



E-Waste Management Solution Guidance

Authors: Robert Simpson, Yumiko Abe, Mariannick Bossut, and Sebastien Soulier

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This solution and guidance material has been developed with the contribution of Innovation Norway for the IOM E-waste Project. The IOM E-waste Project focuses on creating a circular economy for e-waste in displacement settings. Solvoz developed various solutions to support sustainable procurement practices, focusing on the procurement aspect of the e-waste value chain to green humanitarian responses. As part of the Project, Solvoz has developed sustainability and circularity criteria for several product types and services, in consultations with numerous humanitarian and private actors. This is one of the outcomes of this partnership.

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1 E-WASTE MANAGEMENT SERVICE

In e-waste is an emerging but imminent problem worldwide. In most developing countries, e-waste legislation is still at the development stage but the capacity to properly treat e-waste is developing steadily. It is important to check the local e-waste legislative framework in the country of interest:

<https://www.gsma.com/mobilefordevelopment/e-waste-legislative-framework-map/>

In most countries, e-waste must be separated from other solid waste due to its toxic nature; hence, humanitarian organisations must respect the local regulations and plan the e-waste management strategy accordingly.

1.1 GUIDANCE FOR E-WASTE MANAGEMENT SERVICE

E-waste generated in displacement settlements can be correctly managed if it is correctly collected (refer to « E-waste collection guidance » for more information). It is recommended to trade the collected e-waste with local scrap dealers, but there will always be a certain quantity of e-waste that cannot be traded for economic values. Such non-valuable e-waste must be managed separately.

The following guidance provides the information required to contract a waste management service for non-valuable e-waste in displacement settlements. The guidance is targeted at the organisations that run and organise such settlements and need to contract an e-waste management partner.

1.1.1 Off-site e-waste management

It is recommended that the contracted service provider is offsite (not in the camp) and an authorised e-waste management site. Such a facility must comply with the national laws and regulations with regard to transporting, handling, processing, and recycling of e-waste. A list of e-waste management facilities of some African countries is compiled by CLASP and provided by EEP Africa although the list is not exhaustive:

<https://eepafrica.org/resources/e-waste-toolkit/recycling-facilities/>

1.1.1.1 Service Agreement

Waste treatment agreement must be signed between the service provider (e-waste treatment facility) and the service contractor (humanitarian organisations or product supplier). Such contract ideally includes an agreement on e-waste transport from waste collection points on a regular basis to avoid accumulation of e-waste in displacement settlements. The e-waste must be prepared according to the specifications given by the service provider.

1.1.1.2 Transport of e-waste

E-waste transport is a regulated activity in most countries, so the service provider must respect the local regulations. Local regulations can be found in GSMA site, so the contracting organisation must identify the local regulations regarding e-waste transport to assure the compliance to the local laws.

Where transport is possible and safe, storing e-waste in safe transportable containers will save time and safety for handling e-waste.

<https://www.gsma.com/mobilefordevelopment/e-waste-legislative-framework-map/>

1.1.1.3 E-waste treatment facility

The facility must comply with national and/or local laws and regulations specifically relevant to handling, processing, and recycling of e-waste, and proper authorization by all appropriate governing authorities to perform such handling, processing, and recycling.

1.1.1.3.1 Safety measures

The e-waste management facility must implement appropriate measures to safeguard occupational and environmental health and safety. The following measures are recommended:

- Environmental health & safety (EH&S) training of personnel, including training with regard to material and equipment handling, worker exposure, controlling releases and safety and emergency procedures.
- Documentation that completion of an EH&S audit is completed and certified by a competent internal or external auditor on a periodic basis (generally annually).
- The facility must manage all materials to minimize adverse exposures to workers and releases to the environment.
- The facility must provide appropriate personal protection equipment (PPE) to workers.

1.1.1.3.2 Hazard and accident contingency plan

The e-waste management facility should implement appropriate measures for potential hazard caused by the operation. The following measures are recommended:

- Written hazardous materials identification and management plan.
- The facility must establish a system for identifying and properly managing components that if waste may be hazardous (e.g., circuit boards, batteries, CRTs, mercury phosphor lamps, etc.) that are removed from e-waste during dismantling and treatment operations.
- Written plan for reporting and responding to exceptional pollutant releases, including emergencies such as accidents, spills, fires, and explosions.
- Maintenance of Commercial General Liability Insurance or equivalent corporate guarantee for accidents and other emergencies as required by local regulations.

