM. In 2010, a HCWM strategy was finalized and adopted (April 2010). Priority intervention included in the strategy and the actions taken to date to address those priorities have been presented in section II Strategy.

On November 15th, 2013, Egypt's Ex-Vice Prime Minister and the Minister of Higher Education, established a HCWM Inter-Ministerial Committee (IMC) which has the responsibility to assess the current HCWM situation and establish an integrated HCWM system to serve all Egyptian hospitals and healthcare facilities, whatever their affiliation. Representatives of the ICM representative ministries adopted a preliminary agenda, aiming at launching a strategic framework and a two-year plan to integrate HCWM activities all over the country.

To support the work of the ICM, three assessment reports[35] (in Arabic) were produced describing the current situation and future needs: A first report, issued on November, 30th, 2013 on "*preliminary HCWM situation*", a second report, issued on December, 15th, 2013 on "*Incineration capacity currently present in Egypt*", and a third report, issued on February 15th, 2014, on "*Response of various Egyptian Governorates on HCWM*".

In support of the implementation of the 2010 HCWM strategy, 47 incinerators have recently been installed in 7 central treatment locations, mostly outside the healthcare facilities, and nearby the existing municipal wastes dumpsites.

Furthermore, over the period 2014 – 2015 an additional 23 new incinerators will also be installed to replace old incinerators in 16 governorates' health directorates. The 23 incinerators have already been purchased by MoHP and are locally made[36].

In addition, the Supreme Council of Universities (SCU) is currently providing university hospitals with 11 additional incinerators. See also the HCWM section of the baseline analysis above.

Finally, the Cairo University Hospitals (CUH), are in the process of establishing a new non-incinerating system (i.e. autoclaving and shredding) with a capacity of 700 liters/45 minutes (≈123Kg/45'). In addition, CUH is anticipating extensive maintenance of one of the two incinerators that have not been working since the end of 2012, with an anticipated budget of ≈LE1.5 million (210,000 US$).

B. KOICA Project: "Management of Mercury Waste in Egypt" (3,000,000 US$)

The project was initiated by EEAA, and officially started in 2008, with a total funding of US$ 3 million. Initially it aimed to improve the management of mercury waste nationwide, however later on it was decided to focus on the waste management of Mercury containing fluorescent lamps. The project aims to:

- Establish a recycling unit for fluorescent lamps at Nasriya landfill in Borg El Arab, Alexandria governorate with a capacity of 24.000 lamps/day.
- Initiate collection of different types of fluorescent lamps from relevant ministries, authorities, producers and consumers for decontamination at Nasriya landfill.

C. TheEU funded German Twinning Project[37] "Development of Integrated Hazardous Substances and Waste Management System for the Egyptian Environmental Affairs Agency (EEAA)" – EG07/AA/EN10 (November 2008 and May 2011)

The EEAA and German Federal Ministry of Environment, Nature Conservation and Nuclear Safety (BMU) implemented the Egyptian – German Twinning Project "Development of Integrated Hazardous Substances and Waste Management System for the Egyptian Environmental Affairs Agency (EEAA) – EG07/AA/EN10" between December 2008 and May 2011. GIZ was entrusted

[35] The first report, issued on November, 30th, 2013 on "preliminary HCWM situation", the second report, issued on December, 15th, 2013 on "Incineration capacity currently present in Egypt", and the third report, issued on February 15th, 2014, on "Response of various Egyptian Governorates on HCWM".

[36] Manufactured by Al-Masara Engineering Industries' company, each incinerator has a capacity of 100Kg/hour. The combined value of the 23 incinerators is LE 13.11 million.

[37] Recommendations on chemicals management policy and legislation in the framework of the Egyptian–German twinning project on hazardous substances and waste management. Burkhard, Wagner; Elham, Aziz; Anja, Schwetje; Fatma, Shouk; Juliane, Koch-Jugl; ... [+] Environmental Science and Pollution Research , Volume 20 (4) – Apr 1, 2013.

with the project and its financial management on behalf of the German Twinning Partner BMU.

The objective of the Egyptian-German Twinning programme[38] was to improve the beneficiary's capacities in:

- Institutional Development
- Policy Development
- Development of an Egyptian legal framework on waste and hazardous substance management, harmonized with relevant EU regulations
- Human Resources Development

Mercury: The German Twinning Project also supported a limited number of Mercury activities as part of the project such as a lecture on Mercury Management.

D. Swiss - Federal Department of Economic Affairs (FDEA), State Secretariat for Economic Affairs (SECO), Economic Cooperation and Development Infrastructure Financing (9.7 million Swiss franc - 10,4 million US$)

In April 2009, the Government of Egypt (GoE), through EEAA submitted a project proposal to the Swiss State Secretariat for Economic Affairs (SECO) to improve the management of medical waste in the country, with the objectives to (1) support the development of a National Strategy for Hazardous Medical Waste Management, (2) upgrade of the Hazardous Substances Information and Management System (HSIMS), and (3) support the establishment of one CTF as a model facility, with two incinerators.

The project concept was approved in 2009, and subsequently a feasibility study was commissioned by SECO and undertaken by the Swiss Centre for International Health (SCIH) from July until October 2010. Although the project's start was interrupted for some years due to political reasons, the project – envisaging activities in two governorates and at national level (policy component) is now ready for implementation, and will encompass the following interventions:

- Commissioning of two state of the art incinerators (300 kg/hours), in two centralized locations outside of populated areas in two priority governorates (1 out of three space allocations has been completed and land allocation has been finalized).
- Procurement of ten HCW transportation vehicles (one ton each) for the transportation of waste from the hospitals to the CTFs.
- Institutional capacity building and optimization of HCWM practices.
- Policy dialogue (revision of healthcare waste strategy at national level).

Due to legal challenges and last year's political situation in Egypt, the Swiss project has remained in its feasibility phase for the last three years. However, past challenges are expected to be resolved during the

[38] The project aimed at:

- Developing an integrated system for a more efficient management of hazardous substances and waste.
- Strengthening EEAAs institutional and policy capacities
- Adapting relevant EA best practices in the field of waste and hazardous substance management.

2014 summer period, resulting with an agreement on the executive steps, to be signed between the Minister of Health and the Ambassador of Switzerland.

E-waste

Activities carried out by governmental institutions.

- **Ministry of Environment**. (MoE) is a coordinating & regulatory body mandated to set (in cooperation and coordination with all the development sectors and other involved stockholders in the country) the environmental policies and national environmental action plan. It also has the mandates to prepare draft environmental inspection roles which cover any violations to the environment law including improper management of WEEE.
- **The Ministry of Communication and Information Technology**. The MCIT and MSEA/EEAA have signed Memorandum of Understanding (MOU) in February 2010 to launch the Egyptian Green ICT Strategy, aiming to reduce adverse environmental impacts of the increasing use of ICT equipment, and introducing safe disposal methods of E-waste
- **Ministry of Trade and Industry hosts the Egyptian National Cleaner Production Center (ENCPC)** and the Technology and Innovation Council. The ENCPC operates through promoting transfer of know-how and technology to the Egyptian industry through international cooperation projects in cooperation with agencies such as UNDP, UNIDO, WB and GIZ, among others. The Technology & Innovation Council acts as an incubator for small and middle businesses. The main pillars of their activities are waste valorization, resource efficiency and process optimization, innovative designs, and product development.

Activities carried out by the private sector.

- The **Egyptian Electronics Recycling Company** (EERC), established in 2010, EERC was operating in cooperation with informal dealers of E-waste and both public and private organizations. Their business was the refurbishment and dismantling of E-waste. EERC conducted short projects related to refurbishment and recycling of waste laptop and in 2011 was able to process around 10-12 ton/month of received E-waste sourced from public and private organizations through bids. Approximate shares of each category were 60% PCs, 30% CRTs, and 10% printers of the main bulk, in addition to minor quantities of other devices and peripherals. Refurbishment is however minimal since received objects are most often irreparable.
- **Spear Ink**, founded in 2006, is an Egyptian company that refills and re-manufactures inkjet cartridges and toners and sells them. It thereby extends the lifecycle of the end-of-life items (www.spearink.com). The take-back policy leads to recovering 3000-4000 cartridges annually. Approximately 4 tons of products per year are processed. Waste material is sent to landfills, but the possibility to sell them for industrial uses is under study.
- **International Technology Group (ITG)** (visited during the PPG stage). This is the first factory operating not only in Egypt but also in the Middle East in the field of E-waste Recycling & Refurbishing IT Equipment. It was established in 2011 according to the Egyptian Law # 9 on Investments with a capital of 100,000,000 LE. The mission is sharing in Green & Clean environment in Egypt and increase numbers of recycling in safe, secure and clean ways and sharing for green environment. The capacity for E-waste recycling is 700-800 MT/Month (ITG 2014) however currently the factory is working at only a fraction of its full capacity, due to the difficulties of procuring raw material at a competitive price.
- **Recyclobekia** (visited during the PPG stage) initially started as winner of a competition among university students for establishing a company. The company started selling some thousands of

hard-disks to China (2.5 ton). Subsequently, the company is currently selling valuable E-waste fractions in Germany and Belgium (UMICORE). Currently the company, with the guidance of EEAA, has ensured compliance with the requirements of Basel convention on transboundary movement of waste. Recyclobekia issues a certificate of "green disposal" to their clients, theoretically relieving them from their responsibilities. This certificate is voluntary and has limited legal value. The company basically operates by dismantling sorting and selling the electronic waste. They are therefore "second level" collectors and traders. The company also fixes and sells used computers and collects car batteries. The company is establishing an innovative portal website for door-to-door collection of E-waste. To address the issue that common people in Egypt are not keen to dispose their E-waste for free, the portal assigns rewards to people who dispose their E-waste with Recyclobekia; afterwards they can use these rewards for purchasing goods in another web portal (fashion, furniture etc.). Only when a sufficient amount of E-waste is scheduled for collection by the Recyclobekia vehicle they arrange the pick-up. Recyclobekia sees this as a medium term plan, which eventually could break the dominance of the informal sector.

- **The Mobile Operator Mobinil** was established in 1998 and is currently the largest mobile operator in the Middle East and North Africa. The company has been conducting limited but effective recycling actions since 2005, through implementing mobile handsets and mobile batteries collection and recycling schemes under the UN Basel Convention and in cooperation with the Ministry of Environment. Mobinil carried out the following initiatives: Office Waste Recycling (since 2002); Waste Mobile Battery Collection and Recycling (2005-2006); Bridging the Digital Divide" PC refurbishing program (since 2008); Alexandria Dry Cell Collection and Safe Dumping (since 2008); E-waste Learning Center (2009); Participation in Mobile Phone Partnership Initiative (MPPI) (http://archive.basel.int/industry/mppi/documents.html); Participation in the Revive project that is conducted in partnership with Microsoft, CID consulting, and others.
- **Vodafone Egypt** is implementing various initiatives as part of its CSR program, such as an in-store mobile handset and battery collection initiative, against an incentive recharge card. Vodafone also donates phased-out PCs to local NGOs for re-use or refurbishment.
- In 2009, **Nokia** collected 4.6 million phones globally. In the Middle East and Africa, Nokia's take back and recycling engagement started in 2009 with the first launch of the permanent take back and recycling schemes at Nokia Care points. Currently in 2011, permanent recycling channels are available in more than ten countries in the Arab region. In Egypt, Nokia launched the take back and recycling scheme at Nokia Care in 2009. In the summer of 2011, Nokia partnered with Resala NGO for the recycling of mobile phones, batteries, chargers and other mobile accessories.
- **Oracle**. Currently, the annual disposal of notebooks ranges between 100-200 units. Oracle resorted to the Egyptian Electronic Recycling Company (EERC) to ensure responsible recycling of their outdated computers. This was part of EERC's pilot project under a Danish Business-to-Business cooperation programme.

Non Governmental Organizations (NGOs).

- **Resala NGO,** established in 2000, is one of Egypt's largest NGO working on diverse charitable activities, with wide presence across Egypt through its 50 branches. One of its activities is collection of EEE donations from the public and private sector and civil community. The EEE collection program covers Greater Cairo and Alexandria. The NGO however only collects for the purpose of selling these donations to several dealers as a fundraising activity for their organization. As any NGO, the fundraising activity is conducted under supervision of the Ministry of Social Solidarity, and only targets the local market. According to their observed

trends, the business of collection is growing. In 2010, their revenues were 5.7 MLE (957,000 USD) (see Annex-1), but the same figure was already surpassed during the three months of June-August 2012 at the time of the interview, hence monthly revenues have quadrupled.

- **The Spirit of Youth Association for Environmental Services (SYAES)** was registered in Cairo on 6/7/2004 as a developmental NGO in the field of environment, health and development in various fields in the Cairo governorate, and mainly in the garbage collectors area. All members of the NGO originate from families of garbage collectors who have taken the initiative to improve and develop their inherited trade. In partnership with CID Consulting and Mobinil, the Association has initiated an E-waste pilot project in Manshiet Nasser, informal area. Activities included monitoring the methodology execution in identifying jobless youth, training them to dismantle and refurbish ICT waste and store hazardous parts for safe recycling. They are also involved in spreading awareness among the private sector about Extended Producer Responsibility (EPR) in cooperation with the Egyptian Environmental Affairs Agency (EEAA). The project is currently ongoing and aspiring to expand with the help of more private sector organizations.

International Organizations.

The Center for Environment and Development in the Arab Region and Europe (CEDARE) is an international non-profit organization of diplomatic status established in 1992 to promote environmental development in the Arab Region. CEDARE has been actively promoting the development of the E-waste collection and recycling sector in the Arab Region since 2009 and has been taking a leading role in promoting dialogue between stakeholders. In Egypt, CEDARE performed studies on the inventory if E-waste and E-waste management training.

Barriers analysis

HCWM: The following barriers have been identified that prevent Egypt to consistently implement an integrated system for the sound management and disposal of HCW waste in the country and minimize negative health and environmental consequences from HCWM practices (SECO, 2010)[39]:

- **Regulatory and Policy Barriers**: The existing Environment Law 4/1994 and its Executive Regulation (EEAA 1994), govern the management of hazardous waste, including healthcare ("infectious / clinical") wastes. In its current form, the regulation stipulates that HCW needs to be treated on the premises of HCFs by incineration. In reality many HCFs treat their waste using non-incineration technologies, or use CTFs. Secondly, due to lack of resources and awareness, implementation of the HCWM regulation is not adhered to by all HCFs nor are inspectorate able to monitor/enforce its implementation.

- **Technical Barriers:** Many incinerators in operation are of very basic design, badly maintained and/or are inadequately operated, and as such do not meet the UPOPs emission standards as set forth in the Environment Law 4/1994.

  Of the total in-country 'HCW treatment capacity' (~ 25,722 tons/hour) about 35.1% is currently not working[40] (leaving 53.4 tons/day[41] of hazardous HCW untreated every day). This is due to the unavailability of good technical and experienced operators; lack of maintenance and spare parts; and objection of neighborhood residents to pollution (smoke and smell) from incinerators. When technologies are of out of service, HCFs revert again to disposal of HCW at landfills/dumpsites without prior treatment, or burning it in the open.

  With respect to treatment residues, there are limited options for disposing of incinerator ashes[42], resulting in potentially UPOPs containing ashes being discarded along with municipal waste at regular dumpsites. Although there are a few designated disposal areas for sterilization remains, these are far too few, and recycling options for disinfected and shredded HCW are currently absent.

- **Equipment/Supplies Barriers:** Because of financial constraints and insufficient budget allocation for HCWM, many HCFs lack the necessary equipment/supplies/infrastructure to be able to practice good segregation, adhere to best environmental practices for HCWM and safeguard staff, patients and surrounding communities. This includes color-coded bags, waste bins, Personal Protection Gear (PPG) for those handling the waste; waste carts for transportation; (intermediate) storage facilities; designated HCW transportation vehicles; and (functioning) HCW treatment facilities adhering to BAT requirement (including fuel to operate them and budgets for spare parts and maintenance).

[39] SECO project: Improving Hospital Hazardous Waste Management in Egypt – Report on the feasibility study- Reference: 2010-01-27/83

[40] On the other hand, the engineering capacity of the non-working treatment technologies represents 34.7% and 0.6% for incinerators and sterilizers, respectively.

[41] However, there is an excess treatment capacity in 5 governorates: Suez (750.7 Kg/day), Assuit (126.2 Kg/day), South Sinai (151.4 Kg/day), Red Sea (2.9 Kg/ day), and Matrouh (869.32 Kg/day).

[42] Although limited, there exists some disposal capacity in Egypt for incinerator ashes as well as remains of sterilization: 3 sites in Cairo assigned to use by 3 licensed companies: Egyptian Company for Environmental Services, Eco-Con-Serv, and ALBA; 2 sites in Alexandria belonging to licensed companies: Al-Nahda (previously Arab Contractors' or Viola) and Al-Nasereya at Al-Amereya; 1 site in Suez belonging to licensed company: Tanzefco; and, 1 site in Beni-Suef (under construction).

- **Organizational/Institutional Barriers:** The most obvious reasons for identified shortcomings appear to result from insufficient training and awareness of staff in combination with limited financial and human resources allocated to HCWM at national, governorate and HCF level.

  Although Ministerial Decree No. 273 (2010) sets out the organizational framework, responsibilities and rules and standards for HCWM at central, governorate and HCF level, enforcement of the decree is limited in many (small) HCFs. Often caused by limited training opportunities on HCWM/infection control; low capacity and awareness of committees in charge of HCWM and/or infection control; insufficient HCWM budget allocations (e.g. for centralized treatment facilities), limited autonomy of HCFs due to centralized management and funding structure; in combination with constrained manpower at central/governorate level to be able to instruct, coach and monitor hospitals and other healthcare facilities.

- **Awareness and Training Barriers:** In general there is limited awareness related to i) the risk of healthcare waste; 2) proper segregation, collection, storage, transportation and treatment techniques for healthcare waste; and 3) general cleanliness and hygiene among the staff of healthcare facilities. Furthermore the workers and informal operators in the sector receive no formal education/training on HCWM and waste pickers at dumpsites are unaware of the risks. There are a few reasons for this situation, firstly issues on HCWM are not included in the curricula of doctors and nurses, secondly limited training opportunities on HCWM exist and thirdly issues related to the risk of HCWM are not communicated to the wider public.

E-waste: The following barriers have been identified that prevent Egypt to consistently implement a sound management and disposal of EE waste in the country:

Regulatory and Policy Barriers:

a) Environmental and chemical regulation is still incomplete and not compliant with SC requirements. A specific regulation on E-waste is completely missing. The enforcement of rules aimed at limiting EOL Equipment to enter the country and at ensuring that used ICT equipment entering the country is functional is still very limited. A licensing system for the processors of E-waste is missing.

b) Lack of control of hazardous waste containing POPs across borders of the country. The customs has no knowledge and capacity to effectively control POPs containing waste or articles which cross the country's border.

Economic Barriers.

c) Door-to-door collection of E-waste and the informal sector are more competitive than the formal sector on this side.

d) People tend to keep their EOL equipment at home or to give it away for money. They do not consider this is a waste, therefore a large and scattered E-waste stockpile is accumulating with time.

Technical Barriers:

e) Technologies for the segregation of POPs containing waste in E-waste stream are either unknown or unavailable in Egypt. In any case these technologies are at their early stage even in developed countries.

f) Lack of disposal facilities and of procedures for testing and permitting the disposal of hazardous waste, with specific reference to Electric and Electronic waste

g) Lacking of the monitoring capability and related environmental standards for POPs and U-POPs generated by the waste management processes.

h) Lacking of standard methodologies for selecting and evaluating POPs waste disposal and remediation technologies. There is not an agreed methodology /guidance for the evaluation, testing and inspection of technologies for the disposal of POPs containing waste, which ensure that these technologies are in compliance with the Stockholm Convention.

Awareness and Training Barriers:

i) Limited awareness on POPs / PTS issues. The knowledge of the effect of POPs and PTS for the health and the environment generated by the unsafe management of E-waste is limited to some central and local institutions and some operators.

j) Absence of awareness of the hazardous waste issues. There is no an official hazardous waste classification built into the national regulation. Egypt relies on the Basel convention classification, however there is the need to incorporate this classification into the national regulation to ensure its implementation and enforcement.

Stakeholder analysis

The main beneficiaries of the project activities are the general public, consumers and communities which may be exposed to U-POPs released by the disposal of healthcare waste, and to toxic substances (including POPs) contained or released into the environment as a result of improper disposal of EE waste.

Health risks for people will decrease once a proper legislation regulating hazardous waste management is in place and enforced, and environmentally sound technologies for the management of waste are in place. The enforcement of environmental legislation will present not only a benefit for the environment, but also a key development factor.

As there is not yet a well-established system for hazardous waste management in Egypt, the upgrading of facilities for disposing of health care waste and E-waste also present not only a benefit for the environment and human health, but again a development opportunity. Obviously, no such system may be sustainable if the relevant legislation is not in place and enforced.

On the HCW side, the main central institutional stakeholders are the Ministry of Health and Population, the Ministry of State for Environmental Affair, the Egyptian Environmental Affairs Agency.

On the E-waste side, the main central institutional stakeholders are, again, the Ministry of State for Environmental Affairs, the Egyptian Environmental Affairs Agency, as well as the Ministry for Communication and Information Technology.

At the decentralized level, project stakeholders are the governorates were the CTFs and HCFs have been selected for the project activities, as well as the administration of the selected facilities.

On the E-waste side, industries who are currently investing on E-waste management are also key stakeholders and project partners. These industries committed to provide a significant co-financing contribution to the project.

Large IT companies (Mobinil, Vodafone, Microsoft, Oracle etc.) are important stakeholders who also contributed in the implementation of E-waste management projects in Egypt, ad are direct addressee of the Egyptian policy on E-waste management.

Informal recyclers (Robabekia, Zabbaleen, Zarabeen) are key stakeholders in the E-waste sector: however, the involvement of informal recycler / collector depend also on their willingness to adhere a

formal waste management system, regulated by a licensing system and compliant with norms and procedures for the environmentally sound management of waste.

International cooperation agencies play also a key role. In this respect, the Swiss Embassy which is launching a technical assistance project in the field of health care waste management is a key partner of the project.

Table 13: List of the main project stakeholders and relative roles

Government Agencies	Key function and mandate	Relevant Common responsibility and duties
MoE	The Ministry of Environment, Solid Waste Department) is the coordinating and technical regulatory body under MSEA. At the central level, EEAA represents the executive arm of the Ministry.	Formulating environmental policies. Preparing the necessary plans for Environmental protection and Environmental development projects, following up their implementation, and undertaking Pilot Projects. The Agency is the National Authority in charge of promoting environmental relations between Egypt and other States, as well as Regional and International Organizations. In charge of Stockholm Convention and Basel Convention Implementation.
MCIT	(MCIT) is the government body responsible for information and communications technology (ICT) issues of the country.	MCIT is responsible for the planning, implementation and operation of government plans and strategies related to ICT. It signed with EEAA Memorandum of Understanding on the issue of E-waste management.
MOH	The Ministry of Health and Population	Policy formulation and the regulation of the health sector (public, non- governmental and private) in order to achieve those policies. Resource allocation, specifically capital funding, its procurement administration and technology selection for HCWM. Give support to the Minister in Parliament (People's Assembly) through providing professional advice and information to allow the Minister to account for the use of resources and obtain sufficient resources to promote the health and well-being of the population of Egypt
MOFA	Ministry of Foreign Affairs	Member of the Project Board as Government focal point for UNDP development projects.
HCF	Health Care facilities administrations	In charge of administrative aspects of the hospital; usually in charge of operational waste management at hospital level; ensuring adherence to national standards related to the management and treatment of HCW; establishment and monitoring of HCWM and infection control committees; ensure sufficient budget allocations for HCWM; facilitating the development and implementation of HCWM plans at HCF level.

CTF	Centralized Treatment Facilities for the disposal of Health Care Waste (owned by MOHP)	In charge of operational collection and disposal of HCW
Private sector	Mobile operators (Mobilink, Vodafone), ICT companies (Microsoft, Oracle) hardware producers (i.e. Nokia, Apple)	Carry out voluntary schemes for the collection and refurbishing of EEE
E-waste recyclers	Recyclobekia, ITG, Spearlink, etc,	Operate in the business of collection and recycling of WEEE, under official license issued / under issuance by EEAA
Informal recyclers or collectors	Groups of waste collectors and recyclers, like the Robabekia, Zabalen, Zarabeen	Collect, recycle and place on the market different waste streams with different modalities (often environmentally unsafe) and from different sources. In few cases organizes themselves into legal entities.
NGOs	RESALA, SYAES etc.	Collect and place on the market used EEE (Resala); SYAES (garbage collector and recycler, carrying out ESM demonstration projects on E-waste)

II. STRATEGY

Strategy related to the health-care waste management

The objective of the project pertaining to HCWM is to protect human and environmental health by reducing releases of UPOPs and Mercury from the unsound management of HCW, in particular the sub-standard incineration and open burning of healthcare waste. The project will build capacity at national, governorate and HCF level for the introduction of Best Available Technologies (BAT) and Best Environmental Practices (BEP) to improve the management and treatment of HCW wastes. These efforts will be further enhanced by strengthening the legislative and policy framework governing HCWM and Mercury at national and governorate level as well as improving HCWM awareness and education.

The proposed project is fully aligned with Egypt's national policies and priorities related to HCWM (please refer to the section "Baseline – d. Specific policies and regulations on HCW") as well as UPOPs reduction priorities taken up in its NIP (see section "Context and global significance – Egypt and the Stockholm Convention").

In line with the GoE's priorities to improve HCWM and reduce releases of Mercury, at national, governorate and district level the project will strengthen the regulatory framework pertaining to the management of HCWM and Mercury use in the health sector to ensure that it conforms to the Stockholm and Minamata Convention requirements.

In line with the GoE's priorities to improve HCWM in priority governorates and to improve the management of Mercury and Mercury containing products, the project team, the Ministry of Health and Population (MoHP) and the EEAA agreed on the selection of 2 priority governorates (Gharbia and Sharkia) for the establishment of two (2) Centralized Treatment Facilities (CTF) each demonstrating a different BAT/BEP approach to HCW treatment. As a third demonstration site, the project will also support "*Cairo University Hospitals*" in the sound operation and management of non-incineration technologies.

Gharbia Governorate: With financial support of the project, a CTF making use of two BAT *non-incineration* technologies will be established in Charbia[43]. Combined, the technologies will be designed to have sufficient capacity to treat 50% of the infectious HCW produced in the governorate of Gharbia (~ 2,500 kg/day, 420 kg/hr).

