SUSTAINABLE RECYCLING INDUSTRIES

E-Waste Management in Egypt

Status Report 2024

Dr. Fatheya Soliman

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Authors

Dr. Fatheya Soliman.
Reviewed by
Eng. Mohamed Sherif and Eng. Radwa Elshenawy, Enviglobe
Ghada Moghny, CEDARE
Mariana Daykova and Esther Thiébaud, dss+

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SRI SUSTAINABLE RECYCLING INDUSTRIES

sustainable-recycling.org
sri@wrforum.org

Turning waste into resources for development

SRI builds capacity for sustainable recycling in developing countries. The programme is funded by the Swiss State Secretariat of Economic Affairs (SECO) and is implemented by the Institute for Materials Science & Technology (Empa) and the World Resources Forum (WRF). It builds on the success of implementing e-waste recycling systems together with various developing countries since more than ten years.

Acronyms

BAT:	Best Available Techniques
BEP:	Best Environmental Practices
BFR:	Brominated Flame Retardants
CAPMAS:	Central Agency for Public Mobilization and Statistics
CEDARE:	Centre for Environment and Development for the Arab Region and Europe
CRT:	Cathode Ray Tube
EEAA:	Egyptian Environmental Affairs Agency
EEE:	Electrical and Electronic Equipment
EERC:	Egyptian Electronics Recycling Company
EIA:	Environmental Impact Assessment
EMoE:	Egypt's Ministry of Environment
Empa:	Institute for Materials Science & Technology
EPR:	Extended Producer Responsibility
ERI:	Electronic Research Institute
EIA:	Environmental Impact Assessment
E-Waste:	Electronic Waste
GEF:	Global Environment Facility
HBB:	Hexabromobiphenyl
ICT:	Information and Communications Technology
IDA:	Industrial Development Authority
ILO:	International Labor Organization
ISO:	International Organization for Standardization
IT:	Information Technology
ITG:	International Technology Group
Kt:	Kilotons
NGO:	Non-Governmental Organization
OECD:	Organisation for Economic Co-operation and Development
OEM:	Original Equipment Manufacturer
OHS:	Occupational Health and Safety
OSHA:	Occupational Safety and Health Administration
PBDE:	Polybrominated Diphenyl Ethers
PC:	Personal Computer
POM:	Put on Market
POPs:	Persistent Organic Pollutants
PPE:	Personal Protective Equipment
PRO:	Producer Responsibility Organization
SECO:	Swiss State Secretariat of Economic Affairs
SME:	Small and Medium Enterprise

SRI:	Sustainable Recycling Industries
UNDP:	United Nations Development Programme
UNU-KEYS:	United Nations University Key Equipment Statistics
UPOPs:	Unintentional Persistent Organic Pollutants
WEEE:	Waste Electrical and Electronic Equipment
WEEELABEX:	Waste Electrical and Electronic Equipment Labelling and Certification
WHO:	World Health Organization
WMRA:	Waste Management Regulatory Authority
WRF:	World Resources Forum

Table of Contents

Tables

Figures

Executive Summary

Waste electrical and electronic equipment (WEEE or e-waste) is the fastest-growing waste stream globally, bringing about significant environmental and health risks. In 2019, 53.6 million metric tons of e-waste were generated worldwide, but only 17.4% was formally recycled [1]. Developing economies, dominated by informal recycling practices, face compounded challenges such as inequitable disposal practices, inadequate waste management systems, and transboundary hazardous waste movement.

This first-of-its-kind report provides a comprehensive assessment of Egypt's e-waste management system through the end of 2024. It includes an analysis of e-waste quantities, key stakeholders, and available infrastructure, and outlines the essential framework conditions for effective e-waste management in the country.

Egypt's E-Waste Landscape

- **Legal Framework:** Waste Management Law No. 202/2020 regulates e-waste as hazardous waste with special conditions, providing guidelines for collection, recycling, and disposal but its implementation, particularly in informal sectors, remains limited. Extended Producer Responsibility (EPR) was introduced under Law 202/2020, but further clarity on implementation is needed.
- **Stakeholders:** Key entities, including the Ministry of Environment, the Waste Management Regulatory Authority (WMRA), and other development actor initiatives, play pivotal roles in developing the e-waste management system.
- **Infrastructure:** Formal facilities include 27 WEEE recyclers, 9 lead-acid battery recycling facilities, 1 hazardous landfill and other private landfills, and is complemented by new startups and initiatives. The informal sector is still prevalent.

Outlook and Recommendations

- Legislation and Governance: Refine EPR mechanisms and improve enforcement.
- Infrastructure: Expand formal recycling facilities and adopt innovative technologies.
- Data and Monitoring: Enhance data collection for better planning.
- Public Awareness and Education: Promote e-waste management practices.

By addressing these priorities, Egypt can develop a sustainable and efficient e-waste management system, protecting both human health and the environment.

Keywords

E-waste management; Egypt status 2024.

1 Introduction

1.1 What is E-Waste?

Waste electric and electronic equipment (WEEE or e-waste) covers any electrical or electronic equipment that requires an electric current, a battery, or solar energy to operate and has reached its end of life and has been discarded. This includes both working and broken items. WEEE is particularly dangerous due to toxic components that may leach into the environment due to unsound treatment practices or when landfilled.

In Egypt, WEEE is divided into eight categories:

1. **IT and telecommunication equipment:** Desktops, PCs, tablets, phones, printers, servers, copying equipment, monitors, telecommunication equipment, etc.
2. **Screens and monitors:** Cathode Ray Tubes (CRT) screens/monitors, CRT televisions, electronic photo frames, flat screen televisions (CCFL, LED, Plasma), flat screens (CCFL, LED) / monitors, notebooks, laptops, portable game consoles, tablets, video baby monitors
3. **Temperature exchange equipment:** Air conditioners, dehumidifiers, freezers, gas refrigerators, heat pump dryers and tumble dryers, heat pumps, refrigerated drinks dispensers, refrigerators, steam ironers
4. **Light sources (lamps):** Compact fluorescent lamps (energy-saving lamps), discharge lamps, fluorescent lamps (fluorescent tubes), induction lamps, LED lamps, mercury vapor lamps, metal halide lamps, sodium vapor lamps
5. **Medical devices:** Radiotherapy, cardiology and dialysis equipment, blood glucose meters, blood pressure monitors, breathalyzers, clinical thermometers, cycle monitors, pain therapy devices, personal scales, respirators
6. **Photovoltaic modules:** Permanently installed modules, small mobile modules
7. **Other large appliances:** Large consumer electronics, large household appliances, large indoor and outdoor lights, large tools
8. **Other small appliances:** Small consumer electronics, small household appliances, small indoor and outdoor lights, small tools

1.2 E-Waste: An International Issue

E-waste is a rising global issue:

- E-waste is the fastest-growing solid waste stream in the world.
- In 2019, an estimated 53.6 million metric tons of e-waste were produced globally, but only 17.4% were documented as formally collected and recycled [1].
- Hazard substances like lead, mercury, cadmium, and Persistent Organic Pollutants (POPs) are common substances released into the environment if e-waste is recycled, stored, or dumped using environmentally inferior activities, such as open burning.
- E-waste recycling activities may have several adverse impacts on human health.
- Children and pregnant women are particularly vulnerable. ILO and WHO estimate that millions of women and child laborers working in the informal recycling sector around the world may be at risk of e-waste exposure [2].

The lack of established WEEE management systems, especially in developing countries, exacerbates these challenges. Informal sectors dominate WEEE management in these regions, with waste collection, transportation, storage, and recycling carried out without environmentally sound practices, posing threats to the environment, public health, and infrastructure.

Additionally, the high cost of disposal in developed countries, driven by strict regulations, has led to the uncontrolled export of waste to developing nations since the late 1970s. This has raised critical global concerns, including around the **transboundary movement of hazardous waste**, the **limited e-waste management capacity in developing countries**, and **fundamental equity and fairness issues.**

1.3 Framework Conditions for Egypt

Managing e-waste is a growing challenge in Egypt, aligning with global trends. Effective management requires a comprehensive framework addressing collection, recycling, disposal, and sustainable policies. Key elements of such a framework would include:

1. **Legislation and Policy:**
   - Enact and enforce e-waste management laws and regulations.
   - Develop policies promoting proper handling, recycling, and disposal.
   - Implement EPR schemes, holding manufacturers accountable for end-of-life product management.
   - Regularly review and update e-waste management policies and regulations.
2. **Collection and Logistics:**
   - Establish nationwide e-waste collection points and centers.
   - Develop efficient logistics for collection and transportation.
3. **Treatment:**
   - Set up and foster formal recycling facilities.
   - Encourage environmentally friendly technologies for e-waste treatment.
4. **Awareness and Education:**
   - Launch public campaigns on the dangers of improper e-waste disposal.
   - Educate consumers, businesses, and government agencies on sustainable e-waste practices.
5. **Capacity Building:**
   - Develop and deliver training programs for workers involved in e-waste management.
   - Build local technical and business capabilities for e-waste treatment and recycling.
6. **Monitoring and Enforcement:**
   - Track e-waste generation and management through monitoring systems.
   - Enforce compliance and improve performance through conformity assessments.