1.1.1.3.3 Inventory monitoring

Inbound and outbound materials arising from the collected e-waste must be safely stored and monitored. The following practices are recommended:

- Storage areas must be adequate to hold all processed and unprocessed inventory.
- The facility must use a regularly implemented and documented monitoring and record keeping program that tracks inbound material weights (total) and outbound material weights (total to each destination).
- The facility must keep records of transactions that involve the export of materials to a foreign country (directly or indirectly through downstream market contractors)

1.1.2 On-site e-waste management (temporary management)

E-waste is a health and environmental threat. E-waste must be managed properly to ensure communities and the environment are not adversely impacted.

If the transfer of collected e-waste to an authorised facility is not possible (low volume of e-waste for a transport, no e-waste treatment facility in reasonable distance nor in the country, etc), and/or if there are regional regulations that prohibit the transfer of hazardous waste such as e-waste, which prevent the sound and sustainable e-waste management in countries without proper e-waste treatment facilities, e-waste must be stored and managed on-site until the situation changes in these situations. Some African regions are in discussion of lifting a transboundary transport ban for certain classes of waste to facilitate the waste management.

1.1.2.1 On-site storage

The service provider must store e-waste on-site in waterproof containers or on roofed shelves with where there is a future intention to transfer the accumulated e-waste to an authorised facility. If off-site e-waste treatment is not possible, then safe storage is the most safe and sustainable on-site e-waste management policy although such storage area must be locked to prevent access to the general public or the theft of e-waste.

1.1.2.2 On-site underground storage

If there is no secured space to store e-waste in a long-term, it is recommended to proceed on-site burying (underground storage or encapsulation) of the accumulated e-waste. All types of batteries must be removed from e-waste to be stored underground, and e-waste must be contained in a waterproof container such as plastic containers. If the removed batteries cannot be stored securely above-ground, they must be stored underground in a sand filled water-proof containers or lined pits (that do not allow runoff or seepage). The underground storage location must be registered and marked for a future recovery of e-waste. The location of the dump should be communicated to relevant authorities and community. The community needs to be aware of the dump's location of its the danger. The dump should have a fenced barrier to ensure people as well as livestock, animals cannot access the e-waste.

1.2 PROCUREMENT GUIDANCE

The actors of such an e-waste management service can be public. In this case, we would refer to the country public procurement process.

In general, the procurement guidance for waste management service provider will consider the procurement of **services**.

When searching for such a service provider, the buyer will consider the social, ethical, environmental and economics elements. He also needs to get a clear understanding of the downstream process (management of the waste) in order to select the provider.

Those considerations should be judged in the following:

- Service provided and clear visibility of the waste treatment
- Application of sustainable principles by suppliers (CSR responsibilities)
- Economic evaluation (waste pricing mechanism)
- Monitoring mechanism

For each part, the guidance provides clear advises and will help the buyer team to develop the award process with recommended supplier selection criteria and weighting system. An example of the weighting and evaluation criteria is available in **Annex 6**.

1.2.1 Service provision

The requirements for service provision will provide the key criteria for supplier selection. Section 5.1 lists the possible specifications and information for the contracting of an e-waste management service provider.

The buyer needs to have a transparent and clear understanding on the waste management process at the downstream.

Key to any agreement is the clarification of those different elements, responsibilities of both parties, vendor and contractor and related costs and expected service level.

1.2.2 Supplier qualification and sustainability

In this part we advise the way to assess sustainability related to service providers, their ethical and social responsibilities and their compliance to commercial activities.

In general, E-waste management service provider may not have the same qualification as general product suppliers. However, we recommend selecting the vendor that has most of the qualifications described below.

1.2.3 Registration

The supplier should have an active business registration in its country of operation. The business registration in most countries can be checked against publicly available databases. Similarly, a tax registration for value added taxes (VAT) or goods and services taxes (GST) should be registered to the supplier. This will ensure the buyer organization can deduct taxes if where possible as a charitable organization.

1.2.4 Financial audits and outstanding obligations

The buyer should request the audited financial statement of the supplier and information on its major suppliers and customers. A financially secure supplier with many customers is likely to be a lower risk partner to engage with. Service providers with significant outstanding obligations, debt or significant commitments for large contracts compared to the size of the company also pose a risk.