Sharkia Governorate: The project will provide capacity building and technical assistance to a second CTF that will be based on *incineration* technologies that meet Stockholm Convention BAT/BEP requirements, but for which the financial resources will be provided by the Egyptian Government. The incineration technologies will be purchased with a capacity sufficient to treat 50% of the infectious waste produced in the governorate of Sharkia.

Land and Infrastructure requirements for the establishment of both CTFs, such as roads/pavement, water and electricity supply, and other infrastructural needs (e.g. construction of storage areas, loading docks, etc.) will be provided by the GoE as a co-financing contribution.

Technical assistance will also be extended to two (2) project model facilities in each governorate (4 in total) with an average bed capacity of 220 beds. The facilities will receive HCWM supplies as well as capacity building to introduce Best Environmental Practices for HCW for the entire HCWM chain (see also project activity 1.1.2). Following implementation of BEP, the model facilities can function as

examples to other HCFs in the governorate and can be used for the project's training and awareness raising activities that will target all HCFs serviced by the project's CTFs.

Cairo University Hospitals: Thirdly, the project will provide capacity building and technical assistance to "*Cairo University Hospitals*" to ensure the sound operation and management of newly installed non-incineration technologies which are being procured. Considering the profile of the hospital and the role it can play in creating further awareness about non-incineration technologies and creation of a high level of confidence in the use of such technologies, it is important that technical assistance (although limited in financial terms) is extended to *Cairo University Hospitals*.

Swiss Embassy cooperation project in the Dakahila Governorate. The Swiss project (co-financing 9.7 million CHF, equivalent to 10.3 million USD) will focus on implementation of a complete sustainable collection and disposal system of HCW based on incineration which will be a very important output and complementary to the GEF project. The Swiss Embassy cooperation project is expected to start soon in the Governorate of Dakahila. The project will install two state of the art incinerators, integrated with sustainable collection and management of healthcare waste.

The coordination of the GEF project with the Swiss project will bring outstanding benefit for the development of a sustainable HCWM in Egypt, for the following reasons:

- In Egypt, the experience on centralized and Stockholm Convention compliant incineration is limited. The coordination with the Swiss project will demonstrate how state of the art incinerator, integrated with a proper segregation of waste, can ensure a sound management of HCW limiting at the same time the release of PCDD/F, dust, and PTSs compared to substandard incinerators. Establishment of SC compliant incinerator will complement the demonstration of centralized autoclave integrated in HCFs, thus providing Egypt with a full range of technologies for the environmentally sound management of HCW.
- This will enable the Government in drafting its national HCWM strategy that includes the proper aspects and specifications for implementing both incineration and autoclaving and suitable conditions for implementing each technique.
- The Ministry of Health and Population has suggested that staff in HCFs on the national level would receive training under the GEF project on handling and segregation of HCW that should be arranged and coordinated with the Swiss project. Accordingly, capacity building and awareness activities HCWM staff and the public will be done jointly between the two projects.
- The coordination with the Swiss project will in addition allow for the enlargement of the geographical coverage of the project, in addition to the three governorates of Gharbia, Sharkia and Cairo.

In addition, Mercury phase-out and management activities will be supported in a limited number of project model facilities (2 per governorate – not exceeding an average of 220 beds per hospital) the two priority governorates as well as a number of key departments of CUH.

The HCW component of the project, aims to reduce UPOPs releases from the two governorates by 63.2 g-TEQ/yr and Mercury releases by 5 kg Hg/yr (see Table 14: UPOPs and Mercury Baselines).

An overview of the current HCWM situation in Egypt is depicted in Figure 1.

Figure 1– Current management of HCW waste in Egypt

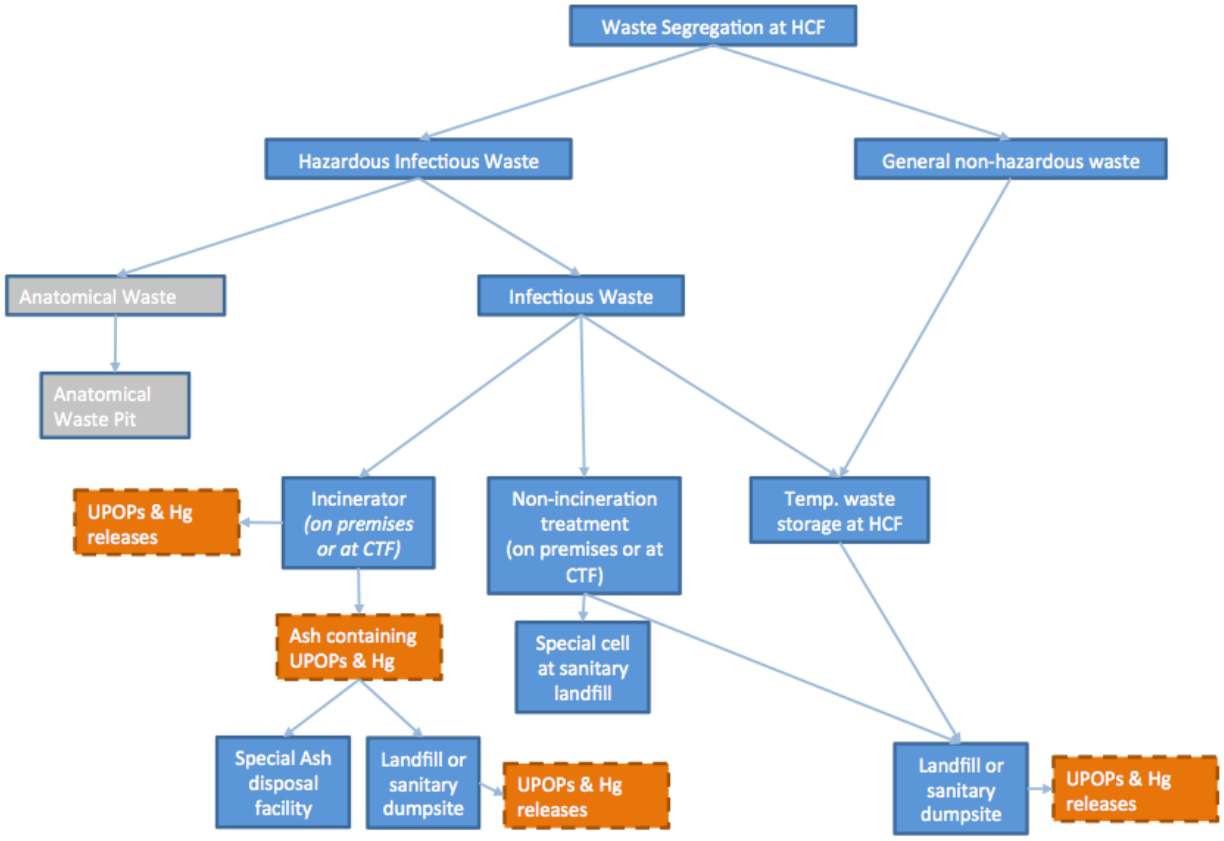
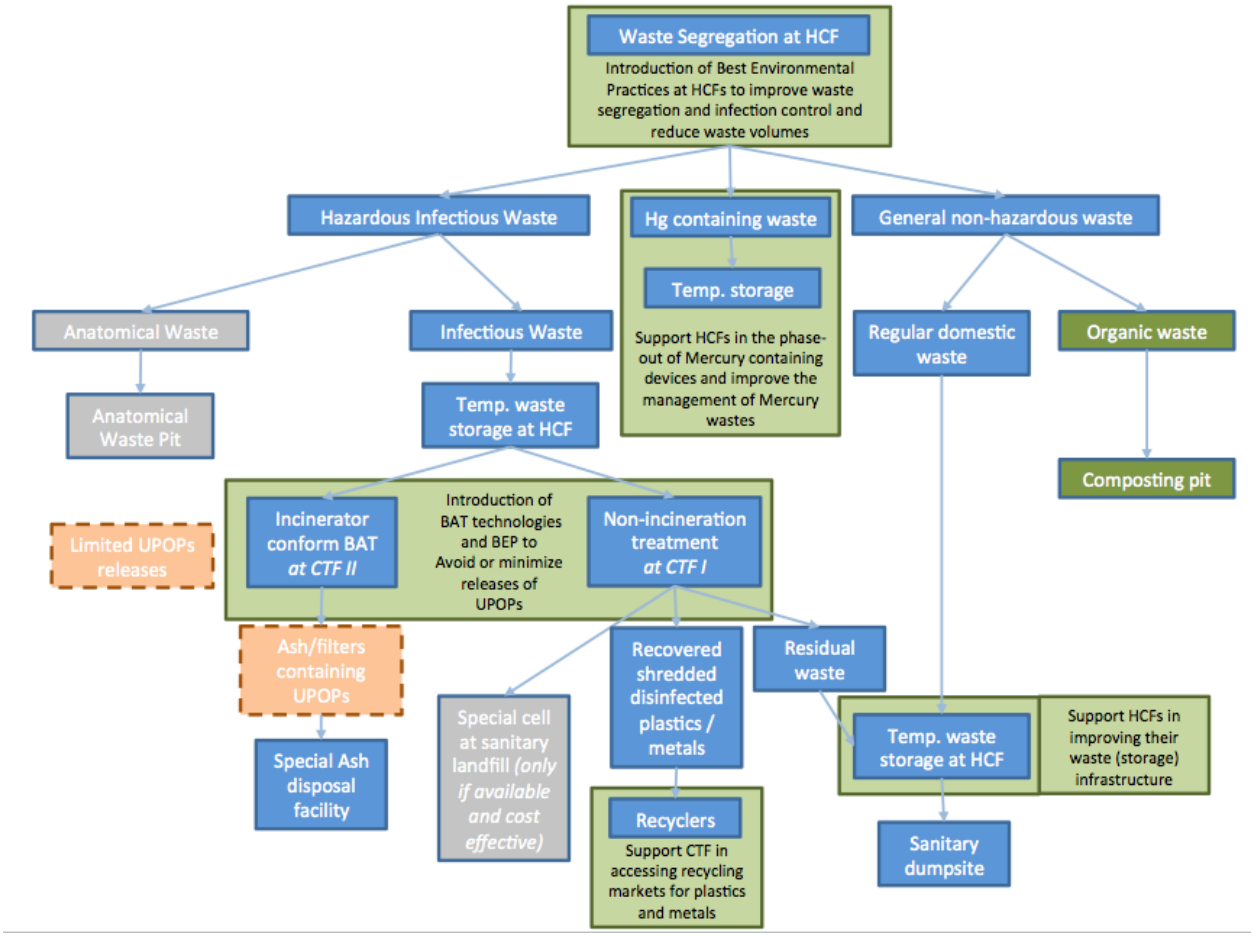


Figure 2 (Enhanced management of HCW in Egypt) visually depicts the strategy to be demonstrated and promoted by the project as a long term objective as the HCWM system develops in the country.

Figure 2 – Enhanced management of HCW in Egypt, as it will be demonstrated by the project. In green the activities that the project will implement.



Strategy related to the Electric and Electronic Waste components

From the baseline analysis resulted that two of the most significant "hot sources" in terms of POPs and U-POPs generation are the EOL ICT equipment (an accumulated c-PBDE content of 4,900 kg and a c-PBDE content for the equipment which reached its EOL in 2012 from 472 to 756 kg/year) and the CRT monitors (an accumulated c-PBDE content of 32 tons and a c-PBDE content of 6.5 t in the equipment which reached its EOL in 2012). These waste may also generate a significant amount of heavy metal (mainly lead).

The largest fraction of these waste stream is currently improperly managed by the informal sector, causing the release in the environment of POPs (PBDE), toxic metals (lead, mercury), and the generation of U-POPs (PCDD/F) and other toxic chemicals with POPs-like behaviour like PAH and PBDD/F.

The project strategy is therefore to focus on the above E-waste streams, namely EOL ICT equipment.

The main strategy of the project would be to prevent E-waste to be improperly managed by the informal sector, at the same time facilitating this sector to integrate with a "formal" and more environmental sound system for waste management. The project will support existing or new enterprises in the adoption of sustainable modalities for the door-to-door collection of waste and in demonstrating BAT/BEP for the segregation of hazardous material (PBDE contaminated plastic, lead containing glasses), all within a model that is sustainable using appropriate economic instruments and improved regulatory enforcement.

The strategy of the project is summarized in Figure 1 and 2 below.

The project will implement activities at 2 levels:

- On the level of informal sector, the project will support the establishment of a sustainable mechanism with incentives for the environmentally sound collection of E-waste, preventing therefore the hazardous E-waste components to be improperly disposed. This will be a result of demonstration of BEP procedures for the collection of waste (following take-back or incentivized collection). However, cooperation or a system of incentives can be established also with the informal sector to ensure that the waste collected by them are delivered to BAT/BEP facilities instead of being unsafely processed.
- On the level of existing formal initiative for the collection and treatment of E-waste (Figure 4) (including the 2 firms visited in the course of PPG preparation, IT companies already active with take-back schemes, other firms or institutions which would emerge after project submission) the project will provide incentives for the collection of E-waste. It will also provide training on safe dismantling and use of PPE, demonstration of BAT/BEP for identifying POPs and other hazardous material in E-waste, as from the Stockholm Convention guidance[44]. The project will in addition facilitate the proper disposal of the hazardous component of EOL CRTs and ICT equipment which due to their POPs or hazardous chemical content cannot be re-used or recycled.

The project will also work in close coordination with the Egyptian government (EEAA and MOIT) with the purpose to ensure the consistency of the regulation on E-waste with the Stockholm Convention requirements, and the possible implementation in the Egyptian regulation of relevant restrictions on content of POPs and PTS in articles, similarly to what is established in the EU RoHS directive, the EU WEEE directive and the annex XVII of the EU REACH regulation.

[44] Guidance on best available techniques and best environmental practices for the recycling and disposal of articles containing polybrominated diphenyl ethers (PBDEs) listed under the Stockholm Convention on Persistent Organic Pollutants, Draft, July 2012

The project will also assist the government in the establishment of a proper permitting scheme for E-waste operators.

Figure 3 – Current management of ICT and CRT waste in Egypt. In green the activities that the project will implement to facilitate the informal sector to adhere BAT/BEP management of these waste streams.

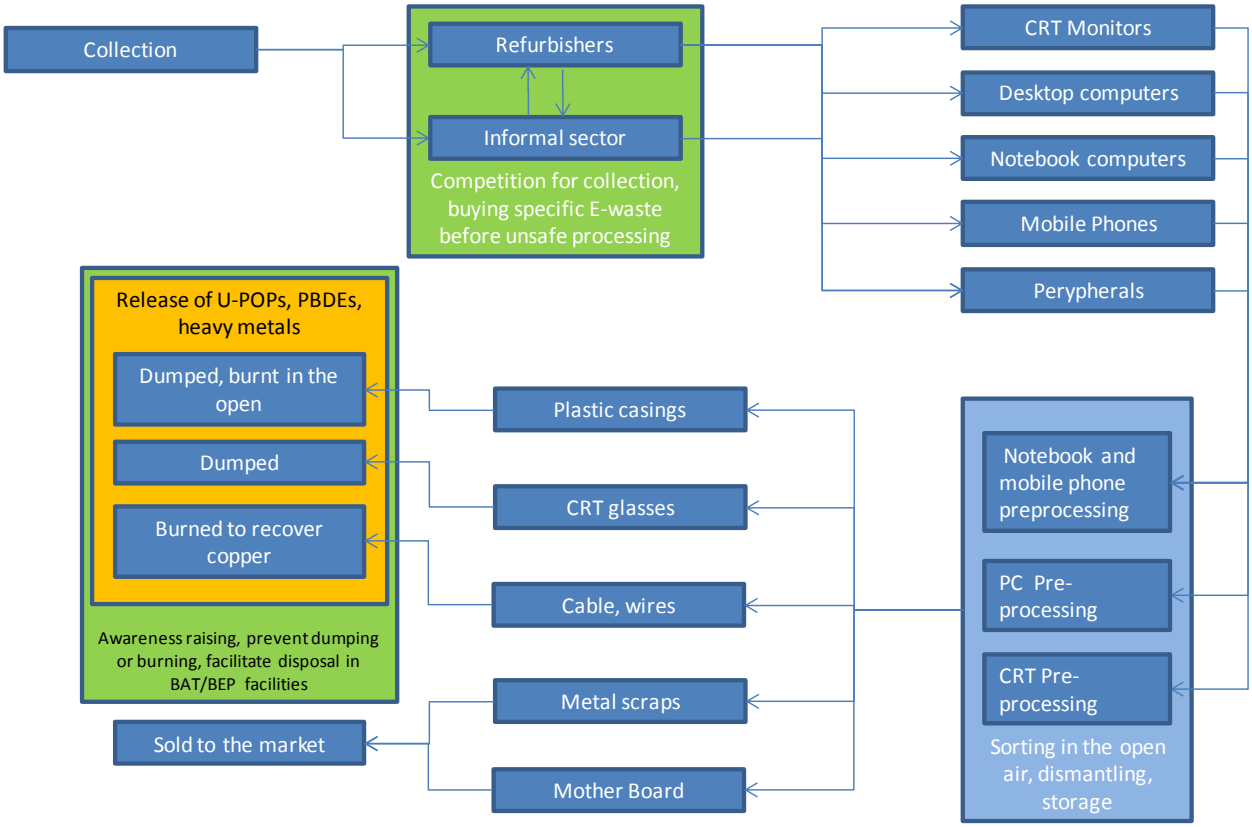
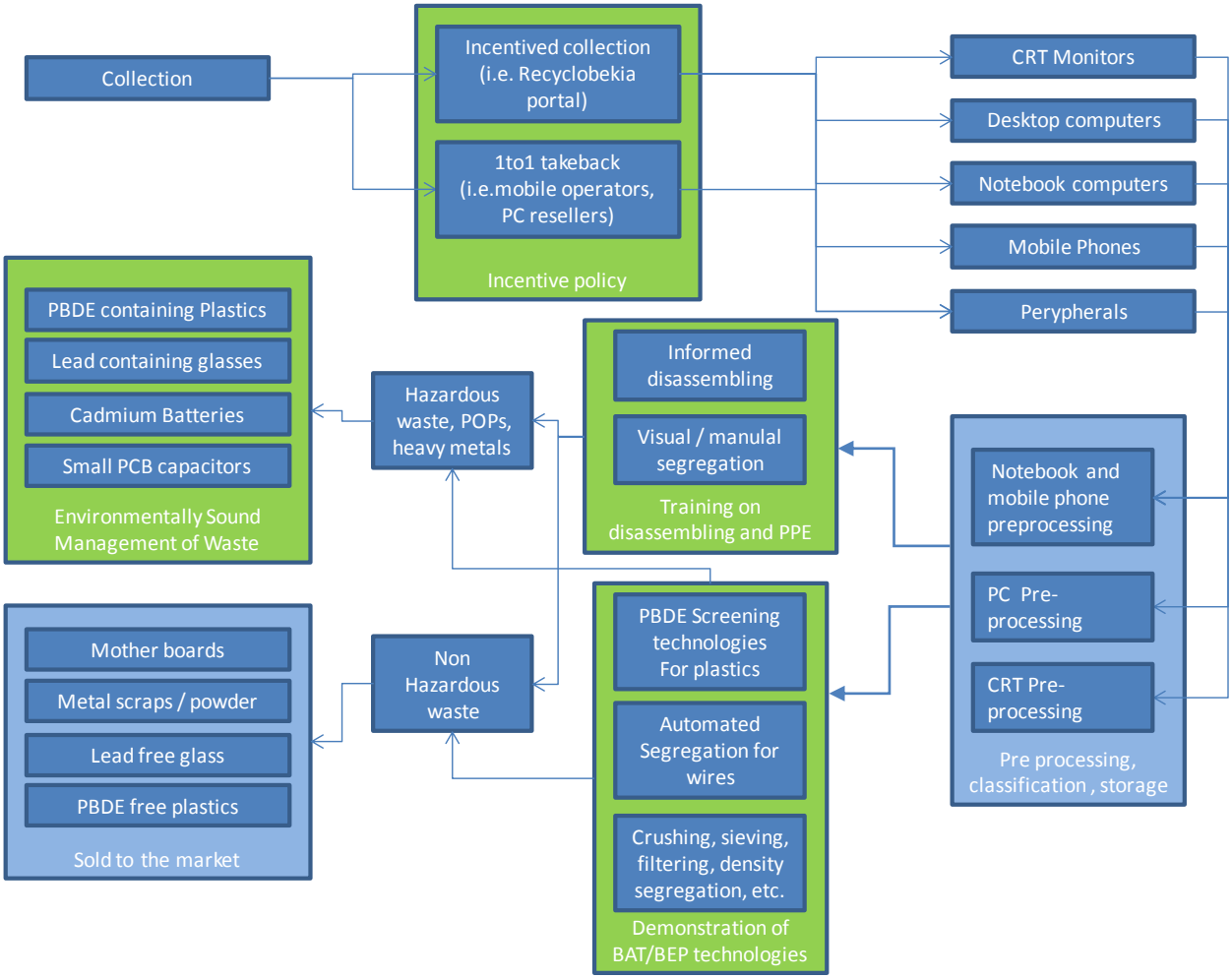


Figure 4 – Enhanced management of EOL ICT and CRT equipment in Egypt, whose implementation will be supported by the project. In green the activities that the project will implement to ensure the segregation of POPs containing material and their environmentally sound disposal.



Addressing gender issues with specific reference to impact of HCW

The main project objective is to prevent and reduce health and environmental risk related to POPs and harmful chemicals through their release reduction achieved by provision of an integrated institutional and regulatory framework covering environmentally sound Health Care Waste and E-waste management.

However, in addition to reducing UPOPs and PTS releases, improved HCWM practices in a healthcare facility, generally also reduce the occurrence of hospital-acquired infections (nosocomial infections) associated with unsafe waste management practices currently in place in many facilities. Improved HCWM can lead to a reduction in human suffering as well as lower cost implications for national healthcare systems.

The level of exposure to POPs and the resulting impacts on human health are determined by social/occupational as well as biological factors, meaning that gender considerations are critical to the effectiveness of policy making and to the sustainability of programming efforts in promotion of sound management practices. The Project will therefore mainstream gender in the formulation new baselines or in the updating of existing ones to ensure to the extent feasible that the data collected is gender disaggregated. This will provide input in the design of specific interventions as well as in monitoring the impact of these interventions on both women and men. The capacity development activities will be tailored and organized taking into account the different circumstances/occupation/level of knowledge/ and spheres of influence of women and men. Similarly the language, imagery and dissemination of awareness raising messages will be formulated to address and reach both women and men.

A stakeholder mapping is available; however, a thorough stakeholder analysis will be undertaken at the onset of the project to determine the level of influence of each of the stakeholders and accordingly, design the appropriate partnership strategy and outreach activities. The stakeholder mapping will help in the identification of the partners who are best suited to ensure that gender considerations are effectively mainstreamed in the project activities at the policy making level as well as at the programmatic level. For example, at the central level, the project will consider synergies with UN Women and NCW's training of parliamentarians to ensure that they are knowledgeable about the international conventions and national commitments and regulations governing POPs, also that they are exposed to international and regional best practices in gender sensitive management of POPs. At the community level the project will identify organizations/ women groups/ influential actors/public figures that can help in the implementation of consultations and in promoting interventions targeting women and men in HCFs, businesses and households.

Nevertheless, medical staff, nurses and patients are at a high risk for infectious diseases in hospitals, therefore they will be the direct beneficiaries of project activities. In addition, nurses, as in other similar projects, have usually a key role in ensuring that the proper management of healthcare waste is adopted in the day-to-day practices, and are therefore among the key resources for the day-to-day project implementation.

This GEF project emphasizes building awareness of the links between waste management and public health (including occupational exposures), with a special focus on the health implications of exposure to dioxins and Mercury for vulnerable populations, such as female workers, pregnant women, and children. In addition to relevant national ministries, hospital, and health clinics, key partners in the program include healthcare professionals, waste workers, and providers of waste management services (among the most vulnerable sub-populations), as well as NGOs and civil society organizations operating in the area of health, women and the environment. Accordingly training and awareness raising of hospital management including care givers doctors and nurses will be addressed separately

Women represent a large portion of workers employed in healthcare services (according to the U.S. Bureau of Labor Statistics, 73% of medical and health service managers are women). Although similar statistics are not available for Egypt, it can be assumed that the majority of healthcare workers are female. Therefore, the "nature" of the target beneficiaries instinctively lends itself to target women as key stakeholders. Additionally, the project will encourage, in the model HCFs, the emergence of 'champions' of better HCWM practices. Experience from the Global Medical Waste projects demonstrates that this values-based effort can reinforce women empowerment within the HCF staff and administration.

In both developed and developing countries, many healthcare workers (such as nurses) receive low remuneration and face hazardous working conditions, including exposure to chemical agents that can cause cancer, respiratory diseases, neurotoxic effects, and other illnesses. As developing countries strengthen and expand the coverage of their healthcare systems, associated releases of toxic chemicals can rise substantially, magnifying the risks experienced by healthcare workers and the public.

As part of this project capacity building, training, curricula, etc. are developed and tailored to different training recipients within the healthcare sector, such as i) Trainers; ii) Medical staff, such as doctors, nurses and paramedical staff, iii) Hospital maintenance and sanitary staff iv) Administrators, etc. Training is also tailored and provided to support services linked to healthcare facilities, such as laundries, waste handling and transportation services, treatment facilities as well as workers in waste disposal facilities. At national level awareness on HCWM issues is created among the general public, patients and family but also among decision makers at national, regional and district level that have significant influence on the development and approval of HCWM related budgets.

On the side of E-waste, women and children are often among the most exposed to the chemicals contained in E-waste, either during their collection – which very often is undertaken by them – or during their unsafe processing. Open burning of E-waste often occurs in the vicinity of villages or even in the suburbs of main cities like Cairo, therefore entire families are exposed to the noxious emissions generated by the burning of waste. By reducing improper collection and processing of E-waste, the project will therefore bring benefits to the local communities and women.

Level	**Gender Rating (output level)**	**Description of Gender Consideration(s):**
Outcome	2	Women and Men health is affected by POPs resulting from the handling and disposal of wastes generated by HCFs and electronic equipment. All factors being equal, women might be disproportionately affected because of their biological constitution (smaller size and weight)
Output 1	2	There is no clear understanding of the existing standards and regulations concerning handling disposal of medical waste and the gaps in the legislative framework do not make it conducive to promoting and enforcing safe segregation and disposal practices. The capacity of HCF (doctors/nurses/management) to address these issues is critical to the success of the project

Output 2	2	There is no clear understanding of the existing standards and regulations concerning handling disposal of e-waste and the gaps in the legislative framework do not make it conducive to promoting and enforcing safe segregation and disposal practices. The capacity of e-waste processors, communities, businesses and local authorities to address these issues is critical to the success of the project. Women and men have different roles to be involved in the awareness raising and capacity development interventions.
Output 3	2	Many stakeholders are involved including policy makers, operators (formal and informal) as well as communities …it is important that the awareness raising messages are formulated to address the range of stakeholders and that women are targeted within each group/category of stakeholders
Output 4	2	The adaptive feedback of women and men in each category of stakeholders in each of the interventions must be considered. Women and men have different insights/opinions that should be considered and accounted for in all project reports.