1.4 Structure of the Report

The report includes the following sections:

1. Introduction
2. Legal, Administrative, and Institutional Framework for E-Waste Management in Egypt
3. Key Players, System, and Infrastructures for E-Waste Management in Egypt
4. E-Waste Statistics for Egypt
5. Outlook: Recommendations for E-Waste Management in Egypt

2 Legal, Administrative, and Institutional Framework for E-Waste Management in Egypt

The legal and institutional framework for e-waste management typically comprises national laws, regulations, and designated authorities responsible for overseeing the entire lifecycle of WEEE, from production to recycling and disposal. This framework aims to ensure the safe and environmentally sustainable handling of e-waste while minimizing its adverse impacts on the environment and human health.

2.1 Definition of WEEE Egypt

The definition and scope of WEEE vary significantly by country and region due to differing regulations, infrastructure, and priorities.

In Egypt, WEEE is defined as "hazardous waste with conditions", as described by the **Waste Management Regulation (Law 202/2020)** and specifically Article 1 item 21 of its **Executive Regulation No. 722 of 2022**.

2.2 Egyptian National Policies, Laws, and Regulations on WEEE

The regulatory framework for e-waste management in Egypt is currently in the developmental phase. The primary environmental law, **Law 4/1994** and its subsequent amendment **9/2009** does regulate hazardous waste but does not specifically address e-waste management. Relevant articles include:

- Article 19,20, 21 & 23 (Environmental Impact Assessment (EIA) requirements).
- Article 22 (Environmental Register requirements).
- Articles 28 and 28/1 (hazardous waste storage requirements).
- Article 28/3 (transportation of hazardous waste).
- Articles 29, 30, 31, and articles 25,26 and 27 (Ministry of Trade and Industry regulation for hazardous waste storage and transport).
- Article 32 (import requirements).

With the introduction of the new waste management law (**Law 202/2020**), and its accompanying executive regulation (**No. 722 of 2022**), Egypt now also has specific guidelines for e-waste collection, transportation, treatment, and recycling.

Other Egyptian legislation relevant to e-waste management includes licensing requirements for companies involved in e-waste management (such as Ministerial **Decree No. 113 /2022** (Integrated Hazardous and Non-Hazardous Waste Management) and **Law 15/2017** (facilitating the procedures of issuing the operational license and industrial register from IDA)).

Despite these advancements, certain aspects remain absent from Egyptian legislation, such as detailed guidelines for household e-waste collection. This is a crucial consideration as approximately 25% of the total e-waste generated originates from households [3]. Addressing this and other gaps in the law is essential for effective e-waste management in Egypt.

2.3 Institutional Framework

Multiple ministries and regulatory authorities have roles to play in regulating the management of e-waste in Egypt (see Table 1 below).

Table 1: Institutional Roles and Responsibilities for the Regulation of E-Waste Management in Egypt

Ministries	Authorities & Affiliates	Roles and Responsibilities
Ministry of Investment	Investment Authority	● Issuing registration documents for recycling companies such as commercial registers, tax cards and added-value certificates.
Ministry of Environment	EEAA	● Issuing environmental approvals for e-waste management facilities.
	WMRA	● Granting specific licenses for e-waste treatment facilities, including recyclers and landfills. ● Monitoring the implementation of environmental management plans for all facilities involved in e-waste management. ● Monitoring the flow of e-waste especially through special auctions
Ministry of Industry	IDA	● Issuing operation licenses and industrial registration for recycling facilities. ● Overseeing operational procedures in collaboration with the EEAA and WMRA.
Ministry of Interior	Civil Defense Authority	● Reviewing firefighting and alarm systems at recycling facilities and issuing formal certificates to ensure compliance with all firefighting code requirements.

2.4 Transboundary Movement of WEEE between Egypt and Other Countries

The transboundary movement of WEEE refers to its international transport across various borders. Many developed nations, including the United States, Japan, and European Union countries, often send their old second-hand equipment or e-waste to developing countries where labor is cheaper and environmental regulations may be less stringent. Developing nations have become popular destinations for e-waste, both legally and illegally. These regions may have inadequate infrastructure for proper recycling and disposal, leading to severe environmental and health impacts.

Because of this dynamic, WEEE's transboundary waste movement is regulated by various international agreements like the Basel Convention [4] (1989, 2019, and subsequent amendments). This primary international treaty governing the movement of hazardous waste aims to reduce the movement of hazardous waste between countries, particularly from developed to developing nations, and to ensure that such waste is disposed of in an environmentally sound manner. Under it, exports of e-waste to countries that cannot manage it properly are prohibited unless they provide explicit consent.

Egypt ratified the Basel Convention through **Law No. 4/1994**, highlighting the country's recognition of the environmental and health risks posed by improper e-waste disposal and its alignment with international efforts to address the global e-waste crisis.

Through WMRA and the national Basel focal point, Egypt follows a set of procedures aligned to Basel[1], regulating e-waste import and export to prevent illegal dumping and ensure environmentally sound operations. Before moving any WEEE, companies operating in Egypt must officially notify the competent authorities in both the exporting and importing countries. This process is designed to ensure that the receiving country can handle the waste safely and is willing to accept it. The companies, through the Egyptian authority, shall receive written and explicit consent allowing the movement. The procedure request can be fulfilled electronically, allowing for digital submission of the application form, required data, and documents.

Egypt's WMRA must ensure that all shipments of hazardous waste are accompanied by appropriate documentation that complies with Basel Convention guidelines. This includes details on the type of waste, its intended destination, and the method of disposal or recycling. Required documents include:

- A copy of the registration card in the registry of exporters/ importers
- Filled-in notification document/form and movement document
- A copy of the contract between the exporter and the importing company
- Results of waste analysis from an accredited laboratory
- Financial security/insurance
- Importing company license
- Description of the technology used
- EIA approval, in case requested due to the perceived potential risks of the export, particularly due to heavy metals found in e-waste.
- Tracking and monitoring documentation. The exporter must track the waste until it is received and properly processed by the importing country. Documentation to this effect must also be submitted to WMRA.

Under the Basel Convention's provisions, Egypt prohibits the illegal export of hazardous waste, including e-waste, to countries that cannot handle such waste safely or where environmental standards are inadequate. Any attempts to circumvent the regulations—such as mislabelling e-waste as non-hazardous goods—are subject to legal penalties. WMRA may also take enforcement actions if it detects illegal shipments of waste, including imposing penalties on companies or individuals who attempt to export e-waste without the necessary permits or consent.

Egypt is also required to provide periodic reports to the Basel Convention Secretariat on the transboundary movement of hazardous waste. This includes reporting any exports of e-waste and their final disposal or recycling outcomes. The aim is to increase transparency and ensure that exported e-waste is processed following environmental standards.

Further and refined import/export requirements are included in **Decree 165/2002** (amended by Decree 489/2017); Decision of the Minister of Trade and Supply **No. 194 for the year 1997**; Decision of the Minister of Trade and Industry **No. 770 of 2005**, and Decree **No. 603 of 2007** of the Minister of Trade and Industry.

2.5 EPR System for WEEE in Egypt

The legislative environment for EPR in Egypt is still developing as part of the country's strategy to manage WEEE. EPR, as defined by the OECD, extends a producer's responsibility to the post-consumer phase of a product's life cycle, including collection, recycling, and disposal.

Article 17 of Egypt's **Waste Law No. 202/2020** lays the groundwork for EPR by empowering the Prime Minister to issue decrees outlining which products should be subject to EPR, the procedures for

[1] See further details here: https://wims.wmra.gov.eg/ar/exportimport-permit/export-waste-permit/

implementation, and the financial obligations of producers. However, it leaves many details to be determined later, reflecting the need for ongoing consultation and adaptation. While private sector initiatives and development cooperation programs such as the Sustainable Recycling Industries (SRI) program have made progress in shaping EPR in Egypt with a focus on ICT equipment (Category 1 according to chapter 1.1) through a comprehensive stakeholder engagement process, clarity is needed in the Prime Minister's Decree and executive regulations to define "safe disposal" to include recycling and to specify WMRA's role in implementing EPR. These adjustments are crucial for creating a functional and sustainable e-waste management system in Egypt.

2.6 Occupational Health and Safety Requirements for Handling WEEE in Egypt

The Egyptian **Labor Law 12/2003** includes several provisions related to the health and safety of workers in the workplace, forming a legal framework to protect workers' rights and ensure a safe working environment when managing e-waste. The most prominent provisions are as follows:

- **Article 205, OHS:** "The employer must take all necessary measures to protect the health and safety of workers while performing their work," including providing a work environment free from risks that could cause injuries or occupational diseases.
- **Article 206, Preventive Measures**: obligates the employer to provide the necessary preventive measures to protect workers from potential hazards, such as protective equipment (helmets, gloves, masks), especially in e-waste recycling.
- **Article 207, Health Monitoring:** requires the employer to conduct periodic medical examinations for workers exposed to occupational health risks. For example, workers in e-waste recycling should undergo regular health checks to detect exposure to toxic substances.
- **Article 208, Training and Awareness:** requires that the employer provides the necessary training for workers on the safe use of equipment and machinery, as well as educating them on preventive measures and how to handle potential hazards in the workplace.
- **Article 209, Reporting and Compensation:** mandates that the employer reports any accidents or injuries that occur in the workplace to the relevant authorities and provides appropriate financial compensation to workers who are injured or suffer from occupational diseases.

The labor law also encourages adherence to international standards related to health and safety, such as ILO conventions, to ensure the highest levels of safety in the workplace.

Other workplace requirements are included in Article 43 of **Law 4/1994** and **9/2009**, and its amendments and executive regulations.