1.2.5 Litigation

Companies that are involved in **litigation** proceedings may pose a risk in being able to fulfil their obligations as well as offer an insight into the organization's reputation.

1.2.6 Code of conduct and certification

Many E-waste management service providers in low- and middle-income countries do not apply for certification due to cost or accessibility to certification processes. Service providers typically **will not** have the resources to undertake certification processes. Buyers can support local organizations by not disqualifying them immediately due to a lack of certification and instead support the assessment of the service provider during procurement process by the inclusion of criteria in the supplier evaluation that directly assess sustainability and ethical practices of the vendor.

However, where service provider is of a larger size then certification and signing onto the codes of conduct may be relevant. There are a number of codes of conduct and standards related to human rights, labor rights, the environment, and anti-corruption; that they roughly fall into roughly three categories:

- Voluntary registration to codes of conduct and practice
- Independent bodies certification and audits
- Buyer assessment or audits

Service providers can demonstrate their intent to be a sustainable organization by voluntarily signing up to a recognized charter, standard or code of conduct. Service providers with engagement in sustainable management can also be found in the UN Global Compact database. The code of conduct clarifies the expectation of supplier/buyer in terms of human rights, labor, environment, and anti-corruption measures. This includes amongst other principles, no forced or child labor, security and safety of workers, proper wages and benefits, rules on bribery or highlight conflict of interest.

Independent certification normally recognizes independent auditors or conduct audits themselves. The most well-known certifications are “Ecovadis”, “B-Corp” or ISO 26000. These certifications are obtained for a fixed period and undertaken by an independent auditor and describe the level of sustainability of the organization.

1.2.7 Supplier reputation

An important objective for all buyers is to create savings through their purchasing decisions. Equally important in the decision is to ensure that the service provider that you engage with is a good actor. You should always ask who the buyer’s main clients are and ask for references and follow-up. Similarly asking for recommendations in varied networks for good service providers is a good way to understand the service providers in the market and the operation of the market.

To give some examples of a good actor; a good supplier complies with good labor practices and human rights, does not harm the environment, its ownership is transparent (company directors and investors) and the company is **not** subject to contravening any embargoes and/or sanctions.

There are a number of databases that are searchable related to corporate and social responsibility, sanctions lists and transparency of companies. A suggested list of databases and relevant guidance can be found in **Annex 7**. It is always as minimum useful to search online (google the company) in the relevant languages to check the background of the organization.

1.2.8 Economic criteria

Prioritising local service provider should be considered when selecting the vendor for obvious operational convenience and reducing the environmental logistics footprint while supporting local economies.

When considering E-waste management service provider selection and costs related, there are several elements to take into account:

- Residual value per type of waste
- Cost of the collection and sorting
- Cost of the treatment per type of waste
- Agreement on incentive for collection
- Any others costs related to service of e-waste management activities

1.2.9 Agreements

In general, an e-waste management service provider agreement duration is 1 year. The longer the contract is, the better it is for both parties. The benefits would be the easiness of the waste management process and the habits to collaborate with same actors.

When defining an agreement, both parties need to stipulate:

- Type of e-waste covered by the contract
- Extent of responsibilities to avoid ambiguity by both parties
- Expectation from the buyer (segregation of accepted e-waste, the collection locations)
- Expectation from the e-waste collection service provider (corresponding to above criteria defined in section 5.1.)
- Price / duration / terms of payment / monitoring mechanism
- Invoicing and payment

1.2.10 Monitoring mechanisms

In order to monitor the e-waste management and so the related invoices (residual value), a mechanism needs to be established and applied by both parties.

The contractor needs to segregate the accepted e-waste and deliver to the accepted collection locations.

The service provider needs to have a clear weighting system at the point of reception to evaluate the residual value of the waste.

This mechanism provides a clear understanding of the process and the validation of the payment process.

1.3 SOLUTION EXAMPLE

1.3.1 Service contract, E-waste Treatment

1.3.2 Description

The following solution is for organizations and suppliers needing to contract an e-waste treatment service for the e-waste collected in refugee camps to avoid scattering of e-waste which is potentially toxic to human health and the environment. The collected e-waste must be safely handled to avoid any exposure to the population and to the environment. The e-waste should be transported and treated according to the local regulations by an authorised facility. If this is impossible (lack of local regulations and authorised facilities), the collected e-waste must be carefully stored underground on-site.