Policy context

Egypt has ratified the Stockholm Convention on POPs, as well as the Basel Convention on the Trans-boundary Movement of Hazardous Waste and their Disposal

The country has not ratified the Rotterdam Convention and/or signed the Minamata Convention, although both are under consideration by the Government. Similarly, it has not undertaken substantial steps toward the adoption of GHS for the classification of hazardous substances.

The project is compliant with the policy and action plan established by the country under the initial NIP. The project is also compliant with the Egyptian Environmental Policy, and more specifically with:

- The National Strategy (2010) on HCWM priority intervention, which envisages:
  - Establishment of centralized treatment facilities rather than small scale treatment units currently located on health-care premises.
  - Revision of the code of practice and use of centralized treatment technologies under the supervision of MoHP and the Ministry of State for Environmental Affairs (MSEA).
  - Revitalizing the medical waste management situation in health-care establishments (training, separation, collection, storage and transportation) according to new guidelines.

- The Egypt's State of the Environment Report– Chapter 15[45] (EEAA, 2011) with specific regards to mercury reduction activities;
- The Memorandum of Understanding jointly signed by MCIT and MSEA/EEAA in February 2010 to launch the Egyptian Green ICT Strategy, aiming to reduce adverse environmental impacts of the increasing use of ICT equipment, and introducing safe disposal methods of E-waste.

Legal context

As already explained in the text, the following are the main regulatory texts related directly or indirectly to POPs waste management:

- The Stockholm Convention on Persistent Organic Pollutants, as ratified by the Egyptian Government;
- The Basel Convention on the control of transboundary movements of hazardous waste, as ratified by the Egyptian Government;
- The Law No. 38/1967 on General Public Cleaning and its amendments;
- The Law No. 4/1994 for the Protection of the Environment and its amendments.

45 http://www.eeaa.gov.eg/english/reports/SoE2011En/part%20four%20Urban%20Environment/chapter%2015.%20Hazardous%20Substances%20&%20Waste.pdf

Project Rationale and Policy Conformity

The goal of the GEF chemicals program is to protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste. The project is fully consistent with the GEF-5 Chemicals focal area strategy, Objective 1: Phase-out POPs and reduce POPs releases as well as Objective 3: Pilot sound chemicals management and mercury reduction. The project will contribute to the achievement of GEF's main indicators under this strategic programming area through the interventions described in the Project Description and in the Result Framework.

The project intends not only to be compliant with the existing Egyptian policy, but to effectively promote the integration of the requirements of the Stockholm Convention on POPs in the country's policy and regulation. Indeed, in Egypt there is a strong need of establishing policies and legislations related to E-waste management, and to revise and strengthen the management of healthcare waste, specifically in ensuring investment in future facilities and supporting practices, which meet international standards. Keeping in view the weak legislation and absence of a sound enforcement mechanism regarding POPs in HCW and E-waste, the role of the project emphasizing upon strengthening the regulatory and policy framework, capacity development of relevant institutions, inventory of U-POPs, HCW and E-waste is of major importance. In this way, successful implementation of the project would enable the state institutions for complying with the provisions of Stockholm Convention that has already been ratified by Government of Egypt.

Project Description

Project Goal, Objective, Outcomes and Outputs/activities

The **Objective** of the project is to protect human- and environmental health by reducing releases of POPs and other hazardous releases (e.g. mercury, lead, etc.) resulting from the unsound management of waste, in particular the sub-standard incineration and open burning of hazardous health care waste (Project component 1 & 2) and electronic waste (Project component 3 & 4) by demonstrating and promoting Best Available Techniques (BAT) and Best Environmental Practices (BEP) to soundly manage and dispose of such wastes.

The project intends to achieve this objective through improving the regulatory system, enhancing its enforcement, raising awareness on POPs, and by establishing the capacity for safe handling, transport and improved disposal of POPs containing waste.

This will contribute to the broader **Goal**, which is to reduce risk for the human health and the environment by avoiding the release of POPs in the environment and preventing people's exposure to POPs.

The project has been arranged in five components (including Monitoring and Evaluation) as following:

- Component 1. HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework
- Component 2. HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (in combination with component 1)
- Component 3. E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework Component
- Component 4. E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT (in combination with Component 3's investments for the end-of-life management) and strengthening of the legislative and policy framework
- Component 5. Monitoring, learning, adaptive feedback, outreach and evaluation.

The detailed project design inclusive of cost estimates is elaborated by Component against each outcome and output/detailed activities in Table 10 below. Detailed descriptions and explanation of cost estimates follow in this Section. This is further defined in Annex A in the Project Results Framework in terms of indicators, corresponding baseline and project cycle targeted outputs.

Table 14 Elaborated project design framework and cost estimate by Outcome and Output/Activity

Outcome	Output/Activity Description	Cost Estimate (US$)		
		Total	GEF	Other
Component 1. HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework[46] (see Note 1)				
Outcome 1.1 UPOPs emissions reduced through support to HCWM initiatives at health-care facility(ies) level, Central Treatment Facility (CTF) level and training institutions	Output / Activity 1.1.1: Facility assessments conducted and UPOPs baseline determined.	330,000	130,000	100,000 (CuH) 100,000 (S.E.)
	Output / Activity 1.1.2 BEP implemented at project facilities (followed by evaluation).	600,000	300,000	100,000 (CuH) 200,000 (S.E.)
	Output/Activity 1.1.3 Identification of technology requirements, competitive procurement, selection and installation of BAT non-incineration and incineration technology at the respective CTFs.	11,216,000	1,186,000	830,000 (CuH) 9,200,000 (S.E.)
	Output / Activity 1.1.4 National HCWM training opportunities enhanced to disseminate best practices to additional hospitals/HCFs.	460,000	200,000	60,000 (CuH) 200,000 (S.E.)
Outcome 1.2. National Policy and regulatory framework strengthened/developed with respect to HCWM and UPOPs emissions	Output / Activity 1.2.1 National HCW policies, regulations and plans reviewed and enhanced.	450,000	100,000	50,000 (from EEAA) 300,000 (S.E.)
Total Component 1		**13,056,000**	**1,916,000**	**11,140,000**
Component 2. HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (in combination with component 1)				
Outcome 2.1 Mercury emissions in HCWM sector are reduced.	Output / Activity 2.1.1 Mercury assessments conducted and Hg baseline determined	134,000	34,000	100,000 (CuH)
	Output / Activity 2.1.2 BEP related to the safe management, storage, phase-out and disposal of Mercury containing devices implemented at project facilities	350,000	150,000	200,000 (S.E.)
	Output / Activity 2.1.3 Mercury free device specifications determined, devices procured	200,000	200,000	-

[46] **Note 1**: Future support from MoHP will serve to link the project to the Government's investments in incinerator equipment, and influence, though in the circumstances of prevailing opinions in the purchase of lower cost technology with limited emission control capability, the decision making process for future investments with emission control systems to minimize the UPOPs pressure on the health and environment in Governmental programmes. Necessary supporting co-finance (in cash) will be considered as leveraged and will be provided as details are established.

Outcome	Output/Activity Description	Cost Estimate (US$)		
		Total	GEF	Other
	and introduced			
Outcome 2.2 National Policy and regulatory framework strengthened / developed with respect to sequestration, phase-out, storage and disposal of Mercury waste in HCWM sector.	Output / Activity 2.2.1 Policies/guidelines on sequestration, phase-out and management of mercury waste from HCFs developed.	200,000	50,000	50,000 (EEAA) 100,000 (S.E.)
Total Component 2		**884,000**	**434,000**	**450,000**
Component 3. E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework				
Outcome 3.1 Emissions of UPOPs (including new POPs) and POPs reduced through support to e- Waste Management at municipality and national level.	Output / Activity 3.1.1. National mapping of e-waste processors and refurbishers and applied practices completed and baseline on POPs and UPOPs releases from E-waste processing determined.	70,000	70,000	-
	Output / Activity 3.1.2 Capacity/ awareness among key among key stakeholders at national and municipal level built.	380,000	180,000	200,000 (ITG)
	Output / Activity 3.1.3 Introduction of BEP/BAT to priority municipalities, selected formal and informal E-waste processors/refurbishers	4,250,000	850,000	3,400,000 (ITG)
	Output / Activity 3.1.4 Replication of project results at international, regional, national and municipality level	50,000	50,000	-
Outcome 3.2 National policy and regulatory framework strengthened with respect to E-waste	Output / Activity 3.2.1 National policy and regulatory framework (incl rules and regulations) on E-waste management reviewed, revised and improved (pertaining to processing, refurbishing, storage, disposal, illegal trade etc.) and fully integrated into the national policy and regulatory framework for waste management.	228,000	50,000	178,000 (MCIT)
Total Component 3		**4,978,000**	**1,200,000**	**3,778,000**
Component 4. E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT (in combination with Component 3's investments for the end-of-life management) and strengthening of the legislative and policy framework				
Outcome 4.1 Emissions of other associated hazardous substances (mercury, lead, cadmium) reduced through support to E-waste management at municipality and national level.	Output / Activity 4.1.1. Baseline on associated hazardous releases (mercury, lead, cadmium) from E-waste processing determined (as part and parcel of Component 3).	10,400	10,400	-
	Output / Activity 4.1.2 Introduction of BEP/BAT to formal and informal E-waste processors. (as part and parcel of Component	2,156,700	156,700	2,000,000 (ITG)

Outcome	Output/Activity Description	Cost Estimate (US$)		
		Total	GEF	Other
	3).			
	Output / Activity 4.1.3 Capacity/ awareness among key stakeholders built	57,662	57,662	-
Outcome 4.2 National policy and regulatory framework on associated hazardous releases from E-waste processing strengthened.	Output / Activity 4.2.1 National policy and regulatory framework on e-waste management and recycling with respect to associated hazardous releases (mercury, lead, and cadmium) reviewed/ improved (as part and parcel of Component 3).	130,000	30,000	100,000 (MCIT)
Total Component 4		**2,354,762**	**254,762**	**2,100,000**
Component 5: Monitoring, learning, adaptive feedback, outreach and evaluation		**150,000**	**100,000**	**50,000** (UNDP)
Total All Components		**21,422,762**	**3,904,762**	**17,518,000**
Project Management Budget		**245,238**	**195,238**	**50,000** (UNDP)
Project Total		**21,668,000**	**4,100,000**	**17,568,000**

The following provides the description of Outcome and Output(s) under each of the project's component.

Component 1. HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework (GEF grant: US$ 1,916,000 USD; committed co-financing: US$ 11,140,000)

Outcome 1.1 UPOPs emissions reduced through support to HCWM initiatives at health-care facility(ies) level, Central Treatment Facility (CTF) level and training institutions

Output / Activity 1.1.1: Facility assessments conducted and UPOPs baseline determined.

During the preparation of the project (PPG phase) a baseline assessment was conducted which reviewed the HCWM situation in Egypt and prepared estimates for UPOPs releases at national/governorate level based on the number of HCFs, beds and healthcare services present at governorate level. The baseline assessment resulted in a ranking of governorates based on infectious waste quantities produced and on UPOPs releases (IDC, 2014)47. Following the ranking of governorates, and discussions with the MoHP, two priority governorates (Gharbia and Sharkia) were selected for participation in the project based on the following criteria: availability to support project activities; commitment to improve the management of health care waste; logistic considerations; availability of data on HCW production; availability of infrastructures for establishing waste treatment facilities. After selection of the two priority governorates, a number of HCFs within these governorates were pre-selected (see table 11/12), with the intension that 2 hospitals in each governorate will ultimately be retained/selected to function as the project model facilities. Subsequently, assessments of the pre-selected facilities (applying the Individualized-Rapid Assessment Tools (I-RAT) developed under the GEF funded UNDP/WHO/HCWH Global Medical Waste project48) were conducted in order to obtain a sense of the challenges faced by HCFs in terms of HCWM as well as an indication of the waste amounts produced and resulting UPOPs and Hg releases. A summary of the results of these baseline assessments have been presented in table 11/12.

Although facility assessments have been conducted of the pre-selected HCFs and UPOPs baselines have been established for the same, if any changes occur between project approval and project implementation, the project team would decide to re-do the I-RAT assessments, which also presents an excellent training opportunity for national experts as well as HCF staff.

It should be noted that during the PPG phase no baseline assessment was undertaken for the Cairo University Hospitals (CUH), therefore a baseline and UPOPs assessment will be conducted for CUH facilities at the start of project implementation.

Output/activity 1.1 will lead to a detailed baseline assessment report for the project's model facilities (~ 5) and will also present an opportunity to verify the amounts of HCW generated in each of the governorates as well as Hg and UPOPs releases. Subsequently this data will be used to determine the required capacity building needs for the HCFs as well as the required HCWM supplies and the capacity of the HCW treatment technologies for the two CTFs.

Making use of the guidance document "Measurements and Documentation[49]" as developed under the GEF/UNDP/WHO Global Medical Waste Project, the project will record the pre-project situation as well

[47] The results of this baseline assessment can be found in the report "*Assessment Study of Healthcare Waste in Egypt* (IDC, May 2014)

[48] (UN/GEF Global Health Care Waste Project, 2009) "Individualized Rapid Assessment Tool (I-RAT)" Available at http://www.gefmedwaste.org/downloads/I-RAT%20May%202009%20UNDP%20GEF%20Project.xls. The I-RAT is a rapid assessment tool to obtain an initial indication of the level of healthcare waste management at an individual healthcare facility. The tool results in an overall score out of 100 that can be used to compare and rank healthcare facilities for the purpose of prioritizing interventions, and can also be used as a quick tool to identify possible areas for improvement within a single facility.

[49] Not yet available on-line

as the post-project to provide a before and after snapshot of the project's impact which can be used to spur project replication in other governorates.

Output / Activity 1.1.2 BEP implemented at project facilities (followed by evaluation).

The project will support 4 project model facilities in the two governorates (two in each governorate) in introducing best environmental practices (BEP) in order to prepare them to be served by the Centralized Treatment Facility (CTF) and to receive Mercury-free devices. Considering project funds are limited, and individualized project support cannot be provided to all HCFs located in the two governorates (Gharbia counts 119 hospitals and Sharkia counts 117 hospitals), the 4 HCFs will function as demonstration and training sites to support` capacity building for the other HCFs to be serviced by the CTF.

The preparation will include the following activities:

- Finalizing and signing Memoranda of Understanding (MOUs) with all the project facilities (incl. CTFs).
- Setting up HCWM committees to include both women and men at each of the project HCFs.
- Developing and implementing HCWM policies and procedures (including monitoring) at each project facility.
- Developing and implementing HCWM plans (including Mercury Management) at each of the project facilities.
- Training project facility staff to include both women and men in best practices related to HCWM (which includes, but is not limited to waste minimization (incl. sound purchasing and stock management), reuse and recycling, waste segregation, storage and transport (on-site and off-site), waste treatment and disposal).
- Undertaking staff preference studies to select cost-effective alternatives to Hg (types, features, etc.) and PVC containing products (This will become the basis for procurement of Mercury-free devices under Outcome 2.1).
- Supporting HCFs in reducing their waste streams by introducing recycling activities (e.g. composting, which will significantly reduce the volume of the waste that needs to be transported to the landfill/dump site, while generating some additional income through sale of compost).
- Evaluate the performance of each project facility in taking up BEP practices.
- Developing standardized HCWM policies and procedures, HCWM plans and TOORs for HCWM staff and committees, based on the experiences from the model facilities to allow for easy take up and adaptation by other HCFs in the two governorates (and possibly beyond).

As an additional project activity, the project will also provide capacity building and technical assistance to "Cairo University Hospitals (CUH)" to ensure the sound operation and management of newly installed non-incineration technologies (autoclaving and shredding, with a capacity of 700 liters/45 minutes (≈123Kg/45'). CUH also owns two incinerators (manufactured by the Danish Envikraft), which were in operation until the end of 2012. CUH will soon start extensive maintenance for one of the incinerators, with a budget of ≈LE1.5 million

Considering the profile of the hospital (a teaching hospital with many different disciplines and over 5,000 beds) and the role it can play in creating further awareness about non-incineration technologies and creation of a high level of confidence in the use of such technologies, as well as good practices with respect to waste segregation and incinerator upgrading and maintenance, it is important that technical assistance (although limited in financial terms) is extended to Cairo University Hospitals. Such assistance

will ensure sound operation, management and maintenance of the technologies as well as their HCWM system in general. Based on the outcomes of the baseline assessment conducted as part of Activity 1.1.1, project interventions for Cairo University Hospitals will be further defined.

However, for now it is anticipated that support to CUH will include the following activities (although additional activities might be identified during the baseline assessment):

- Finalizing an MOU with CUH.
- Support CUH in assessing and revising its HCWM plans and guidelines.
- Provide capacity building and training to staff working at the Centralized Treatment Hub of the CUH (e.g. operators, managers, waste handlers and HCWM staff) in storage, transport, recycling, sound operating procedures of both non-incineration and incineration treatment technologies, biological deactivation testing, etc.
- Provide specific training and technical assistance to improve the shifting from an incineration oriented waste management system to an autoclave oriented waste management system, with specific objective to ensuring the proper segregation of waste upstream and to reduce the amount of waste which will be disposed by incineration once the incinerator is again operational.
- Development of training materials and conduction of training for trainers'(TOT) events to include women and men, to ensure the sustainability of Health Care Waste Management at CUH and other health care facilities, by establishing a node of the training network at CUH (may include development of specific curricula at the University connected to the hospital).
- Procurement of non-mercury equipment including mercury spill kits, technical assistance and training on mercury related issues (management of mercury containing waste, training on the use of non mercury devices) for a limited number of key departments.
- Technical/economical analysis related to the repair of the incinerator, with the objective to understand what are the repairing needs, the recommended upgrading options to ensure reasonable levels of emission of dust and dioxin, and whether the investment associated to repairing and upgrading can be justified compared to other alternatives, like purchasing of additional non-combustion technologies, improving infrastructures and equipment for safe storage and transportation of HCW, etc.
- Technical assistance in carrying out 2 sampling and analysis of PCDD/F at the stack of the incinerator once this is again operational.
- Technical assistance and equipment for conducting microbiological challenge testing for measuring the effectiveness of the autoclave.

An estimated GEF budget for the activity to be carried out at CUH is in the order of US$ 230,000, to which CUH will provide cash and in kind co-financing for an overall amount of US$ 1,100,000.

Secondly, the project team will prepare the central treatment facilities to receive large-scale non-incineration technologies (CTF I in Gharbia) and incineration technologies (CTF II in Sharkia). The preparation could include the following activities:

- Siting of the two CTFs (headed by the health directorates of the two governorates).
- Conducting EIAs for the technologies introduced by the project as required by Egyptian Law while taking into consideration different impacts on men and women.
- Supporting the drafting/signing of MOUs with all stakeholders involved in the operation of the CTFs, including development and signing of cost-sharing agreements between the CTF and HCFs that will be served by it.
- Through large-scale training and capacity building workshops and visits to model facilities,

support HCFs to be served by the CTFs in improving their HCWM systems, in particular waste minimization and segregation.

- Working with the landfill operators to recommend improvements in the landfill if needed.
- Improve the logistics and safety around the transportation of infectious/hazardous HCW (including conducting routing optimization studies to minimize fuel and other transportation costs; developing operating procedures/guidelines for the transportation of waste; putting in place waste tracking procedures and systems and also training CTFs, and hospitals, as well as drivers, in safe temporary storage, transportation, use of PPE, clean up, and emergency response practices).
- Providing assistance to the central/cluster facility and stakeholders in the preparation of an economic cash flow analysis, a business plan including cost recovery through revenues from fees and recycling, a plan for the management and operation of the facility, and other plans to ensure sustainability as appropriate.
- Working with the central/cluster facility on the layout and design (blue prints) for improvement of the centralized treatment facilities and receipt of the new technologies.
- Exploring public-private partnership arrangements if appropriate.
  Once BEPs have been implemented at each of the CTFs as well as at the HCFs, which will be served by the CTFs, practices will be evaluated. If further improvements are required, the project will do its utmost to introduce measures prior to the CTFs becoming functional.

Output/Activity 1.1.3 Identification of technology requirements, competitive procurement, selection and installation of BAT non-incineration and incineration technology at the respective CTFs.

The project will draft and agree upon technical specifications for the non-incineration technologies intended for CTF I, based on specifications developed by the GEF/UNDP/WHO/HCWH Global Medical Waste project for non-incineration HCWH management systems that are consistent with the Stockholm Convention BAT/BEP Guidelines.

The project will also provide advice to the MoHP and EEAA on the drafting of technical specifications for incineration technologies intended for CTF II to ensure that incineration technologies procured for CTF II will meet Stockholm Convention requirements.

Non-incineration technologies that meet the SC BAT/BEP guidelines and international standards will be selected through a competitive international bidding process in accordance with UNDP rules and regulations.

Non-incineration HCWM systems will be procured for CTF I. Which might include two large autoclaves, shredder (either internal or external), compactor, accessories, installation and shipment. It is assumed that initially the CTF will aim to treat 50% of currently generated HCW in the governorate (5,115 kg/day/2 = ~ 2,500 kg/day). With the assumption that the non-incineration technology runs 6 hrs/day, a capacity of approximately 420 kg/hr would be required, divided over two technologies, each with 220 kg/hr capacity.

The project team will work with project facility and the CTF to new technologies into the overall HCWM system. In order to further reduce emissions from waste management practices, the project will support CTF I in setting up schemes for the sale of disinfected/shredded materials (e.g. disinfection by non-incineration technologies, sorting, shredding, transport and subsequent hand-over to recyclers) and support the CTF in accessing recycling markets for plastics and metals. This would reduce the volume (and thus costs) of waste to be disposed of at the landfill and also provide for some income generation.

Specifically, the work will include the following activities:

- Installation and testing of non-incineration technologies, and training staff in their day-to-day

operation and maintenance at the CTF.

- Supporting the establishment and training of local maintenance teams/technicians to ensure that maintenance of new technologies can be ensured in the future while identifying opportunities for men and women separately
- Establish recycling schemes for disinfected/shredded waste (e.g. plastics, metals)
- Waste-to-energy analysis for waste which after treatment by non-incineration technologies are disinfected and which can therefore be safely stored pending final processing by a suitable technology.

Output / Activity 1.1.4 National HCWM training opportunities enhanced to disseminate best practices to additional hospitals/HCFs.

In order to strengthen the institutional capacities for national training, the project will:

- Conduct an assessment of the types, number and quality of training and education opportunities in the area of HCWM.
- Establish a national training infrastructure for HCWM by revising and incorporating content for health-care waste management in existing curricula for Ministry of Education schools and institutions of higher learning (e.g. medical faculties, nursing schools and Environmental Health Schools) to ensure pre-service awareness and training (based on the training modules developed under the Global Medical Waste Project).
- Support the establishment of a specialized certificate course on HCWM.
- Support the establishment of a training-of-trainers program for HCWM, most likely to be hosted by CUH. Both women and men should be included
- Develop a training video in Arab that shows best practices for HCWM, which can be used for training purposes and refresher courses.

<u>Outcome 1.2. Nat. Policy and regulatory framework strengthened/developed with respect to HCWM and UPOPs emissions</u>

Output / Activity 1.2.1 Nat. HCW policies, regulations and plans reviewed and enhanced.

At project start, the project team will assess in detail the national policy, regulatory framework, and national plan governing the management of HCWM and will prepare recommendations for their revision/improvement. It will do so in close consultation/collaboration with the GoE efforts, which at the time of project document development was in the process of developing a strategic framework and two-year-plan to implement HCWM activities throughout the country. Based on the assessment, a detailed proposal for interventions supported by the project on improving the policy and regulatory framework will be made. Although the PPG phase did not review in detail the HCWM policy and regulatory framework, a few important observations were made (see Baseline Section D).

This project activity will support:

- Revision/development of HCWM guidelines and tailoring them to various facility types.
- Revision/development of standards on monitoring HCWM practices.
- Development of technical regulations for HCWM equipment and supplies.
- Development of standards on technologies for the processing and final disposal of HCW.
- Development of gender sensitive job descriptions for those responsible for HCWM at HCFs.
- Provide training to environment and health inspectors on revised regulations and guidelines.

A major challenge related to HCWM remains the implementation and enforcement of regulations and guidelines. The project will support the development of the above listed standards and other regulatory measures, and at the same time support HCFs in implementing these standards and other related measures pertaining to HCWM so that HCFs are in compliance with national requirements.

Component 2. HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (GEF grant: US$ 434,000 USD; committed co-financing: US$ 450,000)

Outcome 2.1 Mercury emissions in HCWM sector are reduced

Output / Activity 2.1.1 Mercury assessments conducted and Hg baseline determined

During the preparation of the project (PPG phase) a baseline assessment was conducted which reviewed the HCWM situation in Egypt. However, at the time of the assessment it was very challenging to obtain data on the use of Mercury containing devices and products in the health sector, either at national, governorate or HCF level. For these reason Mercury baseline values were estimated based on number of beds and population size (see tables 11/12).

It will therefore be important at the start of project implementation to conduct a detailed Mercury baseline assessment, at national level as well as at facility level. At facility level the UNDP/GEF I-RAT tool will be applied, while at national level the project will make use of the UNEP "*Toolkit for Identification and Quantification of Mercury Releases*[50]"

This project activity will:

- Undertake a detailed baseline assessment for the project's model facilities (5 in total, made up of 2 HCFs in each of the two priority governorates and selected departments of CUH) as well as the governorates in terms of Mercury use in the health sector (e.g. Mercury containing medical devices and the use of dental amalgam).
- Determine/decide upon the required number of Mercury-free devices to be procured for the 5 model facilities.

Output / Activity 2.1.2 BEP related to the safe management, storage, phase-out and disposal of Mercury containing devices implemented at project facilities

This project activity will support:

- Undertake an assessment on potential Mercury disposal/treatment options for Mercury containing wastes from health care facilities.
- Development of a Mercury management and phase-out plan for each project facility (as an integral part of the development of facility HCWM plans – see outcome 1.1).
- Implementation of Mercury waste management practices at the project model facilities, and setting up of safe interim storage sites at the HCFs.
- Training of HCFs staff in the clean-up, storage and safe management of Mercury wastes taking into consideration the level of educations of nursing staff,

For project model HCFs that have dental units, the project will also work with these units in improving the waste management of dental amalgam wastes.