While Egyptian labor law provides a solid legal framework for worker protection, the effective implementation of these provisions may face challenges, particularly in the informal e-waste recycling sector, where enhanced monitoring and enforcement mechanisms are needed to ensure a safe and healthy work environment for all workers.

3 Key Players, Systems, and Infrastructures for E-Waste Management in Egypt

3.1 Summary of Key Players/Stakeholders

Key stakeholders, roles, and responsibilities in the Egyptian e-waste management system are diversified. The reverse supply chain of e-waste management includes a range of entities responsible for the functioning of different stages of the system (see Table 2 below).

Table 2: Main Stakeholders in the Chain, Roles and Responsibilities

Key Players	Roles and Responsibilities	Applicable Tools/Legislations
Governmental Entities: (e.g., WMRA, EEAA)	Entities enacting laws and regulations, implementing and enforcing guidelines, requirements, standards, and rules of operation (see also section 2.3)	• Egyptian Law 2O2/2020 and its Executive Regulations • Egyptian Law 4/1994 and its amendment by Law 9/2009 and its Executive Regulations • Inspection departments affiliated to the two agencies
Ministry of Local Development (Municipalities)	Responsible for the waste management implementation on the local level. The municipalities have certain systems in place to handle waste in general.	• Law 38/ 1967 • Law 202/2020: This law specified the cleanliness fund resources for governorates and new cities, and stipulated that a cleanliness fund be established in each governorate or agency of the new urban communities to which this law applies.
Producers, Manufacturers, Importers	Production of electrical and electronic equipment (EEE) which later turns into WEEE.	• Rules governing the public and private sectors (Ministry of Trade and Industry).
Producer Responsibility Organizations (PROs) [5].	• Operate e-waste take-back systems on behalf of producers/OEMs and ensure collected e-waste is transported to appropriate treatment centres and properly treated. • There's currently no PRO for WEEE in Egypt.	• The National Solid Waste Management program incorporated an EPR component since 2014. • Article 17 of the Law 202/2020. • The PROs shall be selected through a standard bidding procedure.
Retailers	They act as an intermediary between producers and consumers. They could have their own collection centres or take-back points.	No specific rules established to control collection through retailers.

Consumers	They are holders of WEEE and include:
	• Household consumers
	• Business consumers
	  • Governmental organizations
	  • NGOs	

Waste Collectors	They may be formal or informal actors.	Formal sector collectors follow WMRA's rules and control.

Key Players	Roles and Responsibilities	Applicable Tools/Legislations
Refurbishers	Refurbishers play a considerable role in feeding the second-hand market of EEE in Egypt.	No specific rules established to control the refurbishing business.
Recyclers	Reyclers are divided into: ● Formal Recyclers**:** Are those who possess a formal industrial facility certified by EEAA and operate under WMRA's control. They dismantle equipment, process fraction and recover metals (see also section 3.3 and 3.4). ● Informal Recyclers**:** Play a dominant role in the current waste management system.	● Law 202/2020 ● Labor Law 12/2003.
Downstream Vendors	Those are the organizations that purchase the materials such as copper, plastic, gold, etc., produced by recyclers. They could be national or international; they vary from jewelers to smelters.	All smelters should be certified by regulatory authorities.
NGOs, International Development Partners	Several initiatives and studies have been undertaken, focusing on improving e-waste management practices through both regulatory frameworks and technological innovations (see also section 3.5).	They are committed to establishing local practices that align with international best practices for WEEE management.

3.2 Current WEEE Reverse Supply Chain

The reverse supply chain for the management of WEEE in Egypt includes: WEEE generation, collection, transport, storage, pre-treatment, and final treatment (recycling, disposal).

3.2.1 Collection

WEEE is generated by the Egyptian public sector, civic sector (NGOs), the private sector (large companies and SMEs) as well as by households. NGOs sometimes get WEEE through donations.

Some actors (e.g., recyclers, refurbishers) collect materials through corporate and government auctions (approved by WMRA) and private sector disposal contracts. The formal part of the collector sector comprises holders of EEAA permits. In 2024, there is also take-back system for lead-acid batteries adopted by local producers certified by WMRA.

Informal collectors, however, are also abundant – many public and private entities treat e-waste as general scrap, often selling it to informal dealers, or formal ones without environmental approvals. Informal collectors also do door-to-door collection, especially from households. A clear mechanism (such as take-back schemes and fixed collection points) for collecting e-waste from households is currently absent.

3.2.2 Transportation

WEEE in Egypt is transported both formally and informally from:

- Transient collection points
- Permanent collection points at business sites such as corporate premises

- Collection and transport from auctions of corporate companies or governmental entities
- Transfer between users
- Disposal after use (hazardous materials disposal in specific hazardous waste landfills)
- Activities related to WEEE movement between two points, such as storage, supply, movement for processing, etc.

The formal sector is committed to the proper transportation of WEEE by obtaining EEAA permits, following well-documented routes, and handling e-waste safely. Informally, it is often transported in regular and unlicensed trucks and carts like non-hazardous waste, as enforcement of transporting e-waste via licensed hazardous waste transportation companies is lacking. Additionally, there are no specific regulations mandating requirements for e-waste containers during transportation and handling, or for labelling.

3.2.3 Storage

Storage is sometimes managed by formal actors (holding EEAA permits for the facilities, including through an EIA study) but also often by informal actors. Informal actors do not follow general safety guidelines for the storage of hazardous components and use unlicensed facilities that are unequipped with safety gear. Formal actors register and keep records of collected equipment and aim to meet minimum requirements for safety and storage space management.

3.2.4 Pre-treatment (including dismantling)

Informal dismantlers are still abundant in Egypt, extracting valuable recyclable fractions to trade with formal recyclers and smelters, as well as components and fractions to trade with refurbishers, while causing environmental pollution and health hazards through unsound treatment and disposal practices. Refurbishers, both formal and informal, play a considerable role in feeding the second-hand market of electrical equipment in Egypt. Illegal and informal export of e-waste components and fractions would also be happening.

Dismantling by the formal sector happens in formal establishments that obtained a permit from EEAA through an EIA study following the Guidelines for the Segregation, Sorting, Pre-treatment and Storage of E-waste Components Containing Heavy Metals and POPs [6] and operate under WMRA's control.

Safe and environmentally sound e-waste recycling requires certain pre-treatment steps where components containing hazardous substances are removed and recyclable materials are separated into fractions, from which secondary raw materials can be recovered without material losses. According to the Occupational Safety and Health Administration (OSHA), personal protective equipment is divided into four categories (A, B, C, and D) based on the degree of protection afforded. At least level D of personal protective equipment (PPE) is required for handling the hazardous fractions (Levels A, B, and C offer more protection).

3.2.5 Final Treatment (including recycling), Disposal

Recycling and recovery of fractions also happen formally or informally. Formal recyclers are those who possess a formal industrial facility certified by EEAA and operate under WMRA's control. There are currently 27 formal WEEE recyclers that do both pre-treatment and recycling, and 9 formal lead-acid battery recyclers in Egypt (see also sections 3.3 and 3.4). Since there are no lithium battery recyclers, the alternative solution in Egypt is to export lithium batteries to recycling facilities outside the country, or to landfill them locally (see Table 3 below). Specific WEEE fractions like plastics with brominated flame retardants (BFRs) also do not have local formal recycling options; they are either safely disposed of in

hazardous waste landfills as shredded plastic or sent outside Egypt to specialized recycling facilities or incineration plants.

Table 3: Final Treatment and Disposal Options in Egypt (2024)

Facilities	Description	Remarks
Formal Recycling Facilities	There are 27 formal recycling Facilities (section 3.3). These facilities are validated by EEAA and working in accordance with WMRA's guidelines.	The number is subject to increase over time.
Hazardous Waste Landfills	**El Nasereya Hazardous Landfill**: It is the first of its kind in Egypt and the first center for the safe disposal of hazardous waste in the Middle East. It receives 39 types of hazardous waste from waste generating companies from all governorates of Egypt from Alexandria to Aswan.	
Private Sector Hazardous Waste Landfills	● **The Arab Center for Safe Disposal of Hazardous and Non-Hazardous Waste** was established as a specialized and qualified company by EEAA in the field of safe disposal of hazardous and non-hazardous waste. The site includes technology for incinerating industrial, pharmaceutical and medical hazardous waste. It also has solid hazardous waste burial cells and a unit for hardening and stabilising hazardous waste. ● **Eco-conserv Hazardous Waste Landfill**.	These are certified facilities by EEAA that receive hazardous waste in general and waste resulting from WEEE recycling.

3.3 Formal WEEE Recyclers in Egypt

The formal recycling sector in Egypt can be classified in 3 categories [7]:

- **Category 1:** facilities that do all stages of recycling starting from receiving the waste up to the precious metal extraction.
- **Category 2:** facilities that do not do extraction of precious metals. Their process ends after the mechanical processing (e.g., lead batteries handling to lead smelters).
- **Category 3:** facilities that do manual dismantling, external power cables processing, and batteries handling.

In 2024, there are **27 formal WEEE recycling facilities** registered at WMRA (see Table 4 below).