The solutions detail the key criteria for the e-waste **management service**. These are summarised in the criteria tab and guidance on these criteria is attached. The following main criteria should be considered as a basis for a **service contract**.

1.3.3 Criteria Quality/functional

Criteria	Values
Locations	E-waste reception center / Fixed e-waste bins

E-waste reception center	Storage space / E-waste bins / Security
Equipment	Desk / Weighing scale
Administration	Equipment / Register book
Monitoring	Monthly site visit / Reporting
Types of e-waste to be collected	Torches / Solar lanterns / Mobile phones / IT equipment / Other electrical equipment
Sorting of e-waste (optional)	Dismantling capacity / PPE requirements /
E-waste hand-in incentives	Subsidized by contracting organization / self-financing

1.3.4 Prerequisites

Prerequisite	Description
Authorised waste management entity	If there are local regulations and authorised waste management entities exist, the e-waste management service must be contracted to such an entity.

1.4 REFERENCE

<https://www.maine.gov/dep/waste/ewaste/tvcomputerguidelines.html>

STEP: Developing legislative principles for e-waste policy in developing and emerging countries (2018)

APPENDIX 1 SUSTAINABILITY CRITERIA

TOXICITY

The danger of toxic substances in electric and electronic products is widely recognised. The proposed sustainability criteria integrate the most acknowledged standards as criteria. However, the trend to avoid any level of chemical hazard will continue, and it is highly recommended to replace the traditional plasticisers, flame retardants and process chemicals by safer alternatives. GreenScreen® provides detailed up-to-date information on safer chemicals. The list of most commonly used chemical groups in electric and electronic products are provided by TCO certification as TCO Certified Accepted Substance List:

<https://tcocertified.com/industry/accepted-substance-list/>

Criteria and definitions

Electrical and electronic equipment and its spare-parts

Criteria	Definitions	Source
Complies with EU's RoHS Directive*	Conformance to RoHS Directive: heavy metals (Pb < 1000 ppm, Hg < 1000 ppm, Cd < 100 ppm, Cr(VI) < 1000 ppm), brominated flame retardants (PBB < 1000 ppm, PBDE < 1000 ppm), PVC softener for wire insulation (DEHP < 1000 ppm, BBP < 1000 ppm, DBP < 1000 ppm, DIBP > 1000 ppm).	NSF/ANSI 457 - 2019
List of declarable substances as specified by IEC 62474**	Manufacturer shall list the presence of IEC 62474 declarable substance groups and declarable substances in the product at or above the reporting threshold amounts stated in the IEC 62474 Standard.	NSF/ANSI 457 - 2019
Contains minimum allowable halogens in electric wires	Avoidance of electric cables containing halogenated compounds. Level of chlorine or bromine greater than 5000 ppm, or fluorine greater than 1000 ppm, based on the test method IEC 62321-3-1 and IEC 62321-3-2.	NSF/ANSI 457 - 2019
Contains minimum allowable halogens in plastics	Avoidance of halogenated compounds in plastic parts exceeding 25g. Level of chlorine or bromine greater than 5000 ppm, or fluorine greater than 1000 ppm, based on the test method IEC 62321-3-1 and IEC 62321-3-2. Exemptions for printed circuit boards.	NSF/ANSI 457 - 2019

* Annex 1 provides the basic information on EU's RoHS Directive.

** Annex 2 provides IEC 62474 listed substance information.

Batteries

Criteria	Definitions	Source
Contains minimum level of heavy metals	No more than 0.0005% (5 ppm) of mercury by weight and no more than 0.002% (20 ppm) of cadmium by weight.	EU Battery Directive***
Components with heavy metals clearly marked	Batteries with more than 40 ppm lead, 20 ppm cadmium or 5 ppm mercury must also be marked with the chemical symbol for the metal. Exemptions for fire alarms.	EU Battery Directive***

*** Annex 3 provides the basic information on EU's Battery Directive.

RECYCLABILITY

End-of-life product components can provide a valuable resource to produce a new product by means of recycling. Most commonly recycled materials on the African continent are metals and plastics. Metals have infinite recycling capacity whereas plastics have finite recycling capacity due to the degradation of polymerisation. In addition, metal recycling can take place at a very small and a local scale as small and affordable electric smelters are omnipresent on the African continent. However, recent movement on the continent allows simple plastics such as PET, PE, and PP (sometimes PS) to be recycled as post-consumer resins. The plastic recycling companies and the types of recycled polymers in African are

listed (non-exhaustive list) in the website of ENF Recycling:
<https://www.enfrecycling.com/directory/plastic-plant/Africa>