[50] Toolkit for Identification and Quantification of Mercury Releases

Output / Activity 2.1.3 Mercury free device specifications determined, devices procured and introduced

Considering the concept of Mercury-free medical devices is relatively new in Egypt and to date the use of Mercury-containing devices is widespread, it will be crucial for the project to create a foundation of confidence in the use and application of Mercury-free devices.

Similar projects in other countries (e.g. Lebanon) have created such confidence by supporting staff preference studies at a number of recognized and accomplished healthcare facilities to allow healthcare staff to select their preferred cost-effective Mercury-free alternatives. The project in Egypt will do the same in the four project model facilities in the two priority governorates but will also support the Cairo University Hospitals in conducting a staff preference study.

Based on the outcomes of the staff preference studies, the technology specifications for the Mercury-free alternatives, will be drawn up, and international bidding procedures will be launched to procure sufficient Mercury-free devices (Mercury-free thermometers and sphygmomanometers) to equip the four project model facilities as well as a number of selected departments of CUH.

The project team will prepare HCFs for the introduction, use and maintenance of mercury-free devices, by training staff in their use and maintenance[51] and supporting the establishment and training of local maintenance teams/technicians to ensure that maintenance of Mercury-free devices can be ensured in the future.

This project activity will support:

- Staff preference studies in each of the project model facilities.
- Drafting of technical specifications for Hg-free devices based on outcomes of the staff preference studies.
- Procure mercury-free devices through international bidding process to equip 4 project model facilities and selected departments of CUH (total of 5 facilities)
- Train HCF staff in the use and maintenance of mercury-free devices.
- Establish and train local maintenance/technician teams.
- Monitoring the phase-out and temporary storage of Mercury containing wastes in the project facilities.

<u>Outcome 2.2 Nat. Policy and regulatory framework strengthened / developed with respect to sequestration, phase-out, storage and disposal of Mercury waste in HCWM sector</u>

Output / Activity 2.2.1 Policies/guidelines on sequestration, phase-out and management of mercury waste from HCFs developed.

At project start, the project team will assess the national policy, regulatory framework, and national plan pertaining to the management of Mercury in general and in the health sector in specific (as an integral component of outcome 1.2), and will prepare recommendations for the improvement of the regulatory framework for Mercury in healthcare products based on the assumption that Egypt will in the near future sign/ratify the Minamata Convention.

The Minamata Convention stipulates[52] that i) Each party shall not allow, by taking the appropriate measures, the manufacture, import or export of mercury added thermometers and sphygmomanometers by

[51] (UNDP/GEF) Guidance on Maintaining and Calibrating Non-Mercurial Clinical Thermometers and Sphygmomanometers, available at: http://noharm-global.org/sites/default/files/documentsfiles/1222/Guidance_Hg_UNDP-GEF-2013.pdf

[52] http://www.mercuryconvention.org/Portals/11/documents/conventionText/Minamata%20Convention%20on%20Mercury_e.pdf

2020 (Annex A, Part 1) and ii) take measures to phase-down the use of dental amalgam by introducing 2 of 8 stipulated measures.

Therefore, in anticipation of the signature/ratification of the Minamata Convention, the project will prepare Egypt for the domestication of the Minamata Convention articles pertaining to medical products containing Mercury.

This project activity will support the development of:

- Recommendations for the improvement of the regulatory framework for the management of Mercury in the health sector.
- National action plan on the life-cycle management (LCM) of Mercury containing medical devices.
- National standards/guidelines for HCFs on the management, storage and disposal of mercury containing medical products.
- National standards/guidelines on requirements and specifications of non-mercury thermometers and sphygmomanometers.
- MoHP decree prescribing a phased approach/total phase-out for the use of Hg-containing thermometers and sphygmomanometers (and potentially dental amalgam).

Component 3. E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework (GEF grant: US$ 1,200,000; committed co-financing: US$ 3,778,000)

Outcome 3.1 Emissions of UPOPs (including new POPs) and POPs reduced through support to e- Waste Management at municipality and national level

Output / Activity 3.1.1. National mapping of E-waste processors and refurbishers and applied practices completed and baseline on POPs and UPOPs releases from E-waste processing determined.

The project will perform a comprehensive mapping of E-waste processors including information on the type of waste treated and the management practices adopted. This will allow the reliable calculation of the POPs and U-POPs release from E-waste processing as well as accurately quantify the flows and commercial basis for the development of the business. A national level characterization study of the informal WEEE processing sector will be undertaken to better understand its level of activity, key locations, stakeholder networks, the nature of its operation and potential strategies to integrate it with the developing formal sector, including economic factors and incentives involved. The mapping will encompass a comprehensive characterization of the current collection chain from source through various collection, segregation and consolidation steps inclusive of the types of participants, business arrangements operating and constraints that may exist. The main formal collection schemes (take-back, online collection, network of small shops/ refurbishers) will be also assessed to identify partnership opportunities for increasing the door to door collection. Potential job opportunities for men and women will be identified separately

Output / Activity 3.1.2 Capacity/ awareness among key among key stakeholders at national and municipal level built.

A campaign aimed at creating awareness among the key stakeholders (institutions and companies generating a large amount of E-waste; retailers and distributors; public and consumers) will be launched. The campaign will communicate the issue of POPs and other harmful substances generated by the improper management of E-waste; the benefit to adhere take-back schemes when buying new equipment;

and will provide practical information on the options made available by the project in term of safe collection and disposal of E-waste. The campaign will also launch and communicate a certification scheme for managers of E-waste adhering to the scheme of environmentally sound E-waste management.

Output / Activity 3.1.3 Introduction of BEP/BAT to priority municipalities, selected formal and informal E-waste processors/refurbishers.

Collection: In selected municipalities (Cairo and Alexandria), BEP/BAT procedures for the collection of E-waste and the implementation of take-back schemes will be implemented. That will include the establishment of incentive schemes for the collection of specific E-waste streams (CRT monitors, ICT equipment and peripherals) by demonstrating proper collection schemes, an overall amount of at least 4000 tons of End of life mobile phones, desktop and notebook computers including peripheral, plus an 2000 tons of CRT monitor will be collected during the project. This will ensure avoiding around 378 kg of c-PBDE from waste ICT plus 1513 kg of c-PBDE from CRT monitors. This activity will include the demonstration of web portals for the incentive-based collection of E-waste and EOL electric or electronic equipment.

Recycling. The project will introduce and demonstrate the following technologies, techniques, and procedures for the safe segregation, recycling and disposal of E-waste components in 2 enterprises:

- Training on classification, segregation, dismantling of EOL equipment and related occupational safety procedures; at least 50 personnel from relevant E-waste management companies and organization will be trained.
- Demonstration on BAT/BEP technologies for the segregation of hazardous component containing POPs: rapid assay system for the determination of PBDE and Chlorine content in plastic will be demonstrated. The demonstration will include a cost-benefit analysis to ascertain the sustainability of the segregation technology. Handheld screening technology (XRF or SSS) will be demonstrated. GC/MS or GC/ECD analysis in laboratory will be carried out for confirmation of screening results.
- Implementation of mechanical systems for the recovery of copper from wires, to avoid PCDD/F emissions from the burning of plastic coatings;
- Disposal. The project will ensure that POPs containing waste streams generated through recycling activities will be disposed in compliance with the Stockholm Convention requirements:
    - Assessment of BAT/BEP technology options and facilities available in Egypt for the environmentally sound management of POPs containing waste generated from the segregation of E-waste.
    - Ensure that the hazardous fractions that are removed during the dismantling processes are channeled to proper treatment and disposal facilities (BAT compliant high temperature incineration/cement kilns or engineered hazardous waste landfills).

Output / Activity 3.1.4 Replication of project results at international, regional, national and municipality level.

The project results and methodology will be disseminated in a national and international workshop. A plan for the replication of the methodologies in other Egyptian municipalities / provinces, including financial plan, timeframe, technology selection and targets will be developed. With the support of BCRC (Basel Convention Regional Center for Arab Countries), the project will seek the collaboration of other countries to extend the replication plan to other North African countries.

Outcome 3.2 National policy and regulatory framework strengthened with respect to E-waste

Output / Activity 3.2.1 National policy and regulatory framework (including rules and regulations) on E-waste management reviewed, revised and improved (pertaining to processing, refurbishing, storage, disposal, illegal trade etc.) and fully integrated into the national policy and regulatory framework for waste management.

The review / improvement of the national policy will encompass the following:

- Review of the Egyptian waste regulation to establish a tracking system of E-waste and of hazardous waste stream, by means of paper-based or IT based waste manifest system;
- Establishment of a specific licensing system for E-waste collectors, recyclers, disposers.
- Review and strengthen policy and regulatory controls aimed at effectively discriminating good quality second hand electronic equipment imported in the country from non-functional or NEOL equipment which should be instead classified as waste, in compliance with Basel Convention guidelines and on the model of the EU WEEE directive;
- Establishment of quality criteria / concentration limits for POPs substances in equipment based on the model of the EU regulation (REACH regulation, ROHS directive).

Component 4. E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT[53] and strengthening of the legislative and policy framework (GEF Grant: US$ 254,762; committed co-financing: US$ 2,100,000)

Outcome 4.1 Emissions of other associated hazardous substances (mercury, lead, cadmium) reduced through support to E-waste management at municipality and national level

Output / activity 4.1.1. Baseline on associated hazardous releases (mercury, lead, cadmium) from E-waste processing determined (as part and parcel of Component 3).

Assessment of the content of mercury, lead and cadmium in a significant number of end of life equipment and sub-components, classified by age, type of equipment / part will be carried out through sampling and analysis. The total amount of the heavy metals concentration, as well as concentration in the leachate will be measured following international recognized analytical method for waste, to assess the potential impact if improper disposal of this equipment either as a result of burning or dumping. At least 150 analysis for each substance will be performed

Output / activity 4.1.2 Introduction of BEP/BAT to formal and informal E-waste processors (as part and parcel of Component 3).

Collection of batteries or other PTSs containing E-waste. The project will build on the experience accumulated in the course of other initiatives, like Waste Mobile Battery Collection and Recycling (2005-2006): for mobile battery collection and recycling scheme under UN Basel convention The collection scheme will be extended to PC batteries and common batteries which will be subsequently secured for treatment in an environmental sound way, either in existing facilities in Egypt or by sending these abroad in compliance with the Basel Convention. Related activities include. 1) identification of collection schemes and incentives on the basis of the previous experience in Egypt and abroad (see for instance the report on from the European Portable Battery Association[54]); deployment of collection containers in

[53] In combination with Component 3's investments for the end-of-life management

[54] The collection of waste portable batteries in Europe in view of the achievability of the collection targets set by Batteries Directive 2006/66/EC

strategic places; awareness campaign to promote collection of batteries. In this way, the improper dumping of at least 50 tons of batteries or other E-waste containing PTSs would be prevented.

Recycling. The project will introduce and demonstrate the following technologies and procedures for the safe segregation, recycling and disposal of E-waste containing heavy metals (Lead, Cadmium, Mercury) components in 2 enterprises:

- Training on classification, segregation, dismantling of EOL equipment and related occupational safety procedures, with specific reference to component containing heavy metal; at least 20 personnel from relevant E-waste management companies will be trained.
- Demonstration on BAT/BEP technologies for the segregation of hazardous component containing heavy metals from batteries: including segregation of equipment from batteries; sorting of hazardous (containing mercury, cadmium and lead) from non-hazardous batteries based on Basel and EU classification; pretreatment and storage of hazardous batteries;
- Demonstration of BAT/BEP technologies for the segregation of lead containing glass in CRT monitors from non-lead glass;

Disposal. The project will introduce and demonstrate the following technologies and procedures for the safe segregation, recycling and disposal of E-waste containing heavy metals (Lead, Cadmium, Mercury) components in 2 enterprises:

- Ensure that the hazardous fractions that are removed during the dismantling processes are channeled to proper treatment and disposal facilities;
- Identification of proper technologies for the environmentally sound landfilling of waste containing heavy metal: containment and immobilization technologies,
- Identification of BAT/BEP technologies for the environmentally sound recovery of heavy metal during thermal destruction of waste: dust filtering (electro-filters, baghouses, wet scrubbing);
- The project will ensure that PTSs containing waste streams generated through recycling activities will be disposed in compliance with the Stockholm Convention requirements:
- Assessment of BAT/BEP technological options and facilities available in Egypt for the environmentally sound management of POPs containing waste generated from the segregation of E-waste.
- Ensure that the hazardous fractions that are removed during the dismantling processes are channeled to proper treatment and disposal facilities (high temperature incineration, hazardous waste landfills).

Output / Activity 4.1.3 Capacity/ awareness among key stakeholders built (as part and parcel of Component 3).

As parcel of component 3, (output 3.1.2) within the campaign launched to create awareness among the key stakeholders on POPs and harmful substances contained in E-waste, the issues of heavy metal contained in E-waste (mercury, lead, cadmium, and others) as well as the identification of E-waste component containing heavy metal will be covered.

Outcome 4.2 National policy and regulatory framework on associated hazardous releases from E-waste processing strengthened

4.2.1 National policy and regulatory framework on E-waste management and recycling with respect to associated hazardous releases (mercury, lead, and cadmium) reviewed/ improved (as part and parcel of Component 3).

The national policy and regulatory framework under this activity will complement and integrate the one being developed under Component 3 through the establishment of quality criteria / concentration limits for PTSs substances in equipment based on the model of the EU regulation (REACH regulation, ROHS directive).

Further, a specific guidance on the collection and processing of E-waste containing PTS and heavy metal will be developed under this Output.

Component 5: Monitoring, learning, adaptive feedback, outreach and evaluation (GEF grant: US$ 100,000; committed cofinancing: US$ 50,000)

5.1.1. M&E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted.

5.1.2. Lessons learned and best practices are disseminated at national level.

Project Indicators, Risks and Assumptions

A number of indicators have been identified (see table 15) to estimate the expected Global Environmental Benefit, in term of POPs reduction, which will be achieved by the project.

Indicators relative to each project output are provided in the Strategic Results Framework (SRF) table in Section II, Part II.

Table 15: **Main project indicator for components 1 and 2**

	Baseline (start of project)	**Target end of project – 5 yrs (project direct)**	**Replication target**	**Comments/assumptions**
UP-POPs releases reduced/avoided as a result of BAT/BEP applied	Gharbia*: 60 g-TEQ/yr	50% reduction = 30 g-TEQ/yr	Gharbia entire: 60 g-TEQ/yr (using non-incineration)	CTF I in Gharbia will apply non-incineration technologies to treat 50% of the waste, which is currently incinerated/burned in the open.
	Sharkia*: 83 g-TEQ/yr	40% reduction = 33.2 g-TEQ/yr	Sharkia: 66.4 g-TEQ/yr (using incineration)	CTF II in Sharkia will use incineration technologies to treat 50% of the waste, which is currently incinerated/burned in the open. It is expected that a 40% UPOPs reduction can be achieved.
Total UPOPs reductions (g-TEQ/yr)	**143**	**63.2**	**126.4**	
Mercury releases reduced/avoided as a result of BAT/BEP applied	4 model hospitals**: ~ 2.2 kg Hg/yr	2.2 kg Hg/yr[55]	Gharbia**: 18.9 kg/yr Sharkia**: 20.4 kg/yr	The project will support 4 model HCFs in phasing out Hg containing medical devices. Depending on the HCF, the project might also improve dental amalgam management
	CUH: 14 kg/yr	Possibly 20% ~ 2.8 kg Hg/yr	Entire CUH: 14 kg/yr	The project will initially support a number of departments in CUH to phase-out Hg containing medical devices.
Total Hg reductions (kg Hg/yr)	**16.2 kg/yr**	**5 kg Hg/yr**	**53.3 kg Hg/yr**	

** Source: Assessment Study of HCW in Egypt (IDC May 2014)*]

*** Source: Table 16: Preselected governorates and districts and HCFs*

[55] The capturing of dental amalgam is not yet included.

In summary:

- Health-Care Waste Management: UPOPs emissions will be reduced by, at least, 63.2 g-TEQ/yr, and Mercury emissions by 5 kg/yr.
- Through replication and adoption of BEP and BAT for Health-Care Waste Management across the two governorates it is expected that an additional 126.4 g-TEQ/yr UPOPs (PCDD/PCDF) reduction could be achieved, while governorate wide phase-out of Mercury containing devices could ultimately reduce yearly Mercury emissions by 53.3 kg. Finally the project also anticipates replication beyond governorate boundaries, however considering the duration of the project (4 years) it is unlikely that such replication results will be able to be reported on, for that reason they have not been taken up in the project document.
- Assuming that in the course of the project at least 1,000 tons per year of ICT E-waste, plus 500 tons per year of CRT monitors will be collected after the first two years of project implementation, it may be estimated that:
    - The release of 378 kg of c-PBDE from IC EOL equipment plus 1,513 kg c-PBDE from CRT monitors would be prevented;
    - The proposed project will be able to reduce the amounts of UPOPs emitted from the improper treatment of E-waste by ~5 g-TEQ/year.
- The introduction of BEP and BAT at this point in time will also avoid the generation of much higher UPOPs emissions in four years time when E-waste volumes will have tripled. As such it can be argued that the project's E-waste component expects to reduce UPOPs emissions by ~15 g-TEQ/yr. It will also enable the reduction in releases of associated heavy metals from the improper handling of E-waste

Sustainability

The project will ensure sustainability of actions through 7 main pillars:

1) Regulations: sustainability of any activity addressed to implement the Stockholm Convention is first of all ensured by a clear, consistent and well enforced regulation. Only in the presence of a regulation which is soundly enforced, the addressees of that regulation will be motivated to take the necessary actions to be in compliance.

By amending the necessary regulation in an integrated and consistent way (with specific reference to the necessary upgrading of the regulation on E-waste, hazardous waste, hazardous waste manifest, licensing system for waste processors and collectors, introduction of the Stockholm Convention requirements) the project will ensure the sustainability of POPs reduction throughout all the activities related to the management of E-waste and healthcare waste.

2) In addition to issuing and enforcing regulation, there is the need to ensure data availability for management purposes. The sustainable management of E-waste goes hand in hand with the availability of information related to the generation of waste and the Enforcement and data availability. By collecting detailed information on the amount of E-waste currently management in the country formally and informally, and ensuring a periodical update of this information, the project will pave the way for a long term planning and sustainable strategy on E-waste-

3) On the E-waste side, the other "pillar" for sustainability has to be effective economic instruments that promote some kind of life cycle costing inclusive of the fractions not deemed economic. The reality is E-waste will get collected and processed but strictly on a high grading basis to get metals/components that have a global commodity market (basically copper wire and printed circuit boards). That business will

sustain itself. Technologies for the segregation of PBDE contaminated waste will be also assessed to check their effectiveness and the implication in term of incidence on the overall E-waste management cost. The issue of segregation of PBDE containing plastic from non contaminated plastic is whether the value of recovered plastic can justify the cost of the segregation technology. The project will rely on partners which have already made specific and substantial investments in the E-waste sector and which therefore are highly committed toward the success of project activities. Once the information on E-waste management and actors is correctly stored and the procedure for updating the data is in place, the government authorities will have the tool for an effective enforcement and monitoring of the relevant regulation. It will be also easy to establish quantitative targets on the reduction of POPs and to establish risk-based priorities.

3) Demonstration in the HCWM sector. This is mainly aimed at ensuring the sustainability and 4) Demonstration in the E-waste sector. By enhancing the door-to-door collection of E-waste, and facilitating at the same time the registration of informal waste processors under formal waste management arrangements, the project will establish a sustainable E-waste management scheme.

5) The project will also ensure sustainability through awareness raising. Only when the stakeholders (not only project beneficiaries and partners, but also the general public and the consumer) are aware of the benefit brought by the elimination of POPs substances, there would be enough pressure on the authorities to ensure enforcement of the legislation. This principle will be applied to both the HCWM component and the E-waste component.

6) Training will be another essential part of the sustainability policy of the project. The training modules will be designed to be easily upgradable after project closure. A two-level training approach (training for trainers, and beneficiary training) will ensure the success of training activities. Training in both the sectors of HCW and E-waste will envisage a substantial amount of “on field” training which includes both women and men.

7) On financial and governance sustainability, it should be noted that the government of Egypt is highly committed to ensure the sustainability of actions aimed at improving waste management in compliance with the SC convention. Actions and partnerships have been established by the Government (EEAA, MCIT and MOH) with national and international institutions (CEDARE; Swiss government, BCRC) to implement better technologies for waste management and UPOPs reduction.

Replicability

On the side of HCWM, the project will be largely based on practices and technologies which have been proved successful in many other countries and projects, including African and Arab countries (see for instance the experience derived from the UNDP Global Healthcare Waste Project recently concluded). These procedures and practices has been officially adopted and standardized by WHO in its "bluebook" (Safe management of wastes from health care activities, Second edition). Technologies, including non-combustion treatment and safe incineration, are largely commercially technology which are available and replicated worldwide.

The E-waste sector is relatively new compared to HCWM, and with reference to the waste collection issues, need to be more tailored on the specific Egyptian situation. Nevertheless, on the side of recycling technologies (dismantling of EOL equipment, segregation, shredding) the technologies adopted have already been successfully demonstrated in a number of countries. The project also benefits from the collaboration which will be established with a number of public or private institutions, including NGOs, who carried out successful activities on the side of E-waste collection. The project will ensure the exchange of experience with other African and Arab countries to receive feedback from similar projects and disseminate successful stories and lesson learnt.

Global Environmental Benefits

The project will ensure concrete reduction of U-POPS and POPs release in the following ways.

1) at project implementation stage:

- UPOPs emissions from health care management will be reduced by at least 63 g-TEQ/yr, and Mercury emissions by 5 kg/yr.;
- Release of around 1,100 kg of commercial PBDE prevented,
- Release of around 10 gTEq PCDD/f prevented

2) at project replication after project closure:

- Through replication and adoption of BEP and BAT in the Health-Care Waste Management sector across the country it is expected that an additional 40 g-TEQ/yr UPOPs (PCDD/PCDF) reduction could be achieved, while national phase-out of Mercury containing devices could ultimately reduce yearly Mercury emissions by 433 kg.
- The introduction of BEP and BAT at this point in time will also avoid the generation of much higher UPOPs emissions in five years time when E-waste volumes will have tripled. As such it can be argued that the E-waste project component expects to reduce UPOPs emissions by ~30 g-TEQ/yr. It will also enable the reduction in releases of associated heavy metals from the improper handling of E-waste.

Communication Strategy

The Project will implement a Knowledge Management plan for the project. The Project will produce a number of important knowledge products, including the technical specifications for HCW treatment technologies, guidelines, standards and technical regulations on HCWM revised/developed and training and educational materials. The CO will disseminate the knowledge products to national stakeholders, so that they could use these products in their own organizations to enhance their capacities.

Particularly the Project will work with the Ministry of Environment and Ministry of Communication and Information Technology to raise awareness on e-waste management issues and will conduct a multi-media campaign aimed at creating awareness on E-waste launched on different media (internet, TV, newspapers. The project will exchange best practices and best environmental techniques with other Arab States through the Basel Convention Regional Center

2. PROJECT RESULTS FRAMEWORK:

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:
Country Programme Outcome Indicators:
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 1. Mainstreaming environment and energy OR 2. Catalyzing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program: Objective 1: Phase out POPs and reduce POPs releases
Applicable GEF Expected Outcomes: Outcome 1.3 POPs releases to the environment reduced; Outcome 1.4 POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner; Outcome 1.5 Country capacity built to effectively phase out and reduce releases of POPs.
Applicable GEF Outcome Indicators: 1.3.1. Amount of un-intentionally produced POPs releases avoided or reduced from industrial and nonindustrial sectors; measured in grams TEQ against baseline as recorded through the POPs tracking tool .Indicator 1.4.1. Amount of POPs and POPs-containing wastes disposed of, or decontaminated; measured in tons as recorded in the POPs tracking tool. Indicator 1.5.2 Progress in developing and implementing a legislative and regulatory framework for environmentally sound management of POPs, and for the sound management of chemicals in general, as recorded in the POPs tracking tool.