Table 4: Formal WEEE Recycling Facilities in Egypt

No.	Company Name	Type of Activity	Address	Classification
1	International Technology Group ITG	Electronic and electrical waste recycling and extraction of precious metals from electronic waste	2/B, plot 69, 6th Industrial area, 6th October City, Giza	Fully operated – Category 1
2	Green Core Recycling Company	Electronic waste recycling and extracting metals from it	Plot 6, Block 5, Area 8, 15 May City, Helwan, Cairo	Stopped operation

No.	Company Name	Type of Activity	Address	Classification
3	Electronic and Electrical Waste Recycling Factory (Al-Araishi Foundation) for General Trading and Industry	Crushing and shredding e-waste	Plot 15, First Industrial Zone, 15 May City, Cairo	Fully operated – Category 1
4	Electronic Waste Recycling (Triple RE)	E-waste recycling	Plot 95, Industrial area, (Youth Project), 6th of October	Fully operated – Category 1
5	Egyptian Electronics Recycling Company (EERC)	Recycling and extraction of precious metals from electronic waste	Plot No. 787, Youth Factories, Extension of the 6th Industrial Zone, 6th of October	Fully operated – Category 1
6	Energy Co Company	Precious metals extraction from e-waste	Plot 75 feddan, Abu Rawash Industrial Zone, 6th of October, Giza	Fully operated – Category 1
7	Arabian WEEE Company	Precious metals extraction from e-waste	Plot (555), Industrial Zone, 6th of October, Giza	Fully operated – Category 1
8	Al Firdous Recycling Company	Collection, sorting, dismantling, and classification e-waste and processing of boards and precious metals extraction from e-waste	Plot (88) national unity City, Industrial Zone, Abu Rawash, kilometer 26, Alexandria Desert Road, Giza	Fully operated – Category 1
9	Al Amal for Trading and Supplies	Recycling of solar panels, crushing and grinding of electronic boards, and performing secondary chemical processing to extract precious metals	Plot no. 60 Industrial Zone, Youth Warehouses Area, 6th of October, Giza	Fully operated – Category 1
10	German for Trading Company	Recycling of electronic and electrical waste and extraction of precious metals	Plot (128) Industrial Zone, Alexandria Desert Road Al-Sadat City	Fully operated – Category 1
11	El Dawleyya Company	Recycling of electronic and electrical waste and extracting of precious metals	Plot (57/28), km 28 Alexandria Desert Road, Abu Rawash, Giza	Fully operated – Category 1
12	Al Mashreq Company	Recycling of electronic and electrical waste and extracting of precious metals	Plot (9), Block15, Industrial Area, Madinet Borg Al Arab	Fully operated – Category 1
13	Candy Company	Recycling of electronic and electrical waste and extracting of precious metals	Abu Zabal, Al Khankah, Al Akrasha Industrial, Qalyub City	Fully operated – Category 1

No.	Company Name	Type of Activity	Address	Classification
14	Rotate Company	Recycling of electronic and electrical waste and extracting of precious metals	Plot no. (843), Industrial Area, 6th of October, Giza	Fully operated – Category 1
15	Egypt Green for E-Waste	Recycling of electronic and electrical waste and extracting of precious metals	Plot no. (708), Industrial Area, 6th of October, Giza	Fully operated – Category 1
16	Greener E-waste Company	Recycling electronic and electrical waste, extracting precious metals, and casting and smelting copper to produce copper ingots	Plot no. (2), Industrial Area, Abu Rawash, Giza City	Fully operated – Category 1
17	Recycle Key	Sorting and recycling of electronic waste	Plot 10, corporate office in Sadat City	Category 2
18	Green Place Company	E-waste recycling	Plot 47, 6th District Youth place	Category 2
19	Hussein and Ahmed Abu Soliman Trading Company	Sorting, classifying, and recycling of electronic and electrical waste, and smelting the copper resulting from the recycling process to produce copper ingots	Plot 3001 El-Tebbin Technology, Al Haded We Al Soulb, El Tebbin, Cairo	Category 2
20	Extreme Construction and Supply Company	Recycling of electronic and electrical waste and production of copper ingots	Plot 3000 El-Tebbin Technology, Al Haded We Al Soulb, El Tebbin, Cairo	Category 2
21	Remt Company	Recycling of electronic and electrical waste, and smelting the copper resulting from the recycling process to produce various copper castings and ingot	Plot (52/451), Attaka City – Gulf of Suez, Suez City	Category 2
22	Alathad African Egyptian for Import & Export	Recycling electronic and electrical waste without extracting precious metals	Plot no. (54), Industrial Area, km 26 Alexandria Desert Road, Abu Rawash, Giza City	Category 2
23	Nile Steel Company	Recycling electronic and electrical waste without only extracting precious metals	Plot no. (171 A), (171 B), Stage 3, Industrial Area, Natrn Valley, Baheira City	Category 2
24	Alorobah Sky Recycling E-Waste Company	Cable waste recycling	The Mosque Alkabeer street, Ezbet Ahmed Selim, Shoubra El Kheima 2, Qalyub City	Category 3
25	Egyptian International for Trading Metals	Recycling electrical cable waste	Plot no. (119) Industrial Area, A4, 10th of Ramadan City	Category 3

No.	Company Name	Type of Activity	Address	Classification
26	Egyptian Metal Works Co. (Hafzy)	Recycling of electrical cable and telephone cable waste	Kafr El-Olow Industrial Zone, Helwan, Cairo	Category 3
27	Al Haram for Metals Trading Import & Export	Aluminum ore smelting and the re-manufacturing of household tools for Al-Haram Company for Manufacturing, Trading, Importing, and Exporting Metals, with the addition of a production line for copper mesh	Ezbet Qutb Aid, Mahalat Al Qasab, Kafr El-sheikh Street, Aremon, Kafr El-Sheikh	Category 3

3.4 Formal Lead-Acid Battery Recyclers in Egypt

There are **9 – certified – formal lead secondary smelters for lead-acid batteries** recycling to extract lead and lead alloys [8].

Table 5: Formal Lead Secondary Smelters for Lead-Acid Batteries

	Company Name	Type of Activity	Address
1	Chloride Egypt	Lead-Acid Batteries Recycling	28 Alexandria Desert Road – Industrial Zone at Abou Rawash – Giza Governorate
2	Al Mottahida for Batteries	Lead-Acid Batteries Recycling	10th of Ramadan – Industrial Zone A4
3	Al Mottahida for Recycling and Fabrication of Metals (Mostafa Abdel Wahab)	Lead-Acid Batteries Recycling	Plot 29 – Industrial Zone 1/31, Gaziret Abo Saleh, Nasser District, Bani Suef Governorate
4	El Nisr for Chemical Industries	Lead-Acid Batteries Recycling	Plot 7021, Industrial Zone 7, El Sadat City
5	Lead Smelting, Refining and Fabrication of Lead, Factory	Lead-Acid Batteries Recycling	Plot 7, Number 8 Hood El Zahhar, Industrial Zone of Arab El Olykat, El Khanka, Qalyoubia Governorate
6	Al Mottahida for Trade, Supplies and General Agencies	Lead-Acid Batteries Recycling	Industrial Zone – El Akrasha – Abo Zaabal, Qalyoubia
7	El Hoda for Batteries Recycling	Lead-Acid Batteries Recycling	Industrial Zone – El Akrasha – Abo Zaabal, Qalyoubia
8	MARSO for Chemicals	Tire Recycling	10th of Ramadan – Industrial Zone 3/ A1
9	HOBIC for Rubber Industries	Tire Recycling	Plot 12, Industrial Zone 2, El Sadat City

At the same time, there are currently **no licensed lithium battery recyclers in Egypt**. In 2024, the common (and EEAA approved) practice in Egypt is to dispose of these and other types of batteries (Alkaline, Silver Oxide, and Mercury) in the **Al-Nasreya hazardous waste landfill** following an environmentally sound disposal process:

- Preparation: The batteries (especially lithium-ion and lithium metal batteries) are first discharged and treated to reduce their reactivity and manage fire hazards.

- Transportation: Batteries are transported safely to Al-Nasreya hazardous waste landfill.
- Landfilling: The discharged lithium batteries are directly landfilled in the hazardous landfill. Other batteries are disposed of in formal landfills in special cells after solidification in concrete molds using a solidification unit to avoid leaching of manganese dioxide, zinc, alkaline, silver oxide, and mercury, as they are toxic and hazardous materials.

Battarity is a new company that emerged from an entrepreneurial competition funded by the SRI program and implemented by the Electronic Research Institute (ERI). The Battarity team emerged victorious in this competition and has since incorporated a formal company focused on lithium-ion battery recycling. Since 2024, they are in the process of setting up their facility in Abo Rawash industrial zone. The primary objective of this facility is to carry out preliminary treatments on lithium-ion batteries through physical processes. These processes aim to extract the black mass, which contains mixed metals such as lithium, cobalt, and manganese. This initial treatment is a crucial step in the recycling process, as it allows for the separation and recovery of valuable materials from used lithium-ion batteries.

3.5 Sector support partners and programs for WEEE management in Egypt

Several initiatives and studies have been undertaken, focusing on improving e-waste management practices through both regulatory frameworks and technological innovations. The **SRI Program,** funded by the Swiss Government and implemented nationally in Egypt by the Centre for Environment and Development for the Arab Region and Europe (CEDARE) was implemented between 2016 and 2025 and aimed to bridge the gap between informal and formal e-waste sectors, develop sustainable recycling systems and introduce mechanisms like EPR to foster more responsible e-waste handling. Other projects include the Medical and Electronic waste Management project funded by UNDP/GEF or the Greater Cairo Air Pollution Management and Climate Change Project funded by the World Bank (see Table 6 below).