Criteria and definitions

Criteria	Definition	Source
Recycled materials used	Manufacturer shall declare the minimum percentage by weight of recycled content in the product and for each of the components as applicable. NSF 457-2019-1 (Article 6-1-1)	NSF/ANSI 457 - 2019
Product components' materials labelled if recyclable	Plastics shall be classified and indicated according to the ASTM International Resin Identification Coding System.	NSF/ANSI 457 - 2019

END-OF-LIFE MANAGEMENT

E-waste is an emerging problem worldwide. The humanitarian interventions shall not leave such waste as a negative heritage to the places of interventions as such waste contains hazardous substances that can endanger the human health and the environment. In most developing countries, the capacity to properly treat e-waste exists locally even if limited.

In order to assure the proper treatment of e-waste, international cross-sectorial partnership is necessary. Such a partnership involves manufacturers, suppliers, humanitarian organisations and agencies, as well as the local waste treatment actors, and the integration of the end-of-life management requirement for the humanitarian procurement of electric and electronic products is recommended.

Criteria and definitions

Criteria	Definition	Source
End-of-Life product take-back scheme available	Manufacturers shall provide a nationwide product take-back service for recycling and disposal.	NSF/ANSI 457 - 2019
Service contract with local waste management company	Manufacturers shall contract a local company for the disposal of end-of-life products.	

REPARABILITY

Reparable products contribute significantly to reduce environmental impacts and to develop local economy. The main objective is to provide multiple life stage to a product before reaching its end-of-life by designing the product that facilitates repairing and repurposing. The introduction of reparability in the product design is rather a new concept. Most vigorous effort was taken by France where Reparability Index (measurable indicator) as a consumer indicator was officially introduced to five categories of electronic equipment (smartphones, laptops, televisions, washing machines and lawnmowers) since 2021.

The reparability category of Sustainability Criteria has two sets of criteria; mandatory and recommended, to accommodate manufacturers to adapt in steps. In open-access space, organisations such as [ifixit.com](https://www.ifixit.com) provide repair manuals of various electronic equipment. The use of such open-space knowledge database is strongly encouraged particularly for the products procured by humanitarian and aid organisations as it will allow the sharing of repair know-how for those who are remotely located.

Mandatory criteria and definitions

Criteria	Definitions	Source
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User manual with trouble shooting guidance available	Manual should be in language(s) accessible to the target population, language level relevant to target group and contain graphic content for ease of use and understanding.	IEC 45554:2020
Availability of spare parts	IEC 62550:2017. Or whereas spare parts are defined as part which can replace a faulty, failed or worn-out replaceable part, the supplier must provide information on the list of spare parts with specifications and how to obtain them. All parts listed in « Frequently replaced parts » must be available as spare parts. If a special tool is required to replace a spare part, such a tool must be provided with the spare part.	IEC 45554:2020
Frequently replaced parts listed	Parts list should provide sufficient information on parts specification to support sourcing.	IEC 45554:2020
Repair manual**** available	Manual should be in language(s) accessible to the target population. The repair manual contains safety procedures, energy specifications, component list, repair tool list, diagnostic procedures, and repair procedures.	IEC 45554:2020

**** Annex 4 provides the list of minimum contents to be included in a repair manual.

Recommended criteria and definitions

Criteria	Definitions	Source
Designed for disassembly	Whereas disassembly is defined as a process whereby an item is taken apart in such a way that it could subsequently be reassembled and made operational (source: IEC 62542 definition), the item must be designed intentionally for repair, material recovery, value retention, and meaningful next use. Disassembly steps and manipulations must be counted and clearly documented.	IEC 45554:2020
Interoperable parts used	Interchangeable parts are parts (or components) that are, for practical purposes, identical. They are made to specifications that ensure that they will fit into any assembly of the same type.	TCO certification
Standard plugs, connectors, and charging solutions used	IEC plugs and connectors (IEC 62196, 60309, 60320, 60906-X, 62180-1-X), IEC charging solutions (IEC63002 based on the USB technologies)	TCO certification
No special tools required for disassembly and repair	Disassembly and repair sequences require only the common tools (listed in IEC 45554 Table A.3), or special tools are provided with the provision of spare parts.	IEC 45554:2020
Upgradeability	Where applicable, updates of firmware and software must be available.	TCO certification

LOCAL PRODUCTION

Locally produced or assembled products allow quick and local repair services, so it would be the ideal in the perspective of the development of a circular economy.