	Indicator	**Baseline**	**Targets End of Project**	**Source of verification**	**Risks and Assumptions**
Project Objective: Protect human- and environmental health by reducing releases of POPs and other hazardous releases resulting from the unsound management of waste, in particular the incineration and open burning of hazardous health care waste and electronic waste by demonstrating and promoting Best Available Techniques (BAT) and Best Environmental Practices (BEP) to soundly manage and dispose of such wastes.	Amount of U-POPs release in the environment from HCW disposal avoided. Amount of PBDE release in the environment from E-waste disposal avoided. Amount of emission of PTS from HCW and E-waste reduced. Existence of a SC compliant regulatory framework on HC waste and E-waste-	U-POPs from HCWM in demonstration facilities: 123 g/TEQ/yr U-POPs from E-waste sector: U-POPs from E waste: 16gTeq/yr (2012) c-PBDE from E-waste sector: 472 to 756 kg/yr from IC E-waste; 6.5 t from CRT monitors.	U-POPs from HCWM in demonstration facilities: Reduction of 63.2 g/TEQ/yr U-POPs from E-waste sector: The proposed project will be able to reduce the amounts of UPOPs emitted from the improper treatment of E-waste by ~5 g-TEQ Reduction of c-PBDE for an overall amount of 378 kg of c-PBDE from IC EOL equipment, plus 1513 kg c-PBDE from CRT monitors would be prevented during the project life span. U-POPs reduction of 3.36 gTeq /yr assuming the project would ensure the proper management of 4000 t of	HCW segregation reports at hospital, and central treatment facilities. Amount of plastic in HCW incinerators burnt before and after project implementation. Sample and analysis of PCDD/F at the stack. E-waste manifests and E-waste collection reports. Analysis of C-PDE in plastic by means of XRF monitors Amount of brominated plastic from E-waste properly disposed of	

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
			E-waste-		
Component 1. HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework					
Outcome 1.1 UPOPs emissions reduced through support to HCWM initiatives at health-care facility(ies) level, Central Treatment Facility (CTF) level and training institutions.	UPOPs releases reduced by 50% for Gharbia and by 40% for Sharkia.	UPOPs releases from Sharkia and Gharbia combined total 143 g-TEQ/yr	UPOPs releases reduced by 63.2 g-TEQ/yr	▪ Baseline reports (incl. I-RAT reports and UPOPs and Hg release assessments), which reflect pre-project situation. ▪ "Measurements and Documentation56" Report which reflects pre-and post-project situation.	**Assumption**: The two CTFs will be fully operational towards the end of the project, and the non-incineration technologies procured by Cairo University Hospitals will also be fully operational. **Risk:** Low
1.1.1: Facility assessments conducted and UPOPs baseline determined.	Baseline assessments conducted for all project facilities	A limited number of preselected HCFs (9) has undergone an assessment	▪ I-RATs conducted for each of the project HCFs. ▪ UPOPs (and Hg) releases before and after project determined for each project facility (PF).	Baseline reports (incl. I-RAT reports and UPOPs and Hg release assessments).	**Assumption**: All project HCFs are willing to participate in baseline and gender assessments and are open to sharing information related to their current HCWM practices. **Risk:** Low
1.1.2 BEP implemented at project facilities (followed by evaluation).	All project HCFs (5) that will be serviced by a project CTF have introduced BEP in a satisfactory manner. 250 HCF staff trained in BEP.	The preliminary baseline assessment (I-RATs) indicated that some practices are in place but further improvements are needs related to segregation, collection, transport, storage, HCWM committees and responsibilities and meeting environmental standards.	▪ Memoranda of Understanding (MoUs) signed with Project Facilities. ▪ HCWM committees established in each PF. ▪ Facility specific HCWM policies, procedures and plans developed and implemented at each PF. ▪ PF staff trained in best HCWM practices. ▪ Each PF evaluated to verify introduction of BEP practices.	▪ MOUs ▪ PFs HCWM plans ▪ Certificates of training completion and attendance sheets of training sessions. ▪ CTF business plans ▪ Blue prints for CTFs ▪ Evaluation report of PFs	**Assumption**: HCFs are willing to sign MOUs and the MOU signature process doesn't slow down the launch of HCF HCWM activities. **Risk:** Low **Assumption:** The business plans developed for the two CTFs indicate that operation of the two CTFs will be financially and operationally feasible. **Risk:** Low **Assumption**: Land-allocation, electricity supply, water supply, road access and necessary infrastructure provided as co-financing by the Government of Egypt and put in place prior to procurement of the non-incineration technologies. **Risk:** Medium
Output 1.1.3 Identification of technology requirements, competitive procurement, selection and installation of BAT non-incineration and incineration technology at the respective CTFs.	▪ Number of non-incineration technologies that are operational at CTF I and Cairo University Hospitals. ▪ % of HCFs in each	▪ No BAT in place at any of the PFs. ▪ No recycling programmes in place at any of the HCFs. ▪ No operational maintenance schemes in place.	▪ Technical specifications for HCW treatment technologies for CTF I and II drafted. ▪ Non-incineration technologies procured, installed and tested at CTF I. ▪ Procurement of an initial set of	▪ Photos of procured non-incineration technologies. ▪ Certificates of training completion and attendance sheets of training sessions. ▪ Signed agreements between CTFs and PFs. ▪ Monitoring and progress reports	**Assumption**: Procurement of non-incineration technologies through UNDP-PSO Health and procurement of HCWM supplied doesn't run into major challenges. **Risk:** Low

[56] Not yet available on-line.

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	governorate served by a CTF.		HCWM related supplies for the project HCFs. ▪ Staff trained in the operation and maintenance of the new technologies.	▪ HCF visit reports ▪ Photos of recycling practices.	**Assumption**: Most or all PFs are willing to enter into contracts with the CTFs for treatment of the HCW. **Risk:** Low
1.1.4 National HCWM training opportunities enhanced to disseminate best practices to additional hospitals/HCFs.	Number of institutions that offer HCWM training/certificate courses.	Training programmes for waste management exist, but training programmes for HCWM need to be further improved.	▪ Assessment of existing HCWM training opportunities conducted. ▪ National training infrastructure for HCWM established/improved.	▪ Copies of improved curricula/training modules. ▪ Certificates of ToT completion and attendance sheets of training sessions.	**Assumption**: The Ministry of Health and national medical training institutions are open and willing to revise the national training modules by on international best practices in HCWM training. **Risk**: Medium
Outcome 1.2. Nat. Policy and regulatory framework strengthened/dev eloped with respect to HCWM and UPOPs emissions	Number of laws, regulations and guidelines pertaining to HCWM drafted/revised.	In 2010, a HCWM strategy was finalized and adopted (April 2010). The strategy that should also include regulatory analysis update has not implemented yet.	▪ Law/regulations and degrees create an enabling regulatory and policy environment for HCFs and CTFs to reduce UPOPs emissions.	Draft/revision of guidelines, standards or technical regulations pertaining to HCWM available.	**Assumption**: The Government of Egypt is willing to consider making necessary changes to the Environmental Law (4/1994) as well as other regulations and plans pertaining to HCWM. **Risk**: Medium
1.2.1 Nat. HCW policies, regulations and plans reviewed and enhanced.	Number of laws, regulations and guidelines drafted/revised. No of environment and health inspectors/ women and men trained on revised regulations and guidelines.	Same as above.	▪ Assessment of the national policy, regulatory framework, and national plan governing HCWM conducted (incl. Act. 2.2.1) ▪ Guidelines, standards and technical regulations on HCWM revised/developed following the recommendations from the national policy and regulatory assessment. Environment and health inspectors trained on revised regulations and guidelines.	▪ Copies of drafts/revisions of guidelines, standards or technical regulations pertaining to HCWM. ▪ Certificates of training completion and attendance sheets of training sessions.	**Assumption**: The Government of Egypt is supportive and willing to consider making changes to the Environmental Law (4/1994) as well as other regulations and plans pertaining to HCWM. **Risk**: Medium
Component 2. HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (in combination with component 1					
Outcome 2.1 Mercury emissions in HCWM sector are reduced.	Hg releases reduced by 5 kg/yr. Kg of Mercury waste safely stored/disposed of.	16.2 kg Hg/yr	Hg releases reduced by 5 kg/yr	▪ Baseline reports (incl. I-RAT reports, UPOPs and Hg releases assessments), which reflect pre-project situation. ▪ Measurements and Documentation Report, which reflect pre-and post-project situation.	**Assumption**: Government of Egypt supports the gradual phase-out of Mercury containing medical devices. **Risk:** Low
2.1.1 Mercury assessments conducted and Hg baseline determined (*in combination with Act. 1.1.1*)	Hg Baseline assessments conducted for all project facilities	A limited number of preselected HCFs (9), has undergone an assessment	▪ I-RATs conducted for each of the project HCFs. ▪ Hg emissions before and after project determined for each project facility (PF).	▪ Baseline reports (incl. I-RAT reports and Hg / UPOPs release assessments)	**Assumption**: All project HCFs are willing to participate in baseline assessments and are open to sharing information related to their current HCWM practices.

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
					Risk: Low
2.1.2 BEP related to the safe management, storage, phase-out and disposal of Mercury containing devices and wastes implemented at project facilities	BEP related to the life-cycle management of Mercury containing medicals devices and wastes introduced in 5 PFs.	▪ Broken/spent Mercury containing medical devices and wastes are discarded along with municipal waste or infectious HCW and subsequently incinerated. ▪ No storage sites for Mercury or Medical devices containing Mercury are available in the country.	▪ Assessment on potential Hg disposal/storage sites conducted. ▪ A Mercury management and phase-out plan prepared and implemented for each project facility. ▪ Temporary storage sites for Mercury containing wastes established at PF level. ▪ HCFs staff trained in the clean-up, storage and safe management (incl. transport) of Mercury wastes. ▪ Staff preference study for selection of Hg and PVC-free alternatives conducted in a limited number of PFs.	▪ Certificates of training completion and attendance sheets of training sessions. ▪ Copy of report of staff preference study. ▪ Photos of temporary storage facilities for Hg containing wastes at PFs.	**Assumption**: Government of Egypt supports the gradual phase-out of Mercury containing medical devices. **Risk:** Low **Assumption**: As co-financing, PFs allocate adequate storage space for interim Hg waste storage, and allocate staff time to participate in the staff preference study and training on the use of Hg-free alternatives. **Risk:** Low **Assumption**: As co-financing, governorates allocate adequate storage space for interim Hg waste storage at governorate level. **Risk:** Low
2.1.3 Mercury free device specifications determined, devices procured and introduced	▪ Number of Hg free devices procured and distributed. ▪ Project model facilities are Mercury-free. ▪ Kg of recovered/ phased-out Mercury waste safely stored.	Some project HCFs already use some Mercury-free medical devices, but none of the PFs is Mercury-free.	▪ Technical specifications for Hg-free devices drawn-up. ▪ Mercury-free devices procured for project facilities (and a number of departments of CUH). ▪ PF staff and maintenance technicians trained in the use and maintenance of Hg-free devices. ▪ Mercury-free devices used in the project facilities. ▪ Spent Hg-devices/waste collected and temporarily stored.	▪ Photos of Mercury-free devices in use and photos of spent/phased-out Hg containing devices. ▪ Certificates of training completion and attendance sheets of training sessions.	**Assumption**: Procurement of Mercury-free medical devices doesn't run into major challenges. **Risk:** Low
Outcome 2.2 Nat. Policy and regulatory framework strengthened / developed with respect to sequestration, phase-out, storage and disposal of Mercury waste in HCWM sector.	Number of regulations/degrees and guidelines pertaining to Hg-containing medical products drafted/revised.	In 2010, a HCWM strategy was finalized and adopted (April 2010). The strategy that should also include regulatory analysis update has not implemented yet.	▪ Law/regulations and degrees create an enabling regulatory and policy environment for HCFs and CTFs to reduce Hg releases.	Draft/revision of guidelines, standards or technical regulations pertaining to Hg available.	**Assumption**: Government of Egypt supports the gradual phase-out of Mercury containing medical devices and is willing to review, approve and adopt guidelines/regulations and degrees in support of the phase-down. **Risk:** Low
2.2.1 Policies/guidelines on sequestration, phase-out and management of mercury waste from HCFs developed.	Number of regulations/degrees and guidelines pertaining to Hg-containing medical products drafted/revised. No of environment and health inspectors women and men trained on	Same as above.	▪ Assessment of the national policy, regulatory framework, and national plan governing Mercury conducted (in coordination with Act. 1.2.1). ▪ Guidelines, standards and technical regulations on Mercury management revised/developed following the recommendations	▪ Copies of drafts/revisions of guidelines, standards or technical regulations pertaining to HCWM. ▪ Certificates of training completion and attendance sheets of training sessions.	**Assumption**: Government of Egypt supports the gradual phase-out of Mercury containing medical devices and is willing to review, approve and adopt guidelines/regulations and degrees in support of the phase-down. **Risk:** Low

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	revised regulations and guidelines.		from the national policy and regulatory assessment. ▪ Environment and health inspectors trained on revised regulations and guidelines.		
Component 3. E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework Component					
Outcome 3.1 Emissions of UPOPs (including new POPs) and POPs reduced through support to e-Waste Management at municipality and national level.	Availability of baseline on POPs – U-POPs release. Availability of awareness campaigns and related feedback. From women and men Amount of E-waste collected Evidence of replication initiatives.	Few data on POPs-U-POPs release from E-waste. Limited awareness on E-waste issue. Most of E-waste still being collected informally with harm to the environment. No replication scheme implemented	Baseline data on U-POPs and POPs released from E-waste management are available. E-waste informal processors mapped. Multi-media awareness campaign concluded. At least 4,000 tons of E-waste collected and management in an environmentally sound way. Prevention of C-PBDE release of around 1,791 kg.	Meeting minutes Mission reports Questionnaire surveys Project reports Awareness raising reports / recordings Regulatory / Policy documents.	**Assumption**: The establishment of incentive scheme and rewarding mechanisms, coupled with improvement and enforcement of the E-waste regulation will effectively promote the environmentally sound management of E-waste, hence ensuring a substantial reduction of U-POPs and POPs release in the environment.
3.1.1. National mapping of E-waste processors and refurbishers and applied practices completed and baseline on POPs and UPOPs releases from E-waste processing determined.	Availability of a completed national level characterisation study of informal WEEE processing sector Availability of a detailed baseline of POPs and UPOPs from the E-waste management releases with trends	There is currently scattered information on informal WEEE processing sector. Baselines of POPs and U-POPs from E-waste in Egypt are not available. Preliminary figures calculated in the course of PPG based on statistical data on E-waste.	A national level characterisation study of informal WEEE processing sector completed. A detailed baseline of POPs and UPOPs from the E-waste management releases with trends completed.	Questionnaire survey results. Meeting minutes Preliminary and final report on informal WEEE processing sector Baseline reports on POPs and U-POPs release from E-waste management.	**Risks:** 1) The informal E-waste processing sector not keen to provide reliable data. 2) E-waste release from open burning or mismanagement emission may only be estimated indirectly **Assumption / countermeasures:** 1) Data on E-waste informal processor will be based on direct surveys and cross check with statistical data on E-waste management. 2) Enough statistical data on E-waste management and EEE are available to calculate U-POPs and POPs emission by the end of the project.
3.1.2 Capacity/ awareness among key among key stakeholders at national and municipal level built.	Number of operators women and men successfully trained on E-waste management, with specific reference to segregation of PBDE contaminated waste.	No capacity on the segregation of PBDE contaminated waste. Limited campaign carried out on take-back schemes under different initiatives, mostly for mobile phones and batteries	Specific training for the operator on the issue of POPs brominated flame retardants in waste and electronic equipment. At least 50 professionals from the public and private sector trained. A campaign aimed at creating	Training report. Pre and post training assessment of the trainees. Training materials. Recordings of awareness on E-waste and POPs broadcasted. Website on E-waste and POPs.	**Assumption:** The simultaneous launching of the awareness raising campaign on several media with different targets and area coverage will ensure a wide dissemination of the information on E-waste management and POPs.

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	Availability of recordings of campaign broadcasted on relevant media on ICT equipment and CRT. Availability of a website on the above. Availability of awareness raising materials. Number of people reached by the campaign	Website on E-waste collection incentives (which however cannot only reach people connected to the web)	awareness on E-waste launched on different media (internet, TV, newspapers), providing reference and contact numbers. (Establishment of a toll-free line)	Awareness raising materials. Number of people asking information through the toll-free number or the website	Providing contact numbers / mail address will allow people to obtain further information and clarification, and will provide a measure of the effectiveness of campaign.
3.1.3 Introduction of BEP/BAT to priority municipalities, selected formal and informal E-waste processors/refurbi shers.	Number of municipalities where a collection scheme was implemented. Availability of E-waste collection system and infrastructures Amount of E-waste collected. Availability of a rapid screening technology for PBDE in E-waste. Effectiveness of the rapid screening technology (% of success	The largest amount of E-waste still being collected and processed by informal sector, with serious environmental consequences. Take back campaign limited to some E-waste categories have been carried out in the past by Mobinil and other operators under MPPI. A website for incentivizing E-waste recovery implemented by one firm (Recyclobekia)	Pilot projects on collection scheme implemented in 2 municipalities (Cairo and Alexandria). At least 6,000 t of WEEE of which 2,000 tons of CRT monitors will be collected during the project. Technology for the rapid screening of PBDE in E-waste demonstrated. At least 1,000 t of hazardous E-waste component disposed of in compliance with the Stockholm Convention	Meeting reports. Documentation relative to collection schemes. Statistics of E-waste collected through the collection scheme. Photo documentation, site visits, visit to the collection scheme infrastructures, interview, questionnaires.	**Assumptions:** The establishment of an incentive mechanism assisting the informal sector in its transition toward a more formal management of waste will ensure the sustainability of the collection scheme. Identification of a rewarding scheme for E-waste owners will increase their willingness in having their E-waste properly collected. Comparison of laboratory analysis with the outcome of the screening system will allow to fine tuning the technology for segregation of PBDE contaminated waste. Proof of performance test of disposal technologies will allow to confirm the destruction of POPs in E-waste.
3.1.4 Replication of project results at international, regional, national and municipality level	Availability of national and international workshop proceedings. Availability of a replication plan.	No replication plan available for E-Waste management	A plan for the replication of the methodologies in other Egyptian municipalities / provinces, including financial plan, timeframe, technology selection and targets developed. With the support of Basel Convention Regional Center for Arab States (BCRC), the project will seek the collaboration of other countries to extend the replication plan to other African countries.	National and international workshop proceedings. Meeting minutes. Draft and final replication plan. Agreement with African countries to extend the E-waste demonstration.	**Assumptions:** BCRC is effective in establishing relationships with other countries with the purpose to promote the replication of the project and to extend the environmentally sound E-waste management initiatives
3.2 National policy and regulatory framework strengthened with respect	Availability of an improved E-waste regulatory framework	The E-waste regulatory framework including licensing system for E-waste manager is incomplete.	Reviewed / improved regulatory framework on E-waste fully compliant with Stockholm and Basel	Official adoption documents of the regulatory framework.	**Assumptions:** The selection of the proper law-making process will ensure timely

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
to E-waste			convention		adoption and enforcement of a SC compliant regulation on E-waste.
3.2.1 National policy and regulatory framework (incl rules and regulations) on E-waste management reviewed, revised and improved (pertaining to processing, refurbishing, storage, disposal, illegal trade etc.) and fully integrated into the national policy and regulatory framework for waste management.	Availability of a reviewed or strengthened policy and regulatory framework on : • E-waste manifest; • Licensing system for E-waste managers; • Rules on the import of second hand equipment; • Concentration limit for POPs in EEE and E-waste	The regulatory framework for E-waste management is incomplete, as there are no waste manifest requirements under the current law and the licensing scheme for E-waste managers is weak. This situation makes informal waste collectors and recycler unfairly competitive compared with formal waste management companies.	Reviewed / strengthened policy and regulatory framework, in compliance with the Stockholm Convention, on: • E-waste manifest; • Licensing system for E-waste managers; • Rules on the import of second hand equipment; • Concentration limit for POPs in EEE and E-waste	Draft and final version of improved policies and regulation. Meeting minutes.	**Assumptions:** The selection of the proper law-making process (i.e., decrees or official guidance embedded in existing regulations) will ensure that the implementation and enforcement of an improved regulatory framework on E-waste compliant with the Basel and Stockholm convention is achieved within the project timeframe.
Component 4. E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT (in combination with Component 3's investments for the end-of-life management) and strengthening of the legislative and policy framework					
Outcome 4.1 Emissions of other associated hazardous substances (mercury, lead, cadmium) reduced through support to E-waste management at municipality and national level.	Availability of baseline on release of Cd and Hg. Availability of awareness campaigns and related feedback from women and men . Amount of E-waste collected	Few data on Hg and Cd release from E-waste. Limited awareness on E-waste issue. Most of E-waste still being collected informally with harm to the environment.	Baseline data on Cd and Hg released from E-waste management are available. Multi-media awareness campaign concluded. At least 50 tons of E-waste containing PTS collected and managed in an environmentally sound way.	Meeting minutes Mission reports Questionnaire surveys Project reports Awareness raising reports / recordings Regulatory / Policy documents.	**Assumptions:** The establishment of incentive scheme and rewarding mechanisms, coupled with improvement and enforcement of the E-waste regulation will effectively promote the environmentally sound management of E-waste, hence ensuring a substantial reduction of the Hg and Cd release in the environment.
4.1.1. Baseline on associated hazardous releases (mercury, lead, cadmium) from E-waste processing determined (as part and parcel of Component 3).	Availability of a detailed baseline of hazardous release from the E-waste management releases with trends, including batteries for electric/electronic devices.	Few data on release of hazardous substances release from E-waste. Most of E-waste including batteries still being collected informally or simply dumped with obvious harm for the environment.	A detailed baseline with expected trend of release of hazardous substances deriving from the E-waste management including batteries completed.	Baseline reports on hazardous substance release from E-waste management.	**Assumptions:** Enough statistical data on E-waste management and EEE are available to calculate release of hazardous substances by project completion.
4.1.2 Introduction of BEP/BAT to formal and informal E-waste processors. (as part and parcel of Component 3).	Number of municipalities where a collection scheme was implemented. Availability of E-waste collection system and infrastructures Amount of E-waste collected. Number of professionas	Although projects on the collection of batteries have been implemented in the past, most EOL battery still being dumped. CRT monitors in most cases are dumped in landfills or open burnt as these are considered low-values	A pilot project for collection scheme E-waste containing PTS (i.e. mercury, lead or cadmium), built on the experience of similar projects (i.e. the Waste Mobile Battery Collection and Recycling (2005-2006) implemented, resulting in the collection of at least 10 t of E-waste. Training (at least 50 professionals) on classification, segregation, dismantling of EOL equipment with specific reference to component	Meeting report. Documentation relative to collection schemes. Statistics of E-waste collected through the collection scheme. Photo documentation, site visits, visit to the collection scheme infrastructures, interview, questionnaire. Training reports (pre-and post-training	**Assumptions:** The establishment of an incentive mechanism assisting the informal sector in its transition toward a more formal management of waste will ensure the sustainability of the collection scheme. Identification of a rewarding scheme for E-waste owners will increase their willingness in having their E-waste properly collected.

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	women and men successfully trained. Amount of battery safely collected. Amount of E-waste containing hazardous material segregated and channelled to safe disposal.		containing heavy metals. Demonstration on BAT/BEP technologies for the dismantling of WEEE and the segregation of hazardous component containing heavy metals (i.e. segregation of lead containing glass from CRT monitors) Demonstration of Environmental Safe Disposal of E-waste containing hazardous material.	assessment, list of participants, training reports, training materials)	Proof of performance test of disposal technologies will allow to confirm the destruction ESM of hazardous waste.
4.1.3 Capacity/ awareness among key stakeholders built (as part and parcel of Component 3).	Number of professional and operators successfully trained on E-waste management, with special reference to E-waste containing toxic metals. Availability of recordings of campaign broadcasted on relevant media on EOL batteries and CRT. Availability of a website on the above. Availability of gender sensitive awareness raising materials. Number of people reached by the campaign	Although projects on the safe collection of batteries have been conducted in the past there is still low capacity in the collection / management of EOL batteries and CRT monitor as the recycling of this waste is not profitable.	Specific training for the operator on the issue of toxic metals in EOL batteries and CRT. At least 50 professionals from the public and private sector trained. A campaign aimed at creating awareness on E-waste launched on different media (internet, TV, newspapers), providing reference and contact numbers.	Training report. Pre and post training assessment of the trainees. Training materials. Recordings of awareness on E-waste and toxic metal broadcasted. Website on E-waste and toxic metal. Awareness raising materials. Number of people asking information through the toll-free number or the website	**Assumptions:** The simultaneous launching of the awareness raising campaign on several media with different targets and area coverage will ensure a wide dissemination of the information on E-waste management and POPs. Providing contact numbers / mail address will allow people to obtain further information and clarification, and will provide a measure of the effectiveness of campaign.
4.2 National policy and regulatory framework on associated hazardous releases from E-waste processing strengthened.	Availability of an improved E-waste regulatory framework	The E-waste regulatory framework including licensing system for E-waste manager is incomplete.	Reviewed / improved regulatory framework on E-waste including concentration limit of toxic metals in EEE and E-waste	Official adoption documents of the regulatory framework.	**Assumptions:** The selection of the proper law-making process will ensure timely adoption and enforcement of a SC compliant regulation on E-waste.

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
4.2.1 National policy and regulatory framework on E-waste management and recycling with respect to associated hazardous releases (mercury, lead, cadmium) reviewed/ improved (as part and parcel of Component 3).	Availability of a reviewed or strengthened policy and regulatory framework on • E-waste manifest; • Licensing system for E-waste managers; • Rules on the import of second hand equipment; • Concentration limit for toxic metals in EEE and E-waste	The regulatory framework for E-waste management is incomplete, as there are no waste manifest requirements under the current law and the licensing scheme for E-waste managers is weak. This situation makes informal waste collectors and recycler unfairly competitive compared with formal waste management companies.	In addition to what is envisaged under outcome 3.2, concentration limit for toxic metal in EEE and E-waste will be established	Draft and final version of improved policies and regulation. Meeting minutes.	**Assumptions:** The selection of the proper law-making process (i.e., decrees or official guidance embedded in existing regulations) will ensure that the implementation and enforcement of an improved regulatory framework on E-waste compliant with the Basel and Stockholm convention is achieved within the project timeframe.