Table 6: WEEE Management Support Programs in Egypt (2024)

Project Description	Implementing Entities	Objective	Period of performance
Greater Cairo Air Pollution Management and Climate Change Project	World Bank/	The main project objective is reducing air and climate emissions from critical sectors and increase resilience to air pollution in Greater Cairo. The project has subcomponent related to hazardous waste management focusing on e-waste and healthcare waste management. Until 2024, the project did not publish any reports.	2021-2026
Medical and Electronic waste Management project	UNDP/GEF	The scope of work for this project encompassed developing a baseline assessment report on e-waste composition, BAT/BEP for its management, developing guidelines for the segregation, sorting, pre-treatment and storage of e-waste fractions containing heavy metals, POPs and creating an IT toolkit and e-calculator for the calculation of the heavy metal, POPs and UPOPs quantities of different e-waste fractions. The project supported WMRA start formalizing the informal sector.	2020
Sustainable Recycling Industries (SRI) program	SECO/CEDARE/ dss+	The project provided multifaceted regulatory, capacity building, and technical support to Egypt on establishing an e-waste management system. Multiple reports, briefs, and content	2016-2025

Project Description	Implementing Entities	Objective	Period of performance
		summaries relevant to Egypt have been produced, as part of the program (see Annex 6.2).	

3.6 Conformity assessment system

Within the SRI program and based on the WMRA guidelines [6], new normative requirements outlined in the “Technical Standard for Environmentally Sound WEEE Management” were developed, together with an “Audit Report for WEEE Operations” and a “Handbook for WEEE Auditors”. These instruments form the basis of a planned WMRA conformity assessment system, which would establish a pool of qualified technical WEEE recycling auditors and create a level playing field for all actors in the WEEE reverse supply chain, thereby driving progress in the e-waste sector.

4 E-Waste Statistics for Egypt

E-waste data and statistics matter because they provide critical insights into the environmental, economic, and social impacts of discarded electronic devices. Accurate statistics reveal the magnitude of the growth in e-waste and help policymakers and organizations recognize the urgency of addressing it. They show how much critical materials and other valuable resources are lost when e-waste is not properly recycled, illustrate the risks hazardous materials pose to ecosystems and human health, and over time help track the effectiveness of e-waste management laws.

In 2022, Egypt generated approximately 690 kilotons (kt) of e-waste in total and over 10 kg per capita, placing it first in Africa [9]. The section below provides an outlook for 2024-2027, providing also more granular e-waste data for different categories of EEE.

4.1 Methodology

For the purposes of quantifying e-waste amounts in Egypt, the **UNU-KEYS classification of EEE products** is adopted. The classification groups EEE products put on the market (POM) based on their similar functionality, material composition, end-of-life differences, average lifetime, and weight. Furthermore, large or environmentally relevant e-waste products for which substantial data is available are assigned to separate categories.

The amount of e-waste generated (in kg) is determined using a standard approach based on time-series data on electrical and electronic equipment introduced to the market over the years, along with the average lifetime in years for each type of EEE.

Data on EEE POM data in Egypt has been sourced from Egypt's official government statistics from the Central Agency for Public Mobilization and Statistics (**CAPMAS**) for the period 2014-2021, with a focus on category 1 (ICT equipment) and category 2 (screens and monitors, see chapter 1.1). The POM accounts for the total weight of EEE available on the market by summing domestic production and imports but subtracting exports. Expected quantities between 2021 to 2023 have been extrapolated based on historical yearly growth rates.

Data from the Egyptian Industrial Development Authority and cross-checks with manufacturers and recyclers have also been used.

4.2 EEE POM in Egypt (in tons, 2014-2023)

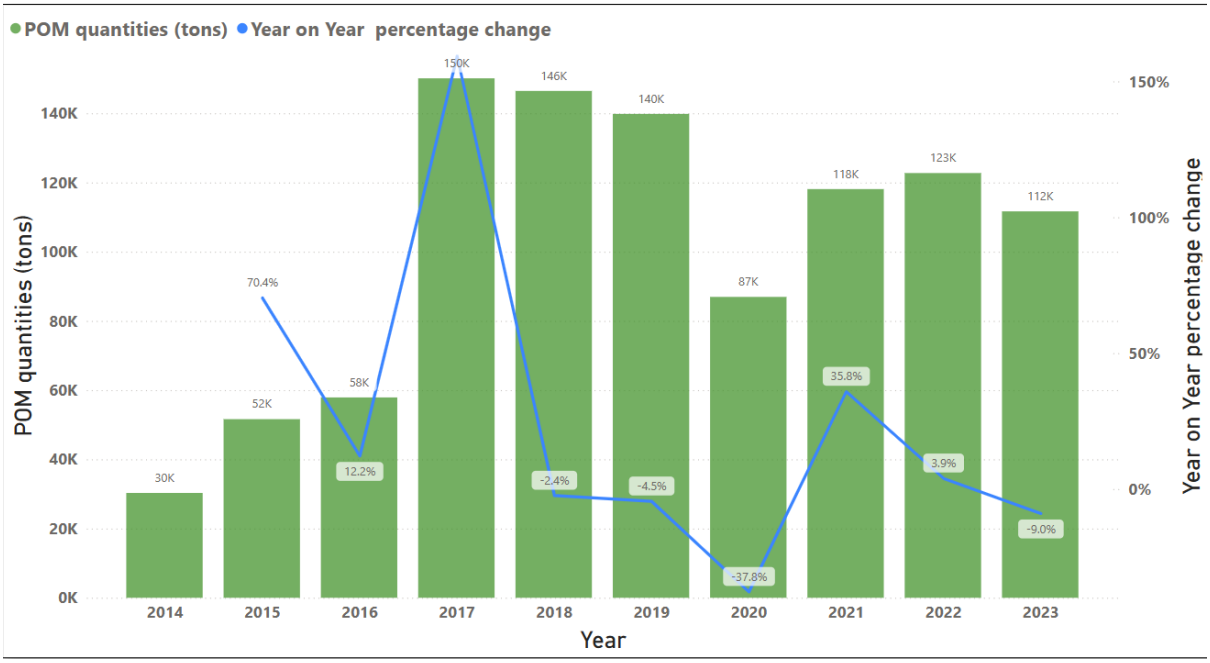

Figure 1. Put-on Market EEE in Egypt for the period 2014-2023 (Source: CAPMAS)

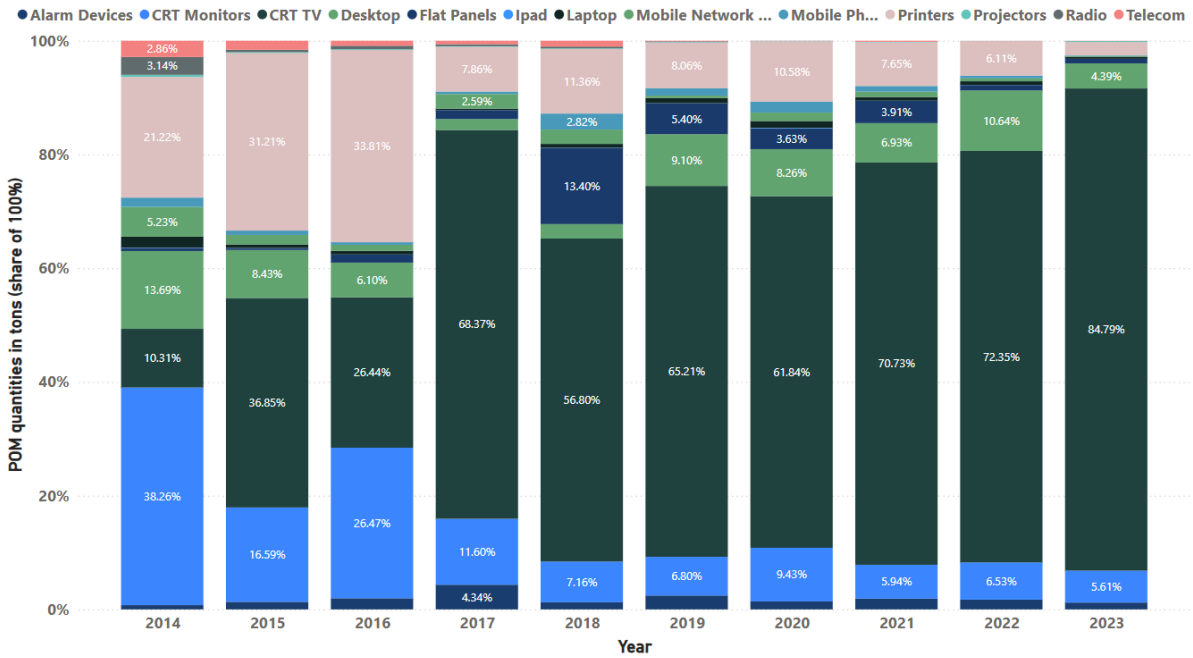

Figure 2. Breakdown of Put-on Market EEE in Egypt for the period 2014-2023 (Source: CAPMAS)

The dataset used can be found in Annex 7.3.