Criteria and definitions

Criteria	Definition	Source
Local production or assembly	A product is manufactured or assembled locally with a certificate of origin as proof.	

ANNEX 2 EU ROHS DIRECTIVE IN A NUTSHELL

EU's RoHS directive regulates the hazardous substances used in the manufacture of electrical and electronic equipment (EEE). It specifies maximum levels of 10 restricted substances that are toxic to the environment (risk of landfill pollution), and are dangerous when exposed during manufacturing, waste treatment, and recycling. These 10 restricted substances and their maximum levels are the following:

- Cadmium (Cd): < 100 ppm
- Lead (Pb): < 1000 ppm
- Mercury (Hg): < 1000 ppm
- Hexavalent Chromium: (Cr VI) < 1000 ppm
- Polybrominated Biphenyls (PBB): < 1000 ppm
- Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm
- Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm
- Benzyl butyl phthalate (BBP): < 1000 ppm
- Dibutyl phthalate (DBP): < 1000 ppm
- Diisobutyl phthalate (DIBP): < 1000 ppm

The scope of the original RoHS was expanded to cover all electrical/electronic equipment, cables, and spare parts with compliance required by July 22, 2019.

The list of exemptions is contained in Annex III and specific exemptions for medical devices and monitoring and control instruments are listed in Annex IV of ROHS II:

http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm.

Permanent exclusions from RoHS include the following: military equipment, space equipment, equipment designed to be part of another piece of equipment falling outside the scope of RoHS, large scale industry tools, large scale fixed installations, means of transport for persons or goods, non-road mobile machinery, active implantable medical devices, photovoltaic panels, equipment for research and development only available business to business.

There are on-going discussions (called RoHS Pack 15) taking place for the possible amendment and inclusion of seven new substances. The seven additional substances being assessed include:

- Beryllium
- Cobalt (dichloride and sulphate)
- Nickel (sulphate and sulfamate)
- Diantimony trioxide
- Indium phosphide
- Medium-Chain Chlorinated Paraffins (MCCPs)
- Tetra-bromobisphenol A (TBBP-A)

ANNEX 3: IEC 62474 DECLARABLE SUBSTANCE LIST IN A NUTSHELL

<https://incompliancemag.com/article/the-power-of-iec-62474-for-product-compliance-and-eco-design/>

The IEC 62474 Declarable Substance List (DSL) is an internationally recognised and consolidated list of substances that are subject to regulations. The DSL listed substances are considered as potentially present in electrical and electronic products and systems. Manufacturers and suppliers use DSL in their design and supply chain management to specify and control substances of interest.

Substances on the DSL are declarable, but not always hazardous or restricted. Entries may be included on the DSL because the substances and materials are valuable for recovery. This includes critical raw materials (CRMs) which are starting to appear in regulations that require reporting to assist in recycling.

The DSL and exemption lists are available online from the IEC 62474 database at <http://std.iec.ch/iec62474>.

ANNEX 4 EU BATTERY DIRECTIVE IN A NUTSHELL

All batteries and accumulators, and waste batteries and accumulators, regardless of type or application, are covered under the EU Battery Directive (2006/66/EC and Amendment 2013/56/EU: https://ec.europa.eu/environment/topics/waste-and-recycling/batteries-and-accumulators_en). The Directive specifies the following:

Chemical symbols shall only be mentioned if batteries contain one or more of the heavy metals above the following limits: 0,0005 % mercury (Hg), 0,002 % cadmium (Cd) or 0,004 % lead (Pb). The chemical symbols must be accompanied by the crossed-out wheeled bin logo.

The capacity label requirement is only applicable for rechargeable, portable and automotive batteries (more information on [Regulation \(EU\) 1103/2010](#)).

The mercury restriction for batteries is less than 0,0005%. An exception is made for button cells: a mercury content less than 2% was allowed until 1 October 2015 (more information on [Directive 2013/56/EU](#)).

The mercury restriction for automotive batteries is stated in the End-of-Life Vehicles (ELV) (more information [Directive 2000/53/EC](#)).