TOTAL BUDGET AND WORKPLAN

Award ID:	00083771	Project ID(s): 00092079	PIMS: 4567
Award Title:	Country Name Project Title: Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste		
Business Unit:	EGY10		
Project Title:	Country Name Project Title: Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste		
PIMS no.	4567		
Implementing Partner (Executing Agency)	Egypt Environmental Affair Administration (EEAA)		

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	Budget notes
COMPONENT 1:	**EEAA**	**62000**	**GEF**	71200	International Consultants	18,000	36,000	48,000	18,000	30,000	150,000	1
HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework				71300	Local Consultants	52,000	52,000	52,000	52,000	52,000	260,000	2
				71800	Contractual Services Indv.	30,000	30,000	30,000	30,000	30,000	150,000	3
				72100	Contractual Services Companies	80,000	480,000	160,000	232,800	238,200	1,191,000	4
				75700	Training/Workshops	9,600	19,200	25,600	9,600	16,000	80,000	5
				71600	Travel	9,000	9,000	9,000	9,000	9,000	45,000	6
				74500	Miscellaneous	8,000	8,000	8,000	8,000	8,000	40,000	7
					Total Outcome 1	**206,600**	**634,200**	**332,600**	**359,400**	**383,200**	**1,916,000**	
COMPONENT 2:	**EEAA**	**62000**	**GEF**	71200	International Consultants	6,000	12,000	16,000	6,000	10,000	50,000	1
HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (in combination with component 1).				71300	Local Consultants	22,000	22,000	22,000	22,000	22,000	110,000	2
				75700	Training/Workshops	21,600	43,200	57,600	21,600	36,000	180,000	3
				72100	Contractual services Companies	2,880	5,760	7,680	2,880	4,800	24,000	4
				71600	Travel	6,000	6,000	6,000	6,000	6,000	30,000	5
				74500	Miscellaneous	8,000	8,000	8,000	8,000	8,000	40,000	6
					Total Outcome 2	**66,480**	**96,960**	**117,280**	**66,480**	**86,800**	**434,000**	
COMPONENT 3:	**EEAA**	**62000**	**GEF**	71200	International Consultants	24,000	9,600	10,800	6,000	0	50,400	1

E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework				71300	Local Consultants	26,000	20,000	20,000	4,000	10,000	80,000	2
				71800	Contractual Services (Indv.)	20,000	20,000	20,000	20,000	24,600	104,600	3
				72100	Contractual Services Companies	8,000	314,000	216,800	108,800	161,900	809,500	4
				75700	Training/Workshops	31,400	6,600	31,400	6,600	19,000	95,000	5
				71600	Travel	4,140	4,172	4,668	4,020	3,500	20,500	6
				74500	Miscellaneous	9,800	7,000	8,200	7,000	8,000	40,000	7
					Total Outcome 3	**123,340**	**381,372**	**311,868**	**156,420**	**227,000**	**1,200,000**	
COMPONENT 4:	**EEAA**	**62000**	**GEF**	71200	International Consultants	8,400	1,200	6,000	1,200	4,200	21,000	1
E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT (in combination with Component 3's investments for the end-of-life management) and strengthening of the legislative and policy framework				71300	Local Consultants	11,200	2,800	7,600	0	5,400	27,000	2
				72100	Contractual services Companies	5,600	43,680	36,800	18,400	26,120	130,600	3
				75700	Training/Workshops	11,880	3,960	11,880	3,960	7,920	39,600	4
				71600	Travel	7,520	3,760	7,600	2,400	5,320	26,600	5
				74500	Miscellaneous	3,385	1,000	2,585	1,000	1,992	9,962	6
					Total Outcome 4	**47,985**	**56,400**	**72,465**	**26,960**	**50,952**	**254,762**	
COMPONENT 5:	**EEAA**	**62000**	**GEF**	71200	International Consultants			25000		33,000	58,000	1
MONITORING, LEARNING, ADAPTIVE FEEDBACK & EVALUATION				71300	Local Consultants		4000	8000		8,000	20,000	2
				72100	Contractual services	1,200	1,200	1,200	1,200	1,200	6,000	3
				74100	Professional Services (Audit)		1,500	1,500	1,500	1,500	6,000	4
				72500	Travel	1,600	1,600	1,600	800	1,400	7,000	5
				74500	Miscellaneous		1,200		1,200	600	3,000	6
					Total Outcome 5	**2,800**	**9,000**	**36,800**	**4,200**	**47,200**	**100,000**	
Project management Costs (PMC) - GEF	**EEAA**	**62000**	**GEF**	71800	Contractual Services Indv	24,800	24,800	24,800	24,800	24,800	124,000	1
				72200	Office Equipment and furniture	9,600		11,390		5,248	26,238	2
				74599	Direct Project Costs	9000	9,000	9,000	9,000	9,000	45,000	3
					Total PMC - GEF	**43,400**	**33,800**	**45,190**	**33,800**	**39,048**	**195,238**	
Project management Costs (PMC) - UNDP	**EEAA**	**04000**	**UNDP**	71800	Contractual Services Indv	10,000	10,000	10,000	10,000	10,000	50,000	1
				Grand total w/o UNDP PMC		**490,605**	**1,211,732**	**916,203**	**647,260**	**834,200**	**4,100,000**	

				Grand total with UNDP PMC		**500,605**	**1,221,732**	**926,203**	**657,260**	**844,200**	**4,150,000**	
				GEF PROJECT TOTAL		**490,605**	**1,211,732**	**916,203**	**647,260**	**834,200**	**4,100,000**	

Budget notes for Component 1

1. International consultants as following: 1. International Expert on HW management. 7 months. International Expert on Non-incineration technologies (draft Technical specifications of the non-incineration technologies for the CTF, evaluate performance of non-incineration technologies (CUH and CTF), help draft operating procedures, etc.) - 4 months. Int. Expert on Incineration Technologies (assess incinerator performance, oversee stack testing and prepare report with recommendations on how to improve incinerator performance in the CTF and at Cairo University Hospitals) - 4 months.
2. National consultants as following: 1. National Technical Coordinator for HCWM - total of 4.5 years part time (50%). National Administrative Assistant (the other 50% he/she can work on E-waste) - total of 3.5 years. National Technical Expert - Policies and Regulations (review, drafting, etc.) - 4 months. National Technical Expert - I-RATs, HCWM best practices and HCWM training (will also support the improvement of the national HCWM training curricula) - 6 months. National Technical Expert no. 1 (provide support to Cairo University Hospitals throughout the entire project's duration) - 4.5 years part time (25%), National Technical Expert - CTF Sharqia & 3 model hospitals (provide support to Sharqia throughout the entire project's duration) - 4.5 years part time (50%).
3. Long term individual consultants for healthcare waste management specialists
4. Contractual services as following: Procurement for Gharbia (non-incineration CTF in Sadat City): ~ 6,770 beds. Large autoclave, shredder, compactor, accessories and installation, shipment (assuming the project will aim to treat 50% of currently generated HCW in the governorate (5,115 kg/day/2 = ~ 2,500 kg/day), assuming the non-incineration technology runs 6 hrs/day, than we need a capacity of approximately 420 kg/hr. Best to purchase 2, each of 220 kg/hr capacity (with additional shredder or incorporated shredder) - which would cost anywhere from 50,000 to 150,000 (see WHO blue book chapter 10). Assumed worst case scenario - equipment costs would be: 300,000 + 150,000 for installation, insurance, shipment, etc. One car for project staff necessary due to the distance among CTFs and HCFs, it will reduce the overall transportation cost (30,000 USD). Procurement support to Sharkia CTF (incineration) ~ 7,293 beds. HCWM supplies and accessories. Procurement for Model Facilities (2 governorates - 3 model facilities per governorate - 150 beds each): assuming that their waste will be treated by the CTF. Waste management equipment for four (4) model hospitals (assume on average 220 beds); Conducting 2 sampling and analysis test at incinerator in the CUH.
5. Training on I-RATs (1 per governorate and 1 for CUH). Training on the introduction of BEP (segregation, storage, transport, etc.).
6. National and international travel including international travel and accommodation for international consultants for a total of;
7. Communication, Printing, Unforeseeable expenses, sundries.

Budget notes for Component 2

1. International consultants shared with component 1) (roughly 1/4 of the time dedicate to mercury issues).
2. National consultants shared with component 1) (roughly 1/4 of the time dedicate to mercury issues).
3. Training on the Replacement of mercury thermometers and sphygmomanometers in health care, including training on Cleanup Storage and Transport of Mercury from Health Care (3).
4. Non-mercury devices and related equipment for four (4) model hospitals
5. National and international travel including international travel and accommodation for international consultants
6. Communication, Printing, Unforeseeable expenses, sundries.

Budget notes for component 3

1. International consultants at 3000 USD/wk as following:
2. Local consultants at 1000 USD/week as following: 2x10 weeks to carry out a survey on informal collection; 2 x 9 weeks for supporting baseline analysis of POPs and PTSs in E-waste; 2 x 25 week for various activities related to training, awareness raising, preparation of training materials, coordination; 2 x 6 weeks for cost/effectiveness analysis of option for plastic recycling and disposal including segregation cost; 1 x 12 weeks for supervising disposal of POP contaminated hazardous waste; 2 x 6 weeks for drafting the replication plan; 2 x 12 weeks for working on draft legislation on E-waste management specialists
3. Long term individual consultants for E-Waste specialists
4. Translation services (around 400 pages); Contractual service for preparing raising awareness materials including websites, Contractual services for conducting 2 training awareness workshop including renting of workshop facilities, translation, presentation, cost for travel of local participants. Technical - financial support to a toll-free line on E-waste; Contractual

services for supporting communities or private companies on the Environmentally Sound collection of E-waste (3 annual contracts since 2nd yr for an overall amount of 192,000USD); Procurement and testing of equipment for screening plastic contaminated by PBDE to be demonstrated in one E-waste recycling factory (estimated 196,500 USD); Hazardous waste disposal services (not less than 500 t at 600 USD/t); 1 Large workshop for introducing the replication plan to national and international stakeholders, including renting of workshop facilities, translation services, fees for presenters, travel cost for national participants; 1 large workshop for introducing new draft legislation on E-waste and hazardous waste management in Egypt.

5. Contractual services for supporting communities or private companies on the Environmentally Sound collection of E-waste (annual contracts since 2nd yr); Micro - training events on environmentally sound E-waste collection and segregation; It includes 12 times repeated micro-training at community level, both in field and desk training;
6. National and international travel including 21 international travel and accommodation for international consultants for a total of 21 week;
7. Communication, Printing, Unforeseeable expenses, sundries.

Budget notes for Component 4

1. International consultants at 3000 USD/wk as following: 1 week wk for reviewing baseline analysis of PTS in E-waste; 1 week to integrate guidelines on environmentally sound collection of E-waste with PTSs considerations; 1 week for preparation of training materials and training; 1 weeks to carry out studies on segregation modalities of E-waste containing heavy metals and their effectiveness; 1 week for preparation of training materials and training; 2 week to participating in preparation of raising awareness materials and dissemination; 1 week to provide technical assistance on international legislation on E-waste
2. Local consultants at 1000 USD/week as following: 3 weeks for drafting baseline analysis of PTSs in E-waste; 3 weeks for integrating training materials, dissemination, with PTSs considerations; 2 x 1 week for preparation of training materials, training, coordination; 3 weeks at 1000 USD/wk for cost/effectiveness analysis of option for recycling E-waste containing heavy metals; 2 x 1 week for preparation of training materials, training, coordination; 2 x 6 weeks for preparation of training materials, dissemination, coordination; 2 x 3 weeks at for working on draft legislation on toxic metals in E-waste
3. Translation services (450 pages); Contractual services for supporting communities or private companies on the collection of E-waste containing PTSs (batteries, CRT monitors); Contractual service for preparing raising awareness materials including websites, conducting training awareness workshop including renting of workshop facilities, translation, presentation, cost for travel of local participants, financial support to a toll-free line on E-waste; 1 large workshop for introducing new draft legislation on the management of E-waste and hazardous waste containing toxic metals in Egypt
4. Training on environmentally sound E-waste collection and segregation; it includes 12 times repeated micro-training at communities, factory, desk.
5. National and International travel of project staff, incl. 5 international travel and accommodation for international consultants for 5 weeks.
6. Communication, Printing, Sundries; Unforeseeable expenses;

Budget notes for Component 5

1. Local Consultants: Project Management Staff
2. Office Equipment and furniture for Project Management Unit
3. Direct Project Costs for request for services from UNDP

Summary of funds

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	Total
GEF	$510,605	$1,199,732	$906,203	$636,260	$847,200	$4,100,000
UNDP	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
Bilateral (Swiss)	$5,150,000	$5,150,000				$10,300,000
Government	$200,000	$100,000	$50,000	$28,000		$378,000
Hospitals	$690,000	$500,000				$1,190,000
Private sector		$3,000,000	$2,600,000			$5,600,000
TOTAL	**$6,570,605**	**$9,969,732**	**$3,576,203**	**$684,260**	**$867,200**	**$21,668,000**

Total Budget, Co-financing budget and incremental reasoning

GEF Outcome/Atlas Activity	Baseline project activities	Cofinancing activities (certified by co-financing commitment letters)	Cofinancing (USD)	Incremental activities bringing POPs reduction and global benefits	GEF (USD)
Component 1: HCWM: Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework					
Outcome 1.1 UPOPs emissions reduced through support to HCWM initiatives at health-care facility(ies) level, Central Treatment Facility (CTF) level and training institutions.	- In support of the implementation of the 2010 HCWM strategy, 47 incinerators have recently been installed in 7 central treatment locations, mostly outside the healthcare facilities, and nearby the existing municipal wastes dumpsites. - Furthermore, over the period 2014 – 2015 additional 23 new incinerators will also be installed to replace old incinerators in 16 governorates' health directorates. The 23 incinerators have already been commissioned by MoHP and are locally made. - In addition, the Supreme Council of Universities (SCU) is currently providing university hospitals with 11 additional incinerators	- CUH is pioneering in the use of centralized autoclave to shift waste from incineration to steam disinfection. It will made available to the project the new autoclave recently procured for an investment of around 600,000 USD. Operational cost for the autoclave during 4 years of project implementation (estimated at 100,000 USD, in kind) - CUH will dedicate staff to HCWM activities including training during project implementation: 15 staff full time for 4 years estimated at 360,000 USD, in kind - In addition CUH will allocate a budget of 130,000 USD for fixing the APCM of the incinerator. - The Swiss project (overall co-financing of CHF 9.7 million, equivalent to 10.8 million USD) will focus on implementation of a complete sustainable collection and disposal system of HCW based on 2 incinerators compliant with SC requirement, training, assistance to the development of the Egypt national strategy on HCWN.	1,090,000 USD (from CUH) 9,700,000 (from Swiss Embassy)	- Facility assessments conducted and UPOPs baseline determined. - BEP implemented at project facilities (followed by evaluation). - Identification of technology requirements, competitive procurement, selection and installation of BAT non-incineration technology at the CTF.	1,816,000 USD
Outcome 1.2. Nat. Policy and regulatory framework strengthened/dev eloped with respect to HCWM and UPOPs emissions	- On November 15th, 2013, GoE established an Inter-Ministerial Committee (IMC) to discuss the current HCWM situation and establish an integrated HCWM system to serve all Egyptian hospitals and healthcare facilities, whatever their affiliation. - Representatives of the shared ministries adopted a preliminary agenda, aiming at launching a strategic framework and a two-year plan to integrate HCWM activities all over the country.	- MOHP has actually suggested that staff in HCFs on the national level would receive training under the GEF project on handling and segregation of HCW that should be arranged and coordinated with the Swiss project. Accordingly capacity building and awareness activities HCWM staff and the public will be done jointly between the two projects - 100,000 USD will be provided as in kind budget from MOHP to coordinate with the projects and provide staff and infrastructures. - The Swiss Embassy project will be coordinated and complemented with the	50,000 (from EEAA) 200,000 (from Swiss Embassy)	- National HCWM training opportunities enhanced to disseminate best practices to additional hospitals/HCFs. - National HCW policies, regulations and plans reviewed and enhanced.	USD 100,000

GEF Outcome/Atlas Activity	Baseline project activities	Cofinancing activities (certified by co-financing commitment letters)	Cofinancing (USD)	Incremental activities bringing POPs reduction and global benefits	GEF (USD)
		GEF project to enable the Government in drafting its national HCWM strategy that includes the proper aspects and specifications for implementing both incineration and autoclaving			
Component 2. HCWM: Reduction of Mercury emissions through capacity building, demonstration and introduction of mercury-free medical instruments and strengthening of the legislative/policy frameworks (in combination with component 1					
Outcome 2.1 Mercury emissions in HCWM sector are reduced.	- No activity is being currently carried out on this aspect.	- Under the Swiss Embassy cooperation project, activities related to mercury disposal will be carried out. - CUH will provide support, infrastructures and in-kind contribution to demonstrate phase out of mercury devices	100,000 (CUH) 120,000 (Swiss Embassy)	- Assessments conducted and Hg baseline determined - BEP related to the safe management, storage, phase-out and disposal of Mercury containing devices implemented at project facilities - Mercury free device specifications determined, devices procured and introduced	384,000 USD
Outcome 2.2 Nat. Policy and regulatory framework strengthened / developed with respect to sequestration, phase-out, storage and disposal of Mercury waste in HCWM sector	- GoE is currently starting the activity to sign the Minamata Convention.	- In kind co-financing of MOHP on mercury-related activities	50,000 (EEAA)	- Policies/guidelines on sequestration, phase-out and management of mercury waste from HCFs developed.	50,000 USD
Component 3. E-waste: Reduction of emissions of UPOPs, and POPs through capacity building, introduction and demonstration of BEP and BAT (refurbishment and end-of-life) and strengthening of the legislative and policy framework Component					
Outcome 3.1 Emissions of UPOPs (including new POPs) and POPs reduced through support to e-Waste Management at municipality and national level.	- Initiative on collection and take-back demonstration performed by SYAES (2004), Nokia (2009 and 2011 in cooperation with RESALA) Vodafone Egypt , Mobinil carried out the following initiatives: Office Waste Recycling (since 2002); Bridging the Digital Divide" PC refurbishing program (since 2008); E-waste Learning Center (2009); Participation in	- ITG is expanding investment on the E-waste recycling factory which was established since 2011 according to Egyptian investment law 9 with a capital of 100,000,000 Egyptian Pounds. The capacity for E-waste Recycling is 700-800 MT/Month (ITG 2014) however currently the factory is working at only a fraction of its full capacity, due to the difficulties of procuring raw material at a competitive price	3,600,000 (ITG)	- National mapping of e waste processors and refurbishers and applied practices completed and baseline on POPs and UPOPs releases from E-waste processing determined. - Capacity/ awareness among key among key stakeholders at national	1,142,000 USD

GEF Outcome/Atlas Activity	Baseline project activities	Cofinancing activities (certified by co-financing commitment letters)	Cofinancing (USD)	Incremental activities bringing POPs reduction and global benefits	GEF (USD)
	Mobile Phone Partnership Initiative (MPPI) - In Egypt there are currently no facilities for the safe recycling of E-waste.	- ITG will provide infrastructures and personnel to host project activities aimed at implement the segregation of POPs containing plastic and to reduce the cost of equipment dismantling by modernizing / powering the dismantling train to expand the E-waste categories that can be treated, for a planned investment of 40,000,000 EGP. The share of the POPs related activities can be estimated in 30,000,000 EGP		and municipal level built. - Introduction of BEP/BAT to priority municipalities, selected formal and informal E-waste processors/refurbishers - Replication of project results at international, regional, national and municipality level	
3.2 National policy and regulatory framework strengthened with respect to E-waste	- The MCIT and MSEA/EEAA have signed Memorandum of Understanding (MOU) in February 2010 to launch the Egyptian Green ICT Strategy, aiming to reduce adverse environmental impacts of the increasing use of ICT equipment, and introducing safe disposal methods of E-waste	- GoE will provide an overall in kind contribution for the development of the national policy framework on E-waste, with specific reference to POPs, including activities envisaged under the MCIT/MSEA MoE, of 100,000 USD.	100,000 (MCIT)	- National policy and regulatory framework (incl rules and regulations) on E-waste management reviewed, revised and improved (pertaining to processing, refurbishing, storage, disposal, illegal trade etc.) and fully integrated into the national policy and regulatory framework for waste management	58,000 USD
Component 4. E-waste: Reduction of emissions of other hazardous substances (mercury, lead, cadmium) through capacity building, introduction and demonstration of BEP and BAT (in combination with Component 3's investments for the end-of-life management) and strengthening of the legislative and policy framework					
Outcome 4.1 Emissions of other associated hazardous substances (mercury, lead, cadmium) reduced through support to E-waste management at municipality and national level.	- Battery collection initiatives performed by Vodafone Egypt, Mobinil carried out the following initiatives: Waste Mobile Battery Collection and Recycling (2005-Alexandria Dry Cell Collection and Safe Dumping (since 2008); E-waste Learning Center (2009); Participation in Mobile Phone Partnership Initiative (MPPI)	- ITG will provide infrastructures and personnel to host project activities aimed at implement the segregation of POPs containing plastic and E-waste containing toxic chemicals (mercury, lead cadmium) to reduce the cost of equipment dismantling by modernizing / powering the dismantling train to expand the E-waste categories that can be treated, for a planned investment of 40,000,000 EGP, of which the share related to toxic substances other than POPs can be estimated as 10,000,000 EGP.	2,000,000 (ITG)	- Baseline on associated hazardous releases (mercury, lead, cadmium) from E-waste processing determined (as part and parcel of Component 3). - Introduction of BEP/BAT to formal and informal E-waste processors	254,762 USD
4.2 National policy and regulatory framework on associated hazardous releases from E-waste processing strengthened	- Activities related to the MCIT /MSEA MoU as above.	- GoE will provide an overall in kind contribution for the development of the national policy framework on E-waste, with specific reference to POPs, including activities envisaged under the	100,000	- Capacity/ awareness among key stakeholders built (as part and parcel of Component 3). - National policy and	

GEF Outcome/Atlas Activity	Baseline project activities	Cofinancing activities (certified by co-financing commitment letters)	Cofinancing (USD)	Incremental activities bringing POPs reduction and global benefits	GEF (USD)
		MCIT/MSEA MoE, of 100,000 USD.		regulatory framework on e-waste management and recycling with respect to associated hazardous releases (mercury, lead, cadmium) reviewed/ improved (as part and parcel of Component 3	
OUTCOME 5: Monitoring, Learning, Adaptive feedback & Evaluation					
					100,000 USD
Project management costs (PMC)					
					195,238 USD

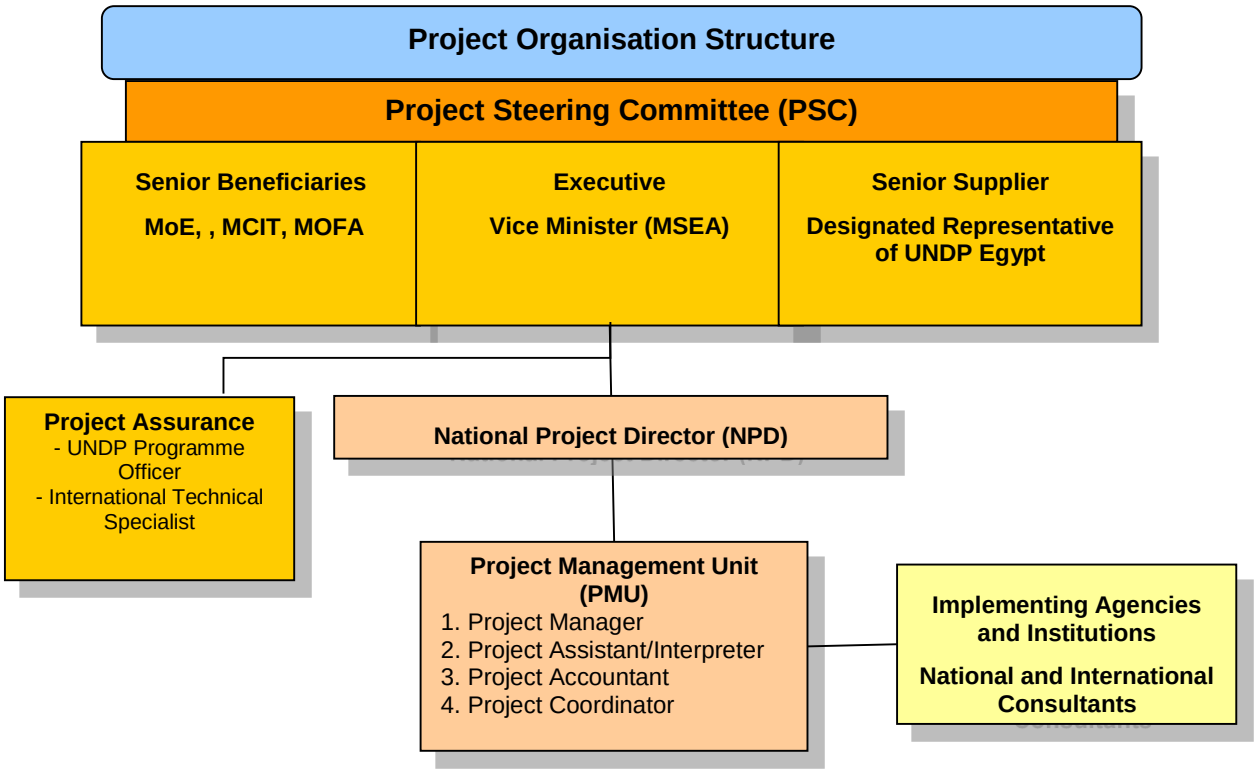
All co-funding from Swiss Development Agency, MCIT, EEAA, Cairo University Hospital is in the form of parallel fund or in-kind contribution that will be managed by the relevant entity and no funds will be transferred to the UNDP accounts. The only funds that will be directly managed by the project management unit will be the GEF and UNDP funds

III. MANAGEMENT ARRANGEMENTS

Project Organization Structure

1. The project has been financed by the GEF and UNDP acts as the GEF Implementing Agency. The project will be executed by Ministry of Environment (MoE), which will assume the overall responsibility for the achievement of project results as UNDP's Implementing Partner (IP). This IP will be subject to the micro assessment and subsequent quality assurance activities as per Harmonized Approach to Cash Transfers to Implementing Partners (HACT) framework. UNDP will provide overall management and guidance from its Country Office in Cairo and the Regional Centre in Istanbul, and will be responsible for monitoring and evaluation of the project as per normal GEF and UNDP requirements. MoE will designate a senior official as the National Project Director (NPD) for the project. The NPD will be responsible for overall guidance to project management, including adherence to the Annual Work Plan (AWP) and achievement of planned results as outlined in the ProDoc, and for the use of UNDP funds through effective management and well established project review and oversight mechanisms. The NPD also will ensure coordination with various ministries and agencies, provide guidance to the project team to coordinate with UNDP, review reports and look after administrative arrangements as required by the Government of Egypt and UNDP. The project will be executed according to UNDP's National Implementation Modality (NIM), as per the NIM project management implementation guidelines agreed by UNDP and the Government of Egypt.

Project Organization Structure



2. The Project Steering Committee (PSC) or Project Board will assume oversight of the Project Management Unit (PMU). The PSC will consist of a Chairperson (MSEA Vice Minister); with PSC members from MoE, MOH, , MOFA UNDP. The primary functions of the PSC will be to provide the necessary direction that allows the Project to function and achieve its policy and technical objectives, and to approve the Annual Work Programmes (AWP) and M&E reports.

3. The PMU will report to the National Project Director. The PMU will assume the responsibility of the project's implementation under the lead of MoE, MOH, the PSC and UNDP, planning activities and budgets, recruiting specialists, conducting training workshops and other activities to ensure the Project is executed as per approved work plans.

4. As a senior supplier, UNDP also has a role of project assurance. This role will be exercised by the UNDP Programme Officer responsible for the project, based in the UNDP Country Office (CO), and an International Technical Specialist, funded by the project.

5. Both the PMU and the NPD will implement mechanisms to ensure ongoing stakeholder participation and effectiveness with the commencement of the Project by conducting regular stakeholder meetings, issuing a regular project electronic newsletter, conducting feedback surveys, implementing strong project management practices, and ensuring close involvement with UNDP Egypt as the GEF implementing agency. A list of Project stakeholders and their projected roles in the Project are provided in Table 5.