4.3 E-Waste Generated in Egypt – Historical and Forecast Quantities (in tons, 2021-2027).

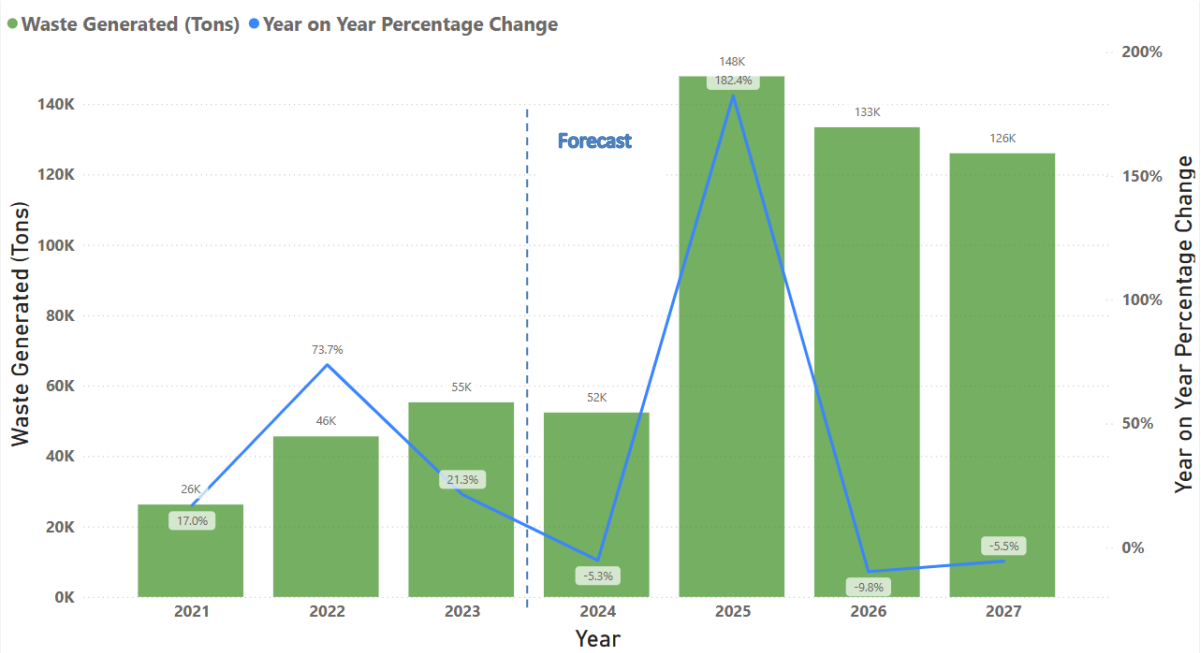

Figure 2: E-waste Generated in Egypt – Historical (2021-2023) and forecast (2024-2027) amounts

The dataset used can be found in Annex 6.4. Historical quantities based on historical POM and forecast based on forecasted amounts of EEE POM for 2024-2027.

4.4 Discussion

According to Figure 1, the POM data for categories 1 and 2 is subject to strong fluctuations, with an upward trend when comparing the data from 2023 with that from 2014. The peak in 2017 translates to a peak in e-waste generated in 2025, since it is assumed that CRT TVs and Monitors, both devices with a high average weight, high POM quantities, have an average lifetime of 8 years. The e-waste generated in 2022, according to CAPMAS data, amounts to 46 kt for categories 1 and 2, and in 2025, to 148 kt.

The increasing share of CRT TVs in the POM data is questionable since CRT technology has largely been replaced by flat-panel technology in recent years. This exemplifies the importance of complete and consistent data sets for adequately monitoring and forecasting mass and material flows connected to EEE and WEEE.

5 Outlook: Recommendations for E-Waste Management in Egypt

Managing e-waste is a critical issue globally, including in Egypt. Effective management of e-waste requires a comprehensive framework that encompasses various aspects such as policies for sustainable handling of electronic waste, including collection, transportation, recycling, disposal. Below are some key framework recommendations that could be considered for improving e-waste management in Egypt.

5.1 Legal, Administrative, and Institutional

- Regularly review and update e-waste management policies and regulations, to fill in gaps and fit with market developments.
- Establish a sound EPR system, ensuring manufacturers take responsibility for the end-of-life management of their products, and legalize it, including:
    - Resource mobilization
    - Collection mechanisms
    - Financial mechanisms
    - Engagement with all relevant stakeholders
- Implement technical standards that promote proper handling, collection, recycling, and disposal of e-waste.
- Form a WEEE technical committee with governmental experts as well as external stakeholders from academia and industry who are experts in the field of WEEE to develop standards and drive the conformity assessment system, as well as the circular economy
- Raise awareness & build capacity through training for various stakeholders across the value chain.
- Achieve full legal compliance with international agreements, including the Basel Convention, all while staying practical to the local context.

5.2 Infrastructure, Monitoring, and Management Practices

- Encourage a formal refurbishing industry, including related standards
- Encourage further the development and improvement of the formal recycling industry.
- Establish environmentally appropriate hazardous waste landfills.
- Find appropriate downstream pathways that allow for hazardous waste incineration.
- Enforce proper standards through a comprehensive conformity assessment system.
- Improved enforcement of health and safety regulations is critical to protect workers, especially in the informal sector.

5.3 Data and Statistics

- Work on achieving complete and consistent datasets through standardized collection methods and methodologies, to allow for data comparability across different regions (especially Africa) and timescales.
- Standardize the reporting practices among different entities involved in e-waste management, leading to accurate statistics.
- Focus on finding and standardizing methods and methodologies for getting data from the informal sector, which is still dominating.

- Focus on enforcing compliance with reporting requirements, by finding effective mechanisms like rewards for good compliance and penalties for non-compliance.
- Dedicate specific oversight bodies specifically focused on e-waste statistics.

6 Bibliography

[1] The Global E-waste Monitor 2020.

[2] The Global Impact of E-Waste: Addressing the Challenge, 2012.

[3] Egyptian Environmental Affairs Agency (EEAA) – The EEAA regularly publishes reports and statistics about waste management, including electronic waste.

[4] https://wims.wmra.gov.eg/ar/exportimport-permit/export-waste-permit/

[5] An EPR Scheme for WEEE in Egypt, Options for implementation, Sofies & CEDARE, 2021.

[6] Medical and Electronic Waste Management Project, Guidelines for the Segregation, Sorting, Pre-treatment and Storage of E-waste Components Containing Heavy Metals and POPs, September 2019.

[7] Opportunity Study on Available Solutions Including Impact Assessment, SRI, 2022.

[8] WMRA Official List for Licensed WEEE Recycling Facilities.

[9] Global E-Waste Monitor 2024.

7 Annex

7.1 List of Publications on Egypt E-Waste

End-of-life Management of Cooling Appliances. Baseline Stuy for Egypt	SRI program	To complement the scope of SRI in Egypt beyond the historical focus on infor- mation and telecommunication (ICT) equipment, an assessment of the end-of- life of cooling appliances in Egypt was conducted in 2024	2025
Bridging the gap between the formal and informal e-waste sectors in Egypt	SRI program	The overall objective of this study was to establish an international benchmark for successful approaches to bridging the collection gap between the formal and informal sectors, drawing on existing literature and case studies from various developing countries.	2024
Selected Solutions for the Management of Problematic Fractions of E-Waste Feasibility study & Roadmap	SRI program	Feasibility study on the environmentally sound recycling and disposal of plastics containing brominated flame retardants and Lithium-Ion-batteries	2024
Solutions for Problematic Fractions from WEEE in Egypt	SRI program	The study provides an in-depth analysis of the management of hazardous fractions from waste electrical and electronic equipment (WEEE) in Egypt, focusing on the identification of gaps existing in both the regulatory and technological dimensions. These gaps shall be addressed in priority in order to improve the management of e-waste in a systemic and sustainable manner.	2023-2024
Problematic Fractions Arising from WEEE in Egypt	SRI program	The study provides a comprehensive assessment of problematic fractions in e-waste in Egypt. The study also conducted a WEEE mass flow assessment, focusing on equipment that is recycled in Egypt and considered the most problematic, in particular, equipment that includes the highest quantity of hazardous materials.	2022
Guidelines for the Segregation, Sorting, Pre-treatment and Storage of E-waste. Components Containing Heavy Metals and POPs	Medical and Electronic Waste Management Project		2019
Module 1: Assessment of POPs, UPOPs, and Associated Hazardous Release from E-Waste Managing and Processing	Medical and Electronic Waste Management Project	Baseline assessment on persistence organic pollutants (POPs), unintentionally produced persistent organic pollutants (UPOPs), and associated hazardous releases (mercury, lead, cadmium) from electronic waste (E-waste) processing	2020
Module 2: Assessment of BAT/BEP for managing	Medical and Electronic	Baseline assessment on persistence organic pollutants (POPs), unintentionally produced persistent organic pollutants (UPOPs),	2020

and processing of E-waste containing POPs	Waste Management Project	and associated hazardous releases (mercury, lead, cadmium) from electronic waste (E-waste) processing	
Module 3: Assessment of BAT/BEP for managing and processing of E-waste containing heavy metals	Medical and Electronic Waste Management Project	Baseline assessment on persistence organic pollutants (POPs), unintentionally produced persistent organic pollutants (UPOPs), and associated hazardous releases (mercury, lead, cadmium) from electronic waste (E-waste) processing	2020
Egyptian E-waste Recycling Legislations Report	SRI program	The report details the national and international legislations governing the WEEE waste activities	2017
Entrepreneurship Assessment Report: Landscape of Sustainable Incubators and Accelerators in Egypt for E-Waste Recycling	SRI program	The program helps to design and implement an entrepreneurship support program to help either incubate or accelerate new or existing start-ups and ultimately create a dynamic formal sector based on new models of business that infuse innovation, creation with existing market opportunities.	2017
Scrap cable processing in Egypt – Challenges & Opportunities	SRI program	The objective of this document is to summarize the most important information about scrap cable processing in Egypt, reviewing different technologies, their advantages and disadvantages and providing a short analysis of the available amount of scrap cables.	2017
Assessment of WEEE Dismantling business opportunities: Formal sector	SRI program	The goal of this document is to map the licensed & sound recycling companies for end-processing in Egypt for each separate fraction, and delineate, as appropriate, the best possible local beneficiation.	2017
Extended Producer Responsibility Assessment Report	SRI program	This document is intended to form the basis of a primary assessment study that relates and depicts EPR in the electronics industry as part of greater efforts to create a management system for e-waste or WEEE and products.	2017