The cadmium restriction for portable batteries is less than 0,002%. The restriction did not apply to battery packs for cordless power tools until 31 December 2016.

Medical devices/equipment and alarm/emergency systems are excluded for cadmium restrictions.

The EU is preparing new battery regulations which are expected to come into force in 2022 - 2023. The new regulations will envisage a circular economy of batteries and set sustainability requirements by requiring more information to be publicly available, enhanced traceability of batteries, increased recycling and reuse of batteries, and increased use of recycled raw materials. More information can be found:

[https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2021\)689337](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2021)689337)

ANNEX 5: REPAIR MANUAL CONTENT RECOMMENDATIONS

Repair manual must be available publicly either on the manufacturer's or the supplier's website, or on the open-source website dedicated for the development of repair culture such as ifixit.com so that repair professionals as well as local suppliers and users have access to such information.

The repair manual does not have specific format or technical requirements, but it is expected to contain the following topics.

SAFETY PROCEDURES

Nothing is more important than safety. The repair manual must provide safety measures to avoid accidental electrocution and other injuries. In addition to personal safety, procedures to ensure equipment safety must be provided.

ENERGY SPECIFICATIONS

Power, voltage, and current used by the product must be clearly specified.

COMPONENT LIST

In order for a repair person to understand the product, it is essential to provide a list of components and component drawings. In addition, their placement can be shown in diagrams for a better understanding. For products containing multiple active components, it is advised to provide a block diagram as well as wiring and connection diagrams. The list must contain the specifications of the component (if generic component can be used to replace the original broken component) or the product number (if the component is specific to the product) so that a repair person can source a spare part.

LIST OF REQUIRED REPAIR TOOLS

Required repair tools must be clearly named with their specifications if necessary. If a special tool is required, it is the responsibility of the manufacturer to provide such tool(s) to each local supplier.

DIAGNOSTIC AND TESTING PROCEDURES

It is recommended to provide an overall approach to troubleshooting techniques so a repair person can understand the global and logical process of the product. An effective way to present the overall approach is by providing a flow chart with "yes or no" options that leads to identify the cause of fault. It is also helpful to provide testing procedures (if any) to confirm the cause of the fault. In addition, if the use of basic test equipment (digital multimeters, capacitance checker, etc) can assure the safety and the diagnostic, it must be listed in the diagnostic section.

REPAIR SEQUENCES AND PROCEDURES

Each repair sequence must contain a specific disassembly sequence to remove the component to be repaired or exchanged and a step-by-step explanation of repair procedures. If applicable, instructions for installation of relevant software and firmware must be provided. It is also useful to indicate where possible the level of difficulty of each repair sequence so the user will determine if it is self-repairable or not.

ANNEX 6: PROCUREMENT EVALUATION CRITERIA.

Proposed evaluation criteria and weighting for the procurement award process is an example. Your procurement team and tender committee should discuss what are the key requirements for the tender and weighting before formal engagement with suppliers.

E-WASTE MANAGEMENT

Parameter	Criteria	Weighting Level
Service score	Range of waste collected	High
	Range of waste treated	
	Treatment methods	High
	Staff experience and skills	High
	Equipment, facilities and security	Medium
Economical score	Incentive and subsidy schema	high
	Service fees and direct charges	Medium
Sustainable criteria	Sustainable and safe working practices	High
	Level of dangerous and toxic material usage	High
	Storage of dangerous materials	High
	Waste management practices	High
Company reliability	Sustainable engagement (certification, code of conduct or equivalent)	High
	Certifications for waste management	
	References	Medium
	Financially stable	Medium

ANNEX 7: PROCUREMENT REFERENCES

DUE DILIGENCE CHECKS

For screening the main sources are

- <https://sanctionssearch.ofac.treas.gov/>
- <https://webgate.ec.europa.eu/europeaid/fsd/fsf>
- B2B Supplier/
- Buyer Blacklist (SBBL)

Litigation check depends per country whether it is public data and easily accessible.

Paid databases

- <https://www.reprisk.com>
- <https://www.sustainalytics.com/> basic score is searchable, but again only stock listed companies)
- <https://www.msci.com/our-solutions/esg-investing/esg-ratings>, (there are many more).

STANDARDS, AUDITS AND CHARTERS

- ISO 2600 & 26001
- Global compact
- Ecovadis
- B-Corp

Solvoz