Table 5: List of main Stakeholders and Proposed Roles on PHCM Project

Stakeholder	Role on Project
Government Stakeholders	
MoE	As National focal point of Stockholm convention on POP, Basel Convention and Montreal Protocol on ODS, MoE will be a key project partner under MoE in managing the day-to-day operations of the Project implementation as per approved work plans, carrying out and coordinating technical activities, drafting technical norms / guidelines, conducting and supervising inventory of contaminated sites in the demonstration provinces, designing and implementing the PRTR system, carrying out and coordinating training, etc. MoE will be the Project implementing partner accountable to the Government of Egypt and UNDP for: (i) the successful implementation of the Project; (ii) mobilization of all resources including needed co-financing for the project implementation; (iii) the proper coordination among all related ministries, agencies, provinces and stakeholders involved in the project implementation; MoE together with MOH and MCIT will be responsible for developing policies, technical standards and regulation.
MCIT	MCIT will be the key partner in the project for the E-waste part. MCIT will provide the necessary direction that allows the Project to function and achieve its policy and technical objectives, and to approve the annual Project plans and M&E reports. MCIT will facilitate the achievement of project deliverables through availing the required information, arrange meetings with the E-waste stakeholders, reviewing project documents, ensuring that the project deliverables are aligned with the national polices and strategies. MCIT in cooperation with Ministry of Environment and UNDP will

Stakeholder	Role on Project
	conduct a national study on "the assessment of E-waste management practices in Egypt (Greater Cairo, Alexandria, Sharkia)". The study will be the baseline for the whole project deliverables where the study will cover the following issues: polices, legal framework, stakeholders, current and future mass flow, institutional framework, social and environmental impact.
MOHP	MOHP will be the key partner in the project for the HCWM part. MOHP is the owner of the project healthcare waste facilities and of the project central treatment facilities. It will provide coordination in the development of the national strategy on HCWM and on the drafting of the country's guidance documents on HCWM. MOHP will facilitate the achievement of project deliverables through availing the required information, arrange meetings with the E-waste stakeholders, reviewing project documents, ensuring that the project deliverables are aligned with the national polices and strategies.

General

UNDP support service

6. MoE will enter into an agreement with UNDP for support services in the form of procurement of goods and services during the project implementation process. In such a case, appropriate cost recovery will be charged as per UNDP rules and regulations. The support services will be outlined in the form of Letter of Agreement signed between MoE and UNDP.

Collaborative Arrangements with Related Projects

7. The project development team at MoE will consult and involve the implementers of the relevant ongoing POPs related projects and programmes as well as other chemical management or environmental protection programmes in the country in the design and development of the Project to explore synergies and avoid overlaps.

8. With regards to other initiatives in the region, the Project will promote learning and knowledge sharing and forge partnerships between Egyptian entities and other country partners to replicate best practices and facilitate technology transfer.

9. This proposed Project will establish the necessary communication and coordination mechanisms through its PMU and PSC with the Project Management Board to ensure proper coordination between the various projects there under. UNDP Egypt will also take the lead in ensuring adequate coordination and exchange of experiences. In addition, the project will seek to coordinate its actions with other UNDP POPs related activities in Egypt. Similarities in the strategy of the proposed project may extend an opportunity to share lessons and exploit synergies, in particular in the areas of harmonization and mutual recognition. Also, the proposed project will also seek to coordinate actions with other existing government commitments and non-government initiatives.

Prior Obligations and Prerequisites

10. There are no prior obligations and prerequisites.

Audit Arrangements

11. The Government will provide the UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the programming and finance manuals. The audit will be conducted according to UNDP financial regulations, rules and audit policies by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

Agreement on Intellectual Property Rights and Use of Logo on Project Deliverables

12. To accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF-supported project publications, including among others, project hardware, if any, purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgement to GEF.

13. The project team and the UNDP Office in Cairo supported by the UNDP-GEF Regional Coordination Unit in Istanbul will be responsible for project monitoring and evaluation conducted in accordance with established UNDP and GEF procedures. The Project Results Framework provides performance and impact indicators for project implementation along with their corresponding means of verification. The GEF CC Tracking Tool will also be used to monitor progress in reducing GHG emissions. The M&E plan includes: inception workshop and report, project implementation reviews, quarterly and annual review reports, independent mid-term evaluation, and independent final evaluation. The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The M& E budget is provided on Table 6.

Monitoring Framework and Evaluation

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

1. *Project start*: A Project Inception Workshop will be held within the first 4 months of the project starting with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders will be invited. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The Inception Workshop would address a number of key issues including:

    a) Assisting all partners to fully understand and take ownership of the project;
    b) Detailing the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team;
    c) Discussing the roles, functions, and responsibilities within the Project's decision-making structure including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference of project staff will be discussed again as required;
    d) Finalization of the first annual work plan based on the project results framework and the relevant GEF Tracking Tool if appropriate. A review and agreement on the indicators, targets and their means of verification will be required as well as a re-check of assumptions and risks;
    e) Providing a detailed overview and reach consensus on reporting, monitoring and evaluation (M&E) requirements, the M&E work plan and budget;
    f) Discussion of financial reporting procedures and obligations, and arrangements for annual audit;
    g) Planning and scheduling Project Board meetings; and,
    h) Clarification of roles and responsibilities of all project organization structures as well as planned dates of meetings where the first PSC meeting should be held within the first 12 months following the inception workshop.

2. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

3. *Quarterly Progress Report*: Contents of the QPR include:

   - Progress made as reported in the Standard Progress Report (SPR) and monitored in the UNDP Enhanced Results Based Management Platform;

Table 6: M&E Work Plan and Budget

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team staff time*	**Time Frame**
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP GEF	Indicative cost: 20,000	Within first four months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by CTA with support from the Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually by July
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 30,000	At the mid-point of project implementation.
Final Evaluation	▪ Project manager and team, ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : 30,000	At least three months before the end of project implementation
Project Terminal Report	▪ Project manager and team ▪ UNDP CO		At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost per year: 1500 x 4 years	Yearly
Visits to field sites)	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		86,000 (+/- 5% of total budget)	

- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS (if applicable otherwise outside ATLAS). Risks become critical when the impact and probability are high;
- Project Progress Reports (PPR) as generated in the Executive Snapshot and based on the information recorded in Atlas; and,
- Other ATLAS logs that are used to monitor issues and lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

4. *Annual Project Review /Project Implementation Reports (APR/PIR)*: APRs/PIRs are key reports prepared to monitor progress since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements, and includes, but is not limited to, reporting on the following:

   - Progress made toward project objective and project outcomes, each with indicators, baseline data and end-of-project targets (cumulative);
   - Project outputs delivered per project outcome (annual);
   - Lesson learned/good practice;
   - AWP and other expenditure reports;
   - Risk and adaptive management;
   - ATLAS QPR; and,
   - Portfolio level indicators (i.e. GEF focal area tracking tools) that are used by most focal areas on an annual basis.

5. *Periodic Monitoring through site visits:* UNDP CO and the UNDP RCU staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

6. *Mid-term of project cycle*: The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

7. *End of Project*: An independent Final/Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

8. The Final Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation. During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where

results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

9. *Learning and knowledge sharing*: Results from the project will be disseminated within and beyond the Project intervention zone through a number of existing information sharing networks and forums. In addition:

   - The Project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for senior personnel working on projects that share common characteristics;
   - The Project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned; and,
   - The Project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an on-going process and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting the lessons learned. To this end a percentage of project resources will also need to be allocated for these activities;
   - This GEF-funded Project will endeavor to compile and share its development results within a monitoring framework that is designed to meet the goals of the UN One Plan outcomes.

LEGAL CONTEXT

1. This document together with the Country Programme Action Plan (CPAP) signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the Standard Basic Assistance Agreement (SBAA), signed by the parties on 21 March 1978, and all CPAP provisions apply to this document

2. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner. The implementing partner shall:

   - ensure the safety and security of project personnel contracted by UNDP and project property (equipment, files and other assets);
   - Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

3. UNDP reserves the right to verify whether project personnel and property are adequately safeguarded. Failure to maintain and implement appropriate measures in this respect shall be deemed a breach of this agreement.

4. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via: http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm.

5. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

ANNEXES

ANNEX I: RISK ANALYSIS

OFFLINE RISK LOG

Project Title: Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste	**Project ID:**	**Date: 3/07/2014**

#	Description	Date Identified	Type	Impact (L, M. H) & Probability (L, M, H)	Countermeasures / Management responses	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
1	Lack of coordination of the relevant institutions and ministries	10/08/2014	Institutional	M/M	Coordination and solution of conflicts among different stakeholders will be solved by involving them in the project steering committee and/or in specific project activities and establishing a well-staffed PMU for project management.	PM GOV	UNDP	10/08/2014	N/A at this stage
2	New legislation compliant with the SC or amendment of the current legislation cannot be drafted and adopted within project timeframe due to length of the lawmaking process	10/08/2014	Institutional	M/H	The selection of the proper law-making process (i.e., decrees or official guidance embedded in existing regulations) will ensure that the implementation and enforcement of an improved regulatory framework on E-waste compliant with the Basel and Stockholm convention is achieved within the project timeframe.	PM GOV	UNDP	10/08/2014	N/A at this stage
3	Lack of cooperation of relevant stakeholders (informal collectors, waste generators) to cooperate in the establishment of a sound management of E-waste.	10/08/2014	Management	M/H	The establishment of an incentive scheme and rewarding mechanisms, coupled with improvement and enforcement of the E-waste regulation are expected to effectively promote the environmentally sound management of E-waste, hence ensuring a substantial reduction of U-POPs and POPs release	PM	UNDP	10/08/2014	N/A at this stage

#	Description	Date Identified	Type	Impact (L, M. H) & Probability (L, M, H)	Countermeasures / Management responses	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
					in the environment.				
4	Difficulties related to the gathering of information on informal / illegal management of E-waste.	10/08/2014	Management	L/M	Data on E-waste informal processor will be reinforced by direct surveys and cross check with statistical data on E-waste management. Enough statistical data on E-waste management provided by official institution and EEAA will be however available to calculate U-POPs and POPs emission by the end of the project.	PM	UNDP	10/08/2014	N/A at this stage
5	Raising awareness activities on E-waste not effective or do not reach the proper target	10/08/2014	Management	L/M	The simultaneous launching of the awareness raising campaign on several media with different targets and area coverage will ensure a wide dissemination of the information on E-waste management and POPs.	PM GOV	UNDP	10/08/2014	N/A at this stage
6	Limited willingness of EOL equipment owner to have it disposed by formal collectors	10/08/2014	Management	M/M	Providing contact numbers / mail address will allow people to obtain further information and clarification, and will provide a measure of the effectiveness of campaign. The establishment of an incentive mechanism assisting the informal sector in its transition toward a more formal management of waste will ensure the sustainability of the collection scheme. Identification of a rewarding scheme for E-waste owners will increase their willingness in having their E-waste properly collected.	PM	UNDP	10/08/2014	N/A at this stage
7	Disposal / segregation technology ineffective	10/08/2014	Technical	M/M	Proof of performance test of disposal technologies will allow to confirm the	PM	UNDP	10/08/2014	N/A at this stage

#	Description	Date Identified	Type	Impact (L, M. H) & Probability (L, M, H)	Countermeasures / Management responses	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
					destruction of POPs in E-waste. Proof of performance test of disposal technologies will allow to confirm the destruction of POPs in E-waste.				
8	Issues in the procurement of non-incineration technologies through UNDP-PSO Health and procurement of HCWM supplied	10/08/2014	Management / Technical	M/L	This risk may be minimized thanks to the sound experience UNDP already gathered in similar projects, including a global project involving the procurement of this equipment in 8 countries	PM	UNDP	10/08/2014	N/A at this stage
9	PFs not willing to enter into contracts with the CTFs for treatment of the HCW.	10/08/2014	Institutional	L/L	Joining the project represent an evident technical and financial benefit for HCF, which will be self sustainable also after project closure	PM GOV	UNDP	10/08/2014	N/A at this stage
10	Ministry of Health and national medical training institutions unwilling to revise the national training modules by on international best practices in HCWM training.	10/08/2014	Institutional	L/L	MoH already recognised the need for review of training modules. In any case, any modification to the national training modules will be discussed in advance to ensure MoH involvement.	PM GOV	UNDP	10/08/2014	N/A at this stage
11	Government of Egypt unwilling to consider making necessary changes to the Environmental Law (4/1994) as well as other regulations and plans pertaining to HCWM.	10/08/2014	Institutional	L/L	MoH and EEAA are already aware of the need to improve the regulation on hazardous waste under Law N°4, and will lead the relevant project activities	PM GOV	UNDP	10/08/2014	N/A at this stage

#	Description	Date Identified	Type	Impact (L, M. H) & Probability (L, M, H)	Countermeasures / Management responses	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
12	Government of Egypt would not support the gradual phase-out of Mercury containing medical devices and is not willing to review, approve and adopt guidelines/regulations and degrees in support of the phase-down.	10/08/2014	Institutional	L/L	Preliminary discussion at PPG stage already proved the availability of the Government to support the gradual phase out of mercury devices	PM GOV	UNDP	10/08/2014	N/A at this stage
13	Project HCFs are unwilling to participate in baseline assessments and are not open to sharing information related to their current HCWM practices.	10/08/2014	Management	M/L	The project will work with facilities which are interested in participating in baseline assessment and to share information. The benefit obtained in these facilities will be disseminated to ensure replicability and sustainability of the project	PM	UNDP	10/08/2014	N/A at this stage
14	PFs do not allocate adequate space for interim Hg waste storage, and staff time to participate in the staff preference study and training on the use of Hg-free alternatives.	10/08/2014	Technical	M/L	The project will work with facilities which can allocate space for interim Hg storage. The benefit obtained in these facilities will be disseminated to ensure replicability and sustainability of the project. In addition, some governorate allocate as co-financing adequate storage space for interim Hg waste storage at governorate level.	PM	UNDP	10/08/2014	N/A at this stage
15	Issues with the procurement of Mercury-free medical devices	10/08/2014	Technical	L/L	This is a routine activity in many hospital and there is enough experience to carry out procurement of mercury free devices in a smooth way	PM	UNDP	10/08/2014	N/A at this stage

ANNEX II: TOR FOR KEY PROJECT PERSONNEL

Project Title	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste
Title	National Project Director
Contractual Modality	Part time.
Duty Station	Cairo with travel in Egypt
Supervision	Government of Egypt, MoE.

Duties and responsibilities

Overall, **t**he NPD will be accountable to both the Government and the UNDP. The main duties and responsibilities are:

- Ensures that the expected results of the project are of satisfactory, substantive quality and that they contribute to the achievement of the intended outcome identified in the ONE UN document. This will be discharged through the (i) approval of project work plans, TORs, reports, (ii) follow-up on the implementation of recommendations made by regular project reviews and/or external evaluations, and (iii) conduct of internal reviews and evaluations as/if needed.
- Ensures that project resources, national as well as international, are effectively utilized for their intended purposes through the (i) verification of project budgets and payments, (ii) approval of budget revisions within the agency flexibility limit, (iii) follow-up on the implementation of recommendations made by external audits and (iv) conduct of internal audits as/if needed.
- Ensures that counterpart funds are made available by the Implementing Partner in sufficient quantities and in a timely manner to support project implementation.
- Ensures that project parties, particularly national parties (including the Implementing Partner) fully participate in project implementation, effectively collaborate in project activities and duly benefit from project results.
- Ensures that the results achieved and lessons learned by the project are properly documented, proactively disseminated to and duly shared with all project parties, particularly national parties.
- Selects, arranges for the appointment of and supervises the Project Manager, in consultation with UNDP, to make sure that the PM and other national project staff are empowered to effectively perform their day-to-day project duties.
- Selects, arranges for the appointment of International Consultants, in consultation with UNDP, to make sure that international project personnel contribute expert inputs of the highest quality to the expected outputs of the project.
- Represents the Implementing Partner at major project reviews, evaluations, audits and other important events.
- Provide regular updates to the PSC.

Project Title	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste
Title	Technical Officer of the Project Management Unit
Contractual Modality	Full time – one year renewable up to 3 years.
Duty Station	Cairo with travel within Egypt
Supervision	PMU Project Manager

Duties and responsibilities

This assignment is for a full time PMU Technical Officer who will be recruited with the objective to provide PMU with technical assistance and advice on all the activities to be carried out under the Project, to help on routine technical coordination and supervision and to prepare or assist in the preparation of relevant project documentation and training materials. The TO will work under overall supervision of Project Manager.

The Technical Officer will, in general, be responsible for:

1. Assisting PMU in drafting the inception report of the project;
2. Assisting PMU in overall technical management and coordination of all project activities;
3. Technical support to PMU on the supervision of all the technical activities related to institutional strengthening, policy framework, POPs and PTS cleanup plans, project monitoring and evaluation, and replication program development;
4. Technical support to PMU in participating in meetings with UNDP and the PSC;
5. Technical support to PMU in coordinating the work of international consultants;
6. Providing comments on project implementation progress at different stages;
7. Assisting PMU in drafting Term of References for all the services and equipment to be procured under the project;
8. Assisting PMU in drafting technical reports and management reports like the Project Implementation Reports, (PIR), Annual and Quarterly Progress Reports (APR, QPR) and Annual and Quarterly Workplans (AWP, QWP);
9. Assist PMU in drafting minutes of the meetings with special reference to the technical part;
10. Perform site visits and inspections at project implementation sites during various implementation stages (site visits and contaminated sites, industrial sites, trainings)
11. Provide comments on the reports related to the technical activities and review the related plan under the Project to ensure their technical feasibility and most appropriate measures and actions taken.
12. Supervise the work of service provider to guarantee the quality and consistency of the reports and deliverables, and help them finalize reports before their dissemination to concerned parties;
13. Timely and proactively provide recommendation for the improvement of all project activities.

Duration of this assignment, duty station and expected places of travel

This is a full time assignment of the duration of one year. The contract may be renewed yearly for maximum 3 years (the duration of the Project) on the basis of the satisfactory evaluation of the performance of the work carried out by the Technical Officer in the preceding year.

The Technical Officer will work at the PMU office to be established in Cairo.

The Technical Officer is expected to travel within the country at the implementation sites, to supervise project implementation activities. The exact number of travels will be specified in the course of project implementation based on project needs. Travel and subsistence during travel will be paid by the project.

Deliverables

The following deliverables will be submitted to the PMU by the Technical Officer:

Short quarterly work-plan of the activities to be carried out under this assignment;
Draft Inception report of the Project;
Quarterly reports of the activities carried out under this assignment (three reports per year);
Comments reports and supervision reports as relevant for the different project activities;
Draft TORs for the required project activities;
Draft PIR, APR, QPR, AWP, QWP
Mission report and debriefing for the field visit;
Meeting minutes, with special reference to the technical parts.

Required qualifications

The Technical Officer shall have as a minimum the following qualifications:

Advanced degree (Master of Science as a minimum) in Engineering, Industrial Chemistry, Environmental Science, Biology.
Sound experience on POPs and Stockholm Convention,
At least 5 year experience in the field of chemical risk assessment, or in projects related to the implementation of Stockholm Convention on POPs, or in the management of hazardous chemicals and waste;
Previous experience as supervisor / Technical Officer in projects related to environmental protection or hazardous waste management;
Previous experience in the implementation or supervision of projects related to the management and disposal of POPs or PCBs is an asset.

In addition, the Technical Officer should be independent and should not have any personal interest related to project activities which may hinder its independency and which may distort or bias his performance.

Project Title	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste
Consultancy Title	Project Manager of the Project Management Unit
Contractual Modality	Full time – one year renewable up to 3 years.
Duty Station	Cairo with travel within Egypt
Supervision	PSC National Project Director

Duties and responsibilities

Overall, the PM will be responsible for the day-to-day running of the project, including overall coordination, planning, management, implementation, monitoring & evaluation and reporting of all project activities:

- Prepare and update project work plans, and submits these to the NPD and UNDP for clearance.
- Participate in quarterly work planning and progress reporting meetings with the NPD, PMU, and UNDP;
- Ensure that all agreements with implementing agencies are prepared, negotiated and agreed upon.
- Prepare TORs for key inputs (i.e. personnel, sub-contracts, training, and procurement) and submits these to the NPD and UNDP for clearance, and administers the mobilization of such inputs.
- With respect to external project implementing agencies/ sub-contractors:
    a. ensuring that these agencies mobilize and deliver the inputs in accordance with their letters of agreement or contracts, and
    b. providing overall supervision and/or coordination of their work to ensure the production of the expected outputs.
- Assume direct responsibility for managing the project budget by ensuring that:
    a. project funds are made available when needed, and are disbursed properly,
    b. expenditures are in accordance with the project document and/or existing project work plan,
    c. accounting records and supporting documents are properly kept,
    d. required financial reports are prepared,
    e. financial operations are transparent and financial procedures/regulations for NEX projects are properly applied; and
    f. S/he is ready to stand up to audits at any time.
- Assume direct responsibility for managing the physical resources (e.g. vehicles, office equipment, and furniture) provided to the project by UNDP.
- Supervise the project staff and local or international short-term experts/consultants working for the project.
- Prepare project progress reports of various types and the Final Project Report as scheduled, and organizes review meetings and evaluation missions in coordination with UNDP.
- Report regularly to and keeps the NPD and UNDP PO up-to-date on project progress and problems.

Required Qualifications

University degree (preferably post-graduate degree) in environment management, chemicals or related fields;

Knowledge of Result-based management and at least 5 years of experience in project management and implementation;

Strong analytical skills, good inter-personal and team building skills – Leading skills;

Full time availability for project management duties;

Working level of English language is an absolute necessity;

Familiarity with technical assistance projects and UNDP programme in Egypt is an asset.

Project Title	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste
Title	Accountant Secretary of the Project Management Unit
Contractual Modality	Full time – one year renewable up to 3 years.
Duty Station	Cairo with travel within Egypt
Supervision	PMU Project Manager and PSC National Project Director

Duties and responsibilities

This Account Secretary Position has two roles: as an Administrative Assistant and as an Accountant with the following duties:

a. As a Project Administrator

Provide assistance in the operational management of the project according to the project document and the NEX procedures.
Undertake all preparation work for procurement of office equipment, stationeries and support facilities as required;
Provide support in preparing project events, including workshops, meetings (monthly, quarterly and annual), study tours, trainings, etc., as required.
Take care of project telephone, fax, and email system;
Assist with preparation of TORs and contracts for consultants for project activities.

b. As a Project Accountant

Prepare quarterly advance requests to get advance funds from UNDP in the format applicable.
Assist the PC and NPD in project budget monitoring and project budget revision.
Set up accounting system, including reporting forms and filling system for the project, in accordance with the project document and the NEX procedures;
Maintain petty cash transactions. This includes writing of receipts, preparation of payment request form, receipt and disbursement of cash and clearance of advances;
Prepare cheques and withdraw money from the bank;
Prepare project financial reports and submit to PC and NPD for clearance and furnish to UNDP as required;
Enter financial transactions into the computerised accounting system;
Reconcile all balance sheet accounts and keep a file of all completed reconciliation;
Check and ensure that all expenditures of projects are in accordance with NEX procedures. This includes ensuring receipts to be obtained for all payments;
Check budget lines to ensure that all transactions are booked to the correct budget lines;
Ensure documentation relating to payments are duly approved by the NPD;
Bring any actual or potential problems to the attention of the NPD;
Follow up bank transfers. This includes preparing the bank transfer requests, submitting them to the bank and keeping track of the transfers;
Ensure Petty Cash to be reviewed and updated ensuring that there is up-to-date records;
To continuously improve system & procedures to enhance internal controls to satisfy audit requirements.
Ensure that bank statements be collected from the banks on the 2nd working day of each month;
Ensure that bank accounts should be reconciled and reported on or before 3rd of each month;

Prepare monthly bank reconciliation statement, including computation of interests gained to be included into reports.
Maintain the inventory file to support purchases of all equipment/assets.
Undertake other relevant matters assigned by the NPD.

Required Qualifications

University degree in accounting, finance or related fields;
Solid experience of budgeting, planning and reporting on foreign funded projects; and experience with international auditing requirements.
Good secretarial skills and good organizational capacity;
Knowledge in administrative and accounting procedures of the Government
Good computer skills in common word processing (MS Word), spreadsheet (MS Excel), and accounting software.
Appropriate English language skills, both spoken and written.

Project Title	Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste
Title	Project Interpreter/ Secretary (PIS)
Contractual Modality	Full time – one year renewable up to 3 years.
Duty Station	Cairo with travel within Egypt
Supervision	PMU Project Manager

Duties and responsibilities

Under overall supervision of National Project Director, the PIS will work under the direct supervision of and provide support to the Project Manager in the discharge of his/her responsibilities in the overall management of the day-to-day activities of the project. The PIS will work closely with the NPD, the PM, staff from the PMU and other international and national consultants. The main duties of the PIS are relating to secretarial and Interpretation/translation.

a. Responsibilities of the Project Secretary:

Provide necessary assistance in the operational management of the project according to the project document and the NEX procedures.
Draft correspondence on administrative and program matters pertaining to the Project Office responsibilities;
Provide support in preparing project events, including workshops, meetings (monthly, quarterly and annual), study tours, trainings, etc., as required. This also includes preparation of background materials for use in discussions and briefing sessions on project matter;
Logistical arrangements. This includes visa, transportation, hotel bookings for project staff, consultants and invited guests coming for project activities;
Be responsible for project filing system. This includes setting up the filing, numbering and filing all incoming and outgoing correspondence.
Prepare regular list of events for sharing of information within project staff and outside;
Assist with project communication activities, including publications;

b. Responsibilities as Project Interpreter:

Providing interpretation services to the Project activities, including meetings, small-scale workshops, and relevant events;
Acting as interpreter for NPD and international consultants;
Translating project documents, materials, papers, letters etc. from Egyptian into English and vice versa.

Qualifications

University degree in English language, administration or related fields;
Good command of both written and spoken English and at least four (03) years of working experience in the positions of secretary or interpreter/ translator.
Good secretarial skills and good organizational capacity;
Knowledge in administrative procedures of the Government
Good computer skills in common word processing (MS Word), spreadsheet (MS Excel), Egyptian software;
Knowledge and experience in working with UN agencies and international organizations is an advantage.

ANNEX II: ESTIMATED RELEASES OF UNINTENTIONAL POPS FROM HAZARDOUS HCW GENERATED IN EGYPTIAN GOVERNORATES' HOSPITALS AND HCFS.