7.2 Egypt Basel Convention - Focal Points and Document Templates

Role(s): Basel Convention Focal point (FP)
Department: International Cooperation Department
Institution: Waste Management Regulatory Agency (WMRA) - Ministry of Environment (MOE)
Postal address: Cairo House, El Khayala Road in front of El Fostat Houses, El Fostat,Cairo, Egypt
Phone: +20 2 740 9070
Fax: +20 2 740 9072

Role(s): Basel Convention Competent authority (CA)
Department: Transit Control Department
Institution: Suez Canal Authority
Postal address: Irshaad Building, Ismailia, Egypt
Phone: +2064 391 00 00
Fax: +2064 391 47 84 / 85
Email: info@suezcanal.gov.eg

Role(s): Basel Convention Competent authority (CA)
Department: Department of Environment and Sustainable Development
Institution: Ministry of Foreign Affairs
Postal address: Maspiro, Corniche EL Nile, Cairo, Egypt
Phone: +20 2 25 74 78 46
Fax: +20 2 25 74 79 36

Role(s): Basel Convention Competent authority (CA)
Institution: Waste Management Regulatory Agency (WMRA) - Ministry of Environment (MOE)
Postal address: Cairo House, El Khayala Road, in front of El Fostat Houses, El Fostat, Cairo, Egypt

ANNEX IB: Movement document for transboundary movements/shipments of waste

1. Corresponding to notification No.:	**2. Serial/total number of shipments:** /
3. Exporter - notifier Registration No.: Name: Address: Contact person: Tel: Fax: E-mail: **5. Actual quantity**: Tonnes (Mg): m^3:	**4. Importer - consignee** Registration No.: Name: Address: Contact person: Tel: Fax: E-mail: **6. Actual date of shipment:**
7. Packaging Type(s) *(1)*: Number of packages: **Special handling requirements:** *(2)* Yes: ☐ No: ☐	

8.(a) 1st Carrier *(3)*	**8.(b) 2nd Carrier**	**8.(c) Last Carrier**
Registration No.:	Registration No.:	Registration No.:
Name:	Name:	Name:
Address:	Address:	Address:
Tel:	Tel:	Tel:
Fax:	Fax:	Fax:
E-mail:	E-mail:	E-mail:
------- *To be completed by carrier's representative* -------		*More than three carriers (2)* ☐
Means of transport *(1)*:	Means of transport *(1)*:	Means of transport *(1)*:
Date of transfer:	Date of transfer:	Date of transfer:
Signature:	Signature:	Signature:

9. Waste generator(s) - producer(s) *(4;5;6)* Registration No.: Name: Address: Contact person: Tel: Fax: E-mail: Site of generation *(2)*:	**12. Designation and composition of the waste** *(2)* **13.Physical characteristics** *(1)*:
10. Disposal facility ☐ **or recovery facility** ☐ Registration No.: Name: Address: Contact person: Tel: Fax: E-mail: Actual site of disposal/recovery *(2)*	**14.Waste identification** *(fill in relevant codes)* (i) Basel Annex VIII (or IX if applicable): (ii) OECD code (if different from (i)): (iii) EC list of wastes: (iv) National code in country of export: (v) National code in country of import: (vi) Other (specify): (vii) Y-code: (viii) H-code *(1)*: (ix) UN class *(1)*: (x) UN number: (xi) UN shipping name: (xii) Customs code(s) (HS):
11. Disposal/recovery operation(s) D-code / R-code *(1)*:	

15. Exporter's - notifier's / generator's - producer's *(4)* **declaration**

I certify that the above information is complete and correct to my best knowledge. I also certify that legally enforceable written contractual obligations have been entered into, that any applicable insurance or other financial guarantee is in force covering the transboundary movement and that all necessary consents have been received from the competent authorities of the countries concerned.

Name Date Signature

16. For use by any person involved in the transboundary movement in case additional information is required

17. Shipment received by importer - consignee (if not facility) Date: Name: Signature:

TO BE COMPLETED BY DISPOSAL / RECOVERY FACILITY

18. Shipment received **at disposal facility** ☐ **or recovery facility** ☐	**19. I certify that the disposal/recovery of the waste described above has been completed**
Date of reception: Accepted: ☐ Rejected*: ☐ Quantity received: Tonnes (Mg): m^3: **immediately contact competent authorities*	Name:
Approximate date of disposal/recovery: Disposal/recovery operation (1): Name: Date: Signature	Date: Signature and stamp:

(1) See list of abbreviations and codes on the next page
(2) Attach details if necessary
(3) If more than three carriers, attach information as required in blocks 8 (a,b,c).
(4) Required by the Basel Convention
(5) Attach list if more than one
(6) If required by national legislation

FOR USE BY CUSTOMS OFFICES (if required by national legislation)	
20. Country of export - dispatch or customs office of exit The waste described in this movement document left the country on: Signature: Stamp:	**21. Country of import - destination or customs office of entry** The waste described in this movement document entered the country on: Signature: Stamp:

22. Stamps of customs offices of transit countries

Name of country:		Name of country:	
Entry:	Exit:	Entry:	Exit:
Name of country:		Name of country:	
Entry:	Exit:	Entry:	Exit:

List of Abbreviations and Codes Used in the Movement Document

DISPOSAL OPERATIONS (block 11)

- D1 Deposit into or onto land (e.g. landfill, etc.)
- D2 Land treatment (e.g. biodegradation of liquid or sludgy discards in soils, etc.)
- D3 Deep injection (e.g., injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.)
- D4 Surface impoundment (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)
- D5 Specially engineered landfill (e.g. placement into lined discrete cells which are capped and isolated from one another and the environment)
- D6 Release into a water body except seas/oceans
- D7 Release into seas/oceans including sea-bed insertion
- D8 Biological treatment not specified elsewhere in this list which results in final compounds or mixtures which are discarded by means of any of the operations in this list
- D9 Physico-chemical treatment not specified elsewhere in this list which results in final compounds or mixtures which are discarded by means of any of the operations in this list (e.g., evaporation, drying, calcination, etc.)
- D10 Incineration on land
- D11 Incineration at sea
- D12 Permanent storage (e.g. emplacement of containers in a mine, etc.)
- D13 Blending or mixing prior to submission to any of the operations in this list
- D14 Repackaging prior to submission to any of the operations in this list
- D15 Storage pending any of the operations in this list

RECOVERY OPERATIONS (block 11)

- R1 Use as a fuel (other than in direct incineration) or other means to generate energy (Basel/OECD) - Use principally as a fuel or other means to generate energy (EU)
- R2 Solvent reclamation/regeneration
- R3 Recycling/reclamation of organic substances which are not used as solvents
- R4 Recycling/reclamation of metals and metal compounds
- R5 Recycling/reclamation of other inorganic materials
- R6 Regeneration of acids or bases
- R7 Recovery of components used for pollution abatement
- R8 Recovery of components from catalysts
- R9 Used oil re-refining or other reuses of previously used oil
- R10 Land treatment resulting in benefit to agriculture or ecological improvement
- R11 Uses of residual materials obtained from any of the operations numbered R1 to R10
- R12 Exchange of wastes for submission to any of the operations numbered R1 to R11
- R13 Accumulation of material intended for any operation in this list

PACKAGING TYPES (block 7)

1. Drum
2. Wooden barrel
3. Jerrican
4. Box
5. Bag
6. Composite packaging
7. Pressure receptacle
8. Bulk
9. Other (specify)

MEANS OF TRANSPORT (block 8)

- R = Road
- T = Train/rail
- S = Sea
- A = Air
- W = Inland waterways

PHYSICAL CHARACTERISTICS (block 13)

1. Powdery / powder
2. Solid
3. Viscous / paste
4. Sludgy
5. Liquid
6. Gaseous
7. Other (specify)

H-CODE AND UN CLASS (block 14)

UN class	H-code	Characteristics
1	H1	Explosive
3	H3	Flammable liquids
4.1	H4.1	Flammable solids
4.2	H4.2	Substances or wastes liable to spontaneous combustion
4.3	H4.3	Substances or wastes which, in contact with water, emit flammable gases
5.1	H5.1	Oxidising
5.2	H5.2	Organic peroxides
6.1	H6.1	Poisonous (acute)
6.2	H6.2	Infectious substances
8	H8	Corrosives
9	H10	Liberation of toxic gases in contact with air or water
9	H11	Toxic (delayed or chronic)
9	H12	Ecotoxic
9	H13	Capable, by any means, after disposal of yielding another material, e. g., leachate, which possesses any of the characteristics listed above

Further information, in particular related to waste identification (block 14), i.e. on Basel Annexes VIII and IX codes, OECD codes and Y codes, can be found in a Guidance/Instruction Manual available from the OECD and the

7.3 E-Waste Datasets

There are many types of Electronic and Electrical Equipment (EEE) put on the Market (POM), necessitating sensible and practical categorization. Various classifications can describe e-waste, each potentially valuable for forming a measurement framework. However, classifications must comply with specific criteria to effectively harmonize e-waste measurement and produce internationally comparable indicators.