Governorates	X Estimated quantity of hazardous HCW- in Kg/day	Y Estimated quantities of incinerated hazardous HCW according to actual incineration capacity CLASS 2 or 3	Z Estimated quantities of autoclaved hazardous HCW according to actual sterilization capacity	X- (Y+Z) Estimated quantities of hazardous HCW couldn't be treated and potential for open burning CLASS 1	**Estimated releases of unintentional POPs** in **µg TEQ/t hazardous HCW incinerated**						Total g TEQ/a	Rank
					CLASS 1 {All X-(Y+Z)}		CLASS 2 (≈80% of Y)		CLASS 3 (≈20% of Y)			
					g TEQ/a Air	g TEQ/a Bottom Ash	g TEQ/a Air	g TEQ/a Air	g TEQ/a Bottom Ash	g TEQ/a Air		
Ismailia	1760.51	390	**45**	1325.51	**19.352**	**0.097**	**0.342**	**0.002**	**0.015**	**0.026**	19.834	**18**
Suez	999.33	700	-	299.33	**4.370**	**0.022**	**0.613**	**0.004**	**0.027**	**0.047**	5.083	**25**
Port-Said	1161.34	100	-	1061.34	**15.496**	**0.077**	**0.088**	**0.001**	**0.004**	**0.007**	15.673	**21**
Alexandria	6836.34	250	-	6586.34	**96.161**	**0.481**	**0.219**	**0.001**	**0.010**	**0.017**	96.889	**2**
Cairo	19587.16	1130	**750**	17707.16	**258.53**	**1.293**	**0.990**	**0.007**	**0.043**	**0.076**	260.939	**1**
Kaliobeya	4888.35	600	**45**	4243.35	**61.953**	**0.310**	**0.526**	**0.004**	**0.023**	**0.040**	62.856	**6**
Guiza	5678.09	900	**90**	4688.09	**68.446**	**0.342**	**0.788**	**0.005**	**0.034**	**0.060**	69.675	**5**
Dameitta	1951.92	100	**45**	1806.92	**26.381**	**0.132**	**0.088**	**0.001**	**0.004**	**0.007**	26.613	**14**
Dakahlia	7609.12	1470	**75**	6064.12	**88.536**	**0.443**	**1.288**	**0.009**	**0.056**	**0.099**	90.431	**3**
Kafr El-Sheikh	2656.61	590	-	2066.61	**30.173**	**0.151**	**0.517**	**0.003**	**0.023**	**0.040**	30.907	**12**
Gharbia	5114.74	1130	-	3984.74	**58.177**	**0.291**	**0.990**	**0.007**	**0.043**	**0.076**	59.584	**7**
Menoufia	3985.98	1080	**157.5**	2748.48	**40.128**	**0.201**	**0.946**	**0.006**	**0.041**	**0.073**	41.395	**11**
Sharkia	6515.52	900	**15**	5600.52	**81.768**	**0.409**	**0.788**	**0.005**	**0.034**	**0.060**	83.064	**4**
Beheira	4614.47	750	**15**	3849.47	**56.202**	**0.281**	**0.657**	**0.004**	**0.029**	**0.050**	57.223	**8**
Fayoum	1963.03	320	-	1643.03	**23.988**	**0.120**	**0.280**	**0.002**	**0.012**	**0.021**	24.423	**16**
Beni-Suef	2114.49	700	-	1794.49	**26.200**	**0.131**	**0.613**	**0.004**	**0.027**	**0.047**	27.022	**13**
Menia	3545.55	1000	-	2845.55	**41.545**	**0.208**	**0.876**	**0.006**	**0.038**	**0.067**	42.74	**10**
Assuit	4373.85	1800	-	3373.85	**49.258**	**0.246**	**1.577**	**0.011**	**0.069**	**0.121**	51.282	**9**
Sohag	3522.13	860	-	1722.13	**25.143**	**0.126**	**0.753**	**0.005**	**0.033**	**0.058**	26.118	**15**
Qena	2042.67	400	-	1182.67	**17.267**	**0.086**	**0.350**	**0.002**	**0.015**	**0.027**	17.747	**20**
Luxor	1629.64	150	-	1229.64	**17.953**	**0.090**	**0.131**	**0.001**	**0.006**	**0.010**	18.191	**19**
Aswan	1607.45	250	-	1457.45	**21.279**	**0.106**	**0.219**	**0.001**	**0.010**	**0.017**	21.632	**17**
N. Sinai	427.72	100	-	177.72	**2.595**	**0.013**	**0.088**	**0.001**	**0.004**	**0.007**	2.708	**26**
S. Sinai	473.61	250	-	373.61	**5.455**	**0.027**	**0.219**	**0.001**	**0.010**	**0.017**	5.729	**23**
Red Sea	622.07	250	-	372.07	**5.432**	**0.027**	**0.219**	**0.001**	**0.010**	**0.017**	5.706	**24**
Wadi Gadeed	414.76	100	-	164.76	**2.405**	**0.012**	**0.088**	**0.001**	**0.004**	**0.007**	2.517	**27**
Matrouh	505.68	550	-	405.68	**5.923**	**0.030**	**0.482**	**0.003**	**0.021**	**0.037**	6.496	**22**
Total	103762.8	16820	1237.5	85705.3	1150.11	5.752	14.735	0.098	0.645	1.131	1172.471	

[*Source: Assessment Study of HCW in Egypt, IDC May 2014*]

ANNEX III: CAPACITY OF HAZARDOUS HEALTHCARE WASTE TREATMENT TECHNOLOGIES AND CONVEYING VEHICLES AVAILABLE IN EGYPT.

Treatment options / Governorates		Incineration facilities				Steam Sterilization (with shredding))				Hazardous HCW Treatment facilities				Total
		MOHP*		Non-MoHP		MoHP		Non-MoHP		MoHP		Non-MoHP		
		work	not	work	not	work	not	work	not	work	not	work	not	
Ismailia	No.	5	1	2	-	-	-	1	-	5	1	3	-	9
	Capacity	330	70	60	-	-	-	300 L/h = 45 Kg/h	-	330	70	105	-	505
Suez	No.	-	-	3	-	-	-	-	-	-	-	3	-	3
	Capacity	-	-	500	-	-	-	-	-	-	-	500	-	500
Port-Said	No.	3	-	-	-	-	-	-	-	3	-	-	-	3
	Capacity	300	-	-	-	-	-	-	-	300	-	-	-	300
Alexandria	No.	3	-	-	-	-	-	-	-	3	-	-	-	3
	Capacity	250	-	-	-	-	-	-	-	250	-	-	-	250
Cairo	No.	4	1	9	5	1	-	14	-	5	1	23	5	34
	Capacity	360	80	770	430	150 L/h = 22.5 Kg/h	-	5000 L/h = 750 Kg/h	-	382.5	80	1520	430	2412.5
Kalubia	No.	8	3	-	-	-	-	1	-	8	3	1	-	12
	Capacity	700	300	-	-	-	-	300 L/h = 45 Kg/h	-	700	300	45	-	1045
Giza	No.	10	9	2	1	-	1	2	2	10	10	4	3	27
	Capacity	800	700	400	200	-	150 L/h = 22.5 Kg/h	600 L/h = 90 Kg/h	600 L/h = 90 Kg/h	800	722.5	490	290	2302.5
Dameitta	No.	1	3	-	-	5	-	1	-	6	3	1	-	10
	Capacity	100	260	-	-	750 L/h =112.5 Kg/h	-	300 L/h = 45 Kg/h	-	212.5	260	45	-	517.5
Dakahlia	No.	6	4	5	-	-	-	5	-	6	4	10	-	20
	Capacity	1020	670	450	-	-	-	500 L/h = 75 Kg/h	-	1020	670	525	-	2215
Kafr El-Sheikh	No.	4	6	1	-	-	-	-	-	4	6	1	-	11
	Capacity	400	500	50	-	-	-	-	-	400	500	50	-	950
Gharbia	No.	2	11	4	-	-	-	-	-	2	11	4	-	17
	Capacity	200	900	330	-	-	-	-	-	200	900	330	-	1430
Menoufia	No.	5	2	3	-	2	-	3	-	7	2	6	-	15
	Capacity	500	200	230	-	300 L/h = 45 Kg/h	-	750 L/h = 112.5 Kg/h	-	545	200	342.5	-	1087.5
Sharkia	No.	9	5	-	-	1	-	1	-	10	5	1	-	16
	Capacity	900	400	-	-	150 L/h = 22.5 Kg/h	-	100 L/h = 15 Kg/h	-	922.5	400	15	-	1337.5
Behira	No.	6	11	-	-	-	-	1	-	6	11	1	-	18
	Capacity	600	900	-	-	-	-	100 L/h = 15 Kg/h	-	600	900	15	-	1515
Fayoum	No.	1	-	2	-	-	-	-	-	1	-	2	-	3
	Capacity	120	-	200	-	-	-	-	-	120	-	200	-	320
Beni-Suef	No.	2	5	-	-	-	-	-		2	5	-	-	7
	Capacity	200	500	-	-	-	-	-		200	500	-	-	700
Menia	No.	4	7	4	-	-	-	-	-	4	7	4	-	15
	Capacity	400	700	300	-	-	-	-	-	400	700	300	-	1400
Assuit	No.	9	4	4	-	-	-	-	-	9	4	4		17
	Capacity	900	375	800	-	-	-	-	-	900	375	800		2075
Sohag	No.	8	-	2	-	-	-	-		8	-	2		10
	Capacity	800	-	60	-	-	-	-		800	-	60		860
Kena	No.	3	3	1	-	-	1	-	-	3	4	1		7
	Capacity	300	300	100	-	-	200 L/h = 30 Kg/h	-	-	300	330	100		730
Luxor	No.	2	2	-	-	-	-	-	-	2	2	-		4
	Capacity	150	150	-	-	-	-	-	-	150	150	-		300

Treatment options / Governorates		Incineration facilities				Steam Sterilization (with shredding))				Hazardous HCW Treatment facilities				Total
		MOHP*		Non-MoHP		MoHP		Non-MoHP		MoHP		Non-MoHP		
		work	not	work	not	work	not	work	not	work	not	work	not	
Aswan	No.	3	3	1	-	-	-	-	-	3	3	1		7
	Capacity	200	200	50	-	-	-	-	-	200	200	50		450
North Sinai	No.	1	2	-	-	-	1	-	-	1	3	-	-	4
	Capacity	100	200	-	-	-	200 L/h = 30 Kg/h	-	-	100	230	-	-	330
South Sinai	No.	2	5	1	-	-	-	-	-	2	5	1	-	8
	Capacity	200	450	50	-	-	-	-	-	200	450	50	-	700
Red Sea	No.	2	1	-	-			-	-	2	1	-	-	3
	Capacity	200	50	-	-			-	-	200	50	-	-	250
Wadi Gadid	No.	3	-	-	-	-	-	-	-	3	-	-	-	3
	Capacity	340	-	-	-	-	-	-	-	340	-	-	-	340
Matrouh	No.	5	4	-	-	-	-	-	-	5	4	-	-	9
	Capacity	500	400	-	-	-	-	-	-	500	400	-	-	900
Total	No.	111	92	44	6	9	3	29	2	120	95	73	8	296
	Capacity	10870	8305	4350	630	1350 L/h = 202.5 Kg/h	550 L/h = 82.5 Kg/h	7950 L/h =1192.5 Kg/h	600 L/h = 90 Kg/h	11072.5	8387.5	5542.5	720	25722.5

Capacity of incinerators in mass/time= kgm/hr.

Capacity of sterilizers in volume/time= liters/hr. ≈ 150 gm/hr.

ANNEX IV. RESPONSE TO GEF REVIEW.

In the following, the response to the GEF and STAP comments on the PIF are provided.

Response to the GEF Secretariat comments on the PIF - additional review of Oct 20, 2011 (note: these comments were already addressed in the 2013 version PIF. Answers to these comments are reported below for convenience and further clarification of the project strategy).

Comment	**Response**
Oct. 20, 2011_PMC needs to be reduced to no more than 5% of total GEF grant	The project management cost is less than 5% of the total GEF grant (USD 195,000 over USD 4,100,000)
The incremental reasoning should be elaborated upon in the full proposal, which should describe how HCW and ewaste would be managed in the absence of GEF funding, and how the GEF funding would allow it to be managed.	This is addressed in detail in a tabular format on page 89 of the accompanying UNDP project document, and under section A4 of the request letter for CEO approval. A thorough description of baseline activities and baseline project illustrating how HCW and E-waste would be managed in the absence of GEF funding is reported in Section I, Baseline Analysis of the accompanying UNDP project document.
Co-financing is indicative, type unknown, and will need to be confirmed. Non-UN co-financing is listed in Table C but is not described "more description of Swiss and Government and Private co-financing will be needed in full proposal. More importantly, we expect an increase in the contribution from Government and ask UNDP to explore this possibility with the GoE. A co-financing ratio around 1:2 would be more reasonable.	Co-financing details have been included in table 14 of the accompanying UNDP project document. In addition to that, the following details are provided in the same: 1) description of the Swiss cooperation project and how it will coordinate with the project in page 45 of the project document 2) Cairo University Hospital co-financing activities are described in detail as part of activity 1.1.2 on page 59 of the project document. As far as GoE co-financing, in addition to the already committed co-financing reported in Table 14, necessary supporting co-finance (in cash) from MoHP will be considered as leveraged and will be provided as details are established. The MoHP commitment obviously will include in kind and investment co-financing in term of infrastructures and personnel made available at the HCFs and CTFs supported by the project, as these facilities are indeed owned by MOHP.
The project includes activities to introduce BAT/BEP into waste processors in the country. Yet the development of a sustainable mechanism for e-waste recycling as part of overall waste management system is still weak in the current PIF. The existing activities under e-waste component is scattered in that it touches upon policy and regulation, rules for refurbishment, leaving many other aspects of the issue unmentioned, such as collection, dismantling, recovery of metal in e-waste end-of-life disposal. And how the project design takes into a holistic approach to address e-waste and waste management issue in general, replicability of results in other regions?	On the side of E-waste the project has been better structured and envisages improved collection and demonstration of segregation technologies, by establishing sound cooperation and incentive schemes with informal and formal sector and environmentally sound disposal of non-recyclable E-waste. This is explained in detail in Section II (Strategy) and project description in the accompanying project document and in the Sustainability analysis (page 71) of the same.

The project should also take into account as much as possible existing or completed work. For instance, Egypt was a participating country of E-waste Africa Project by implemented by BCRC-Egypt.	At the PPG stage, a detailed survey of the activities on E-waste was carried out in Egypt through site visits and meetings with all the relevant private and public stakeholders. Several meetings with private investors and public institutions active in the E-waste sector were held. The project will rely on partners which have already made specific and substantial investments in the E-waste sector and which therefore are highly committed toward the success of project activities. This is explained in detail on pages 36-38 of the accompanying UNDP project document. It is expected that BCRC will be one of the key project partners in replication activities (activity 3.1.4)
Based on the revised project design, the following comments need to be taken into account. Risks: 1.Inadequate disassembly and recovery processes will result in harmful releases such as POPs and UPOPs, how the project takes into account potential contamination of water sources and raise mitigation measures. This shall be identified in PIF Project design 2.Activities on policy and regulatory framework have been split into different components (1.2.1/ 2.2.1 /3.2.1/3.2.3/4.2.1) due to the reason that these activities drawing on GEF resources from different pots (POPs, mercury, SCM). However, since it's probably dealing with the same government organization there needs to be an integrated approach for mainstreaming it into the national waste management policy. 3.With the data that cable accounts for 2% e-waste, and circuit board 1.7%,it is unclear why three waste fractions of cables, integrated circuit board, and plastics are the targeted waste fractions. Why not focusing on other significant ewaste sources like computers, mobile phones, or printers since Egypt is experiencing large increase in consuming information and communication technology products. Identification of stakeholders 4.As a suggestion, potential stakeholders for e-waste may include Egypt's National Cleaner Production Centers, Egyptian Electronic Recycling Co., Spear INK, Mobinil, CEDARE , and EMPA Please revise the PIF taking into account all of the comments so far and in the resubmission, indicate where the changes are	Risks: 1. Improper disassembly/ storage / recovery of E-waste is one of the main concerns of the project as explained in details in Section II (Strategy) and project description in the accompanying UNDP project document. These will be addressed by activities 3.1.2, 3.1.3, 4.1.2 and 4.1.3 Project design. 2. It is acknowledged that PTSs, mercury, and POPs issues are strictly related and relevant activities will be jointly managed and coordinated within the 2 project branches of HCWM and E-Waste. Coordination between HCWM and E-waste will be also ensured with reference to the adoption of consistent emission standards for disposal technologies. 3. The project focus has been re-arranged taking into account this recommendation. Greater attention will be paid to E-waste (computer, mobile phone, CRT monitors, plastic casing) bringing the largest contribution in term of PBDE and toxic metal content. This is explained in detail in the Section I, Baseline Analysis of the accompanying UNDP project document, which includes a preliminary inventory of PBDE and PTSs carried out under PPG activities. Identification of stakeholders. 4. A detailed update of relevant and active stakeholders has been carried out at PPG stage. This is detailed in the section "Baseline project" (page 33) as well as "Stakeholders analysis" (page 41) of the accompanying project document

Project responses to STAP Scientific & Technical Screening of the PIF (March 01, 2013) – Christine Wellington-Moore & Hindrik Bouwman

Comment	**Response**
The PIF does not draw out any intention to include measures to decrease the Health Care Waste generated at source, which would also act to reduce uPOPs.	As part of project Component 1 "Reduction of UPOPs emissions through capacity building, introduction and demonstration of BEP and BAT and strengthening of the legislative and policy framework" the project anticipates through activity 1.1.2 to introduce BEP in HCFs serviced by the CTF, which will encompass waste minimization, reuse and recycling (among else).
i. Given the quality of thought given to the proposed project interventions, the STAP is certain that current guidance is already being consulted by the project developers. However, all of the guidance being used it is not explicitly stated, so some possible guidance is suggested below:- though there is mention that the project will build upon the outputs of the Global GEF/ UNDP/WHO healthcare waste and mercury management project, which is still incomplete. At the risk of be labouring a point, the STAP simply reminds developers to be sure to use current guidance and case studies such as: a) The WHO Chapter on health care waste minimization and management (http://www.who.int/water_sanitation_health/medicalwaste/058to060.pdf). There is practical advice to minimize waste such as reducing the use of injections and hence generation of PVC waste through use of pills. b) The Global GEF/ UNDP/WHO healthcare waste and mercury management project (still incomplete) c) Case studies such as "Best Practices in Health Care Waste Management: Examples from four Philippine Hospitals" d) (http://www.noharm.org/lib/downloads/waste/Best_Practices_Waste_Mgmt_Philippines.pdf) e) The USEPA website gives links to "Hospital Prevention (P-2) strategies" (California Department of Health Services), and a "Guide to Mercury Assessment and Elimination in Health Care Facilities" (http://www.epa.gov/region9/waste/p2/hospart.html), which gives a breakdown of equipment of concern, methods of planning and implementation of HCW strategies and plans, and could be a good practical guide of past experience, complete with cost-benefit analyses. The page also includes a section on Pollution Prevention for Health care Professionals, which could help inform any training packages put together for doctor and nursing staff. Therefore the STAP strongly recommends that developers should examine even non-GEF experiences in this field, since	Throughout the Project's Preparation Phase, an extensive number of guidance materials and information sources have been used, some of which are: - WHO "*Safe management of wastes for health care activities* (2nd edition, 2013). Available at http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf - Resources, guidance materials and tools prepared by the GEF/UNDP/WHO Global Medical Waste Project (available at: www.gefmedwaste.org) as well as case studies and evaluation/monitoring reports. - Resources, guidance materials and tools prepared by the NGO Health Care Without Harm, in particular related to the phase-out of Hg and PVC containing products (available at: www.noharm.org) - Assessment and inventory tools to estimate dioxin and Mercury releases ("Toolkit for identification and quantification of mercury releases" UNEP, 2013 & "Standardized toolkit for the identification and quantification of dioxin and furan releases" (UNEP 2005)) - Swiss Red Cross EIA (Egypt) and non-incineration HCWM evaluation (Kyrgyzstan). As well as a large number of assessment reports related to the HCWM situation in Egypt and past experiences and lessons learned.

the GEF has limited experience in this area of work.	
ii. Another thing not explicitly stated in the project is the reduction of the municipal type of waste generated by hospitals, which can make up about 80% of the total waste. Incineration of such waste leads to uPOPs as well, and it should be targeted in the overall training of the medical staff (see suggested guidance from EPA et. al.)	Based on HCWM assessments conducted in Egypt, there are no indications that municipal solid is being incinerated, however MSW does often end up on uncontrolled dumpsites, where the open burning of waste leads to UPOPs releases. As part of project Component 1, the project anticipates through activity 1.1.2 to introduce BEP in HCFs serviced by the CTF. Capacity building efforts will encompass waste minimization, waste segregation, reuse and recycling (including composting), which will significantly reduce the amount of waste generated as well as the (infectious) waste fraction to be treated.
iii. In the Risk table, though rated low, there is risk associated low prioritisation of implementation of the National HCWM strategy both by decision makers and other stakeholders. However, cost-benefit analysis to show savings to the hospitals, and ultimate reduction of burden to workers managing smaller quantities of waste have often been the "selling point" that leads to successful implementation of HCWM in facilities. Acknowledging the stated intent to explore other project experiences, the STAP again emphasizes the need to do a thorough search of case studies and lessons learned, and to find ways to incorporate these benefits meaningfully into the various stakeholder trainings and awareness activities, such that each group can see the benefits brought to bear for their particular group and the facility as a whole.	Since initial submission of the PIF (Sept 2010) and final approval in 2013 (the political situation in Egypt at the time, led the GEFSEC to decide to postpone project approval for a number of years), the government of Egypt has made great strides to improve the HCWM situation and start the implementation of the HCWM strategy (2010) in particular through the establishment of new CTFs as well as the expansion/upgrading of existing CTFs. As such the risk of prioritisation appears to be low. Nevertheless, the project will include a cost benefit analysis and business plans for the CTFs, as well as calculate and document HCF waste management related costs before and after implementation of BAT/BEP, to showcase where saving have occurred, which will support replication of project efforts.
iv. The document indicates an intention to implement the National HCWM Strategy, which focuses on centralized, non-incineration treatment technologies. Where centralized disposal may be necessary, care should be taken that appropriate transportation protocols are followed, as one would other Hazardous chemicals, taking into account any possible seasonal threats to the route selected that may be made more severe due to Climate Change. Should there be long distances be involved, this increases the chance of mishaps, spills and environmental and population exposure, which can be compounded by natural, weather-related events that may threaten transport (eg dust storms). This aspect is not covered in B.	As part of project Component 1, the project anticipates through activity 1.1.2 to introduce BEP at project facilities. In preparing the CTF for receipt and operation of BAT technologies, the project will also improve the logistics for the transportation of infectious/hazardous HCW, including conducting routing optimization studies to minimize fuel and other transportation costs; developing operating procedures/guidelines for the transportation of waste; putting in place waste tracking procedures and systems and also training CTFs, and hospitals, as well as drivers, in safe temporary storage, transportation, use of PPE, clean up, and emergency response practices).
v. Though they should be low, once all is implemented appropriately, should there not be a risk associated with inappropriate use of non-combustible, decontamination techniques, such that infectious waste might "slip through the cracks" as the waste handlers get up to speed in using these alternative techniques? There needs to be some mention of this, and the risk mitigation protocols that will be put in place to make sure that the overall HCWM runs as planned.	Please refer to the response provided under Section iv. As part of component 1, the project will put in place waste tracking procedures and systems, to allow for the tracking of waste from HCFs to CTFs.
vi. The Dioxin Toolkit might be used to obtain a more detailed and appropriate TEQ emission number for medical wastes disposed. STAP would like to see this	The project team has indeed used the Stockholm Convention's dioxin emissions toolkit as a basis, and went beyond it by also utilizing more refined

being done as it would provide better quantitative indicators for project monitoring via the POPs tracking tool.	tools developed as part of the global HCWM toolkit. For dioxin emission calculations, the Stockholm Convention Toolkit classified medical waste incinerators into four types whereas the global HCWM toolkit[57] describes 22 different types of medical waste incinerators and provides emission factors for each based on peer-reviewed data from the scientific literature. Both this and the Stockholm Convention tools will continue to be used for further estimates during the implementation of the project. Both toolkits are referenced in various parts of the Project Document.
vii. Comments on the E-waste Component The STAP has no specific comments at this stage. However, it is hoped that where there is centralization of E-waste processing, those smaller operators might somehow be afforded opportunity to be involved in the workings of centralized processing centres. Again, effort should be make to source appropriate guidance and project experience, whether within or without the GEF experience.	Indeed the project sees the cooperation of the small informal sector by promoting their adoption of more environmentally sound scheme of collection and dismantling. This is explained in the section related to the Strategy, as well as

[57] http://www.gefmedwaste.org/downloads/Dioxin%20Baseline%20Guidance%20July%202009%20UNDP%20GEF%20Project.pdf

ANNEX V: DIRECT PROJECT COST AGREEMENT

Letter of Agreement between UNDP and the Egyptian Environmental Affairs Agency

United Nations Development Programme

Empowered lives.
Resilient nations.

STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND EGYPTIAN ENVIRONMENTAL AFFAIRS AGENCY FOR THE PROVISION OF SUPPORT SERVICES

Under project "Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste "

Sir,

1. Reference is made to consultations between officials of the Government of Egypt (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the project:

(a) Identification and/or recruitment of project and programme personnel;
(b) Identification and facilitation of training activities;
(c) Procurement of goods and services;
(d) Financial support services

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a project, the annex to the project document is revised with the mutual agreement of the UNDP Resident Representative and the designated institution.

5. The relevant provisions of the UNDP Standard Basic Assistance Agreement with the Government of Egypt in 1987 (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Your sincerely,

_____

Signed on behalf of UNDP
Ignacio Artaza
Country Director

For the National Implementing Agency:

Eng Ahmed Abu El-Saoud
CEO, Egyptian Environmental Affairs Agency,

Attachment 1

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. In accordance with the provisions of the letter of agreement and the project document, the UNDP country office shall provide support services for the "Protect human health and the environment from unintentional releases of POPs originating from incineration and open burning of health care- and electronic waste" as described below.

2. Support services to be provided:

Support services **(insert description)**	**Schedule for the provision of the support services**	**Cost to UNDP of providing such support services (where appropriate)**	**Amount and method of reimbursement of UNDP (where appropriate)**
Services related to procurement (including but not limited to): Procurement of goods Procurement of services ▪ Consultant recruitment ▪ Advertising ▪ Short-listing & selection ▪ Contract issuance	Throughout project implementation when applicable	As per the pro-forma costs: ▪ 55 days over 60 months of GS5 Procurement Assistant: $ 7,810 ▪ 20 days over 60 months of NOB Procurement Manager: $ $ 18,810	UNDP will directly charge the project upon receipt of request of services from the Implementing Partner (IP)
Services related to finance (including but not limited to): ▪ Payments	Ongoing throughout implementation when applicable	As per the pro-forma costs: ▪ 122 days over 60 months of GS5 Finance Associate: $ 18,810 ▪ 19 days over 48 months of NOB Finance Manager: $ 9,900	As above
Total		**$ 45,000**	

ANNEX VI: GEF POPS TRACKING TOOL

Attached in Excel to the submission package (in Excel format)