A classification system for e-waste statistics should categorize products based on the following criteria:

- Functionality: Products should be grouped by similar functions.
- Material Composition: Categories should consider comparable material composition, focusing on hazardous substances and valuable materials.
- End-of-Life Attributes: Related end-of-life characteristics should be included.

Additionally, products within the same category should exhibit:

- A homogeneous average weight
- A consistent lifetime

This uniformity simplifies quantitative assessments for similar products.

Furthermore, large or environmentally relevant e-waste products for which substantial data is available should be assigned to separate categories.

Currently, the only classification system that fulfills these criteria is the UNU-Keys. The following table shows UNU-Keys categories, average weight, and lifetime for POM in Egypt.

Table 7: UNU Keys of WEEE-Equipment and Average Weight

UNU-KEY	Description	Average weight - 2018 (kg/piece)[2]	Average lifetime (years)
302	Desktop PCs	8.77	6
303	Laptops	1.26	6
307	Professional IT equipment (e.g., servers, routers, data storage, copiers)	40	5
301	Small IT equipment (e.g., routers, mice, keyboards, external drives & accessories)	0.4	5
305	Telecommunication equipment (e.g., cordless phones, answering machines)	0.45	5
306	Mobile phones (including smartphones, pagers)	0.09	4
407	Cathode Ray tube TVs	33.2	8
309	Flat display panel TVs	5.5	8
308	Cathode Ray Tube Monitors	22	8
309	Flat display panel monitors (LCD, LED)	5.5	8

[2] e-waste statistics- guidelines on classification reporting and indicators- second edition, United Nations University, ISBN: 978-92-808-9066-2, 2018.

UNU-KEY	Description	Average weight - 2018 (kg/piece)[2]	Average lifetime (years)
304	Printers (e.g., scanners, multi-functionals, faxes)	10.3	5
403	Music instruments, radio, Hi-Fi (including audio sets)	3.73	8
404	Video (e.g., Video recorders, DVD, Blue Ray, set-top boxes) and projectors	3.51	8

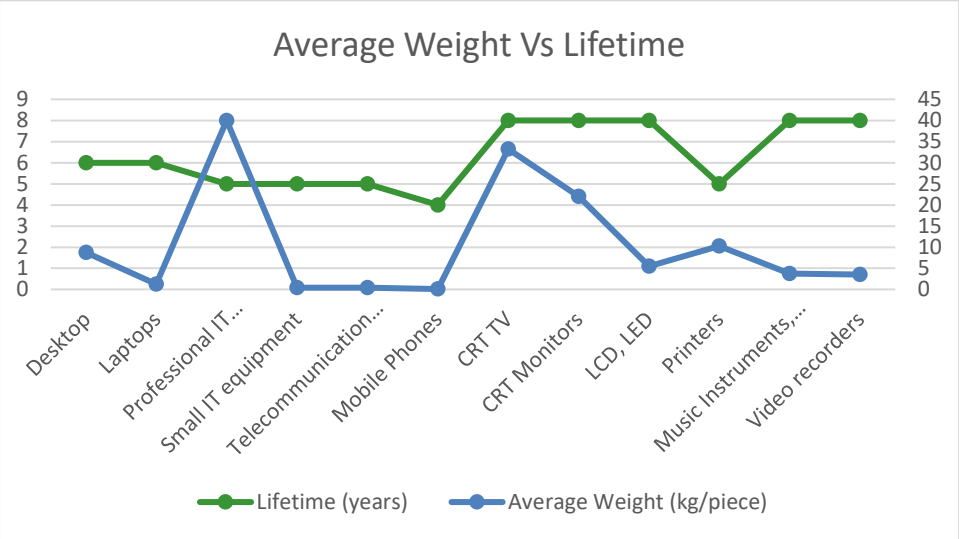

Figure 3: Average Weight of Electronic Equipment and its Expected Lifetime

Table 8: POM Quantities (# of units) in Egypt (2014-2023)

Equipment	UNU Key	POM Quantities in Piece									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Radio	403	237926	58260	91386	141104	120018	49313.5	7339	911	411	0
CRT Monitors	308	491911	373988	672294	780570	469967	425777	363906	313256	358458	279541
CRT TV	407	87825	550525	445050	3049698	2471212	2707000	1582000	2472895	2630697	2800143
Flat Panels *	309	28150	25925	143349	421734	3520126	1352224	560828	824824	209487	162779
Laptop	303	429490	252108	281361	265275	762298	989061	814656	607310	609371	312161
Desktop	302	441469	476786	388931	324738	419276	1430512	800114	917839	1464547	549398
iPad	306	180931	300055	150919	191401	500194	623773	953185	406924	284146	77160
Mobile Phones	306	5152995	4221152	2787408	7176172	45199106	19447537	18172719	12850879	6404996	1305581
Projectors	404	29626	20973	21389	42581	44002	31457	14675	32856	5603	60012
Telecom	305	1795126	1747224	1096621	2036981	3310400	323031	72058	515135	39095	112382
Printers	304	582780	1503167	1833988	1130367	1592953	1078658	872430	862539	715779	246668
Alarm Devices	301	535702	1654747	2743021	16081731	4527214	8442661	2978232	5544215	5212364	3313680
Mobile Network Stations	307	37013	20669	14930	95843	91068	15233	31496	27170	15611	4221

*** As per CAPMAS, flat panel covers both TVs and Monitors**

Table 9: E-Waste Generated (in kg) in Egypt (2024-2027)

Equipment	UNU Keys		Generated Waste			
			2024	2025	2026	2027
Radio	403	Piece	91386	141104	120018	49313.5
		Kg	340869.78	526317.9	447667.1	183939.36
CRT Monitors	308	Piece	672294	780570	469967	425777
		Kg	14790468	17172540	10339274	9367094
CRT TV	407	Piece	445050	3049698	2471212	2707000
		Kg	14775660	14787240	82044238	89872400
Flat Panels	309	Piece	143349	421734	3520126	1352224
		Kg	788419.5	2319537	19360693	7437232
Laptop	303	Piece	762298	989061	814656	607310
		Kg	960495.48	1246217	1026467	765210.6
Desktop	302	Piece	419276	1430512	800114	917839
		Kg	3677050.52	12545590	7017000	8049448
iPad	306	Piece	953185	406924	284146	77160
		Kg	85786.65	36623.16	25573.14	6944.4
Mobile Phones	306	Piece	18172719	12850879	6404996	1305581
		Kg	1635544.71	1156579	576449.6	117502.29
Projectors	404	Piece	21389	42581	44002	31457
		Kg	75075.39	149459.3	154447	110414.07
Telecom	305	Piece	323031	72058	515135	39095
		Kg	145363.95	32426.1	231810.8	17592.75
Printers	304	Piece	1078658	872430	862539	715779
		Kg	11110177.4	8986029	8884152	7372523.7
Alarm Devices	301	Piece	8442661	2978232	5544215	5212364
		Kg	3377064.4	1191293	2217686	2084945.6
Mobile Network Stations	307	Piece	15233	31496	27170	15611
		Kg	609320	1259840	1086800	624440
Total Quantity		**Ton**	**52371.2958**	**147872.4**	**133412.3**	**126009.69**

7.4 Further information about EEE – precious metals, hazardous materials

The **classification of equipment based on precious metals content** involves categorizing various types of electronic devices according to the presence and concentration of valuable metals such as gold, silver, platinum and palladium. This classification helps assess the potential economic value of e-waste and guides recycling and recovery processes. Equipment is typically grouped into categories such as high, medium or low precious metals content, depending on the quantity and type of metals they contain.

Devices like smartphones and laptops are usually classified as high-value equipment due to their significant precious metals content while other types of equipment, such as household appliances, may fall into lower categories. Understanding the precious metals content of different equipment is essential for efficient e-waste management, as it allows for targeted extraction methods and maximizes resource recovery.

Table 10: Classification of Equipment Regarding Precious Metals Content

Equipment	Precious metal contents			Remarks
	High	Medium	Low	
Radio				Precious metals include Ag, Au, Pd, and Pt.
CRT Monitors				
CRT TV				
Flat Panels				
Laptop				
Desktop				
iPad				
Mobile Phones				
Projectors				
Telecom				
Printers				
Alarm Devices				
Mobile Network Stations				

The **hazardous materials that exist in WEEE fractions** are classified as follows:

- **Heavy metals** such as lead, mercury, cadmium, tin, antimony, and americium (a radioactive element used in smoke detectors) are hazardous metals despite their value, and they should be handled with due care.
- **Brominated Fire Retardants** are materials that exist within plastic inside some e-waste fractions. They are classified as POPs by the Stockholm Convention[3]. Like all POPs, these chemicals possess toxic properties, resist degradation, and bioaccumulate. They are transported through air, water,

[3] Revised draft guidance for the inventory of poly-brominated diphenyl ethers under the Stockholm Convention, March 2015

and migratory species, across international boundaries, and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems.

- **UPOPs** (mainly polychlorinated dibenzo-p-dioxin and –furan) are emitted during the burning of plastic, e.g., from copper cables.
- **Liquid hazardous substances** used in processing the fractions such as sulphuric acid, nitric acid, and hydrochloric acid.