



SUSTAINABLE  
RECYCLING  
INDUSTRIES

# Conformity Assessment of WEEE Operations



HANDBOOK FOR THE DEVELOPMENT  
AND IMPLEMENTATION OF  
A CONFORMITY ASSESSMENT SCHEME

JUNE 2025



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# Table of contents

Terms and definitions .....	5
Acronyms .....	7
Tables .....	8
Figures .....	9
Executive summary .....	10
<b>1 Introduction .....</b>	<b>11</b>
1.1 Motivation .....	11
1.2 Aim and objectives .....	11
1.3 Scope .....	12
<b>2 WEEE characteristics .....</b>	<b>13</b>
2.1 Material composition .....	13
2.2 Basic and precious metals .....	14
2.3 Hazardous substances .....	14
2.4 CO <sub>2</sub> benefits of the recycling of secondary metals from WEEE .....	16
<b>3 WEEE value chain .....</b>	<b>17</b>
3.1 Overview .....	17
3.2 Actors in the WEEE value chain .....	18
3.3 Technical and environmental requirements .....	19
<b>4 WEEE treatment standards .....</b>	<b>24</b>
4.1 Classification of standards in the context of legislation .....	24
4.2 Essential elements of a WEEE management standard .....	24
4.3 Overview on international WEEE standards .....	25
4.4 ISO 59014 .....	26
4.5 National WEEE standards in the Global South .....	27
<b>5 Conformity Assessment Scheme .....</b>	<b>28</b>
5.1 Aims and objectives .....	28
5.2 Requirements of Conformity Assessment Schemes .....	29
5.3 Operational models .....	32
5.4 Accreditation .....	35
<b>6 Conformity assessment .....</b>	<b>36</b>
6.1 Why WEEE conformity assessments? .....	36
6.2 Audit procedures .....	36
6.3 Conformity assessment .....	40
6.4 Audit techniques .....	41
6.5 Main documents of a CAS .....	43
6.6 Design features of audit protocols .....	44
6.7 Code of Conduct for auditors .....	45

	<b>Bibliography .....</b>	<b>48</b>
<b>7</b>	<b>Annex 1: Example of an audit protocol .....</b>	<b>49</b>
<b>7.1</b>	Information on the Operator and the Treatment Plant .....	51
<b>7.2</b>	Status of Implementation of Deviations .....	53
<b>7.3</b>	Administration and Organization .....	54
<b>7.4</b>	Infrastructure and Technology .....	58
<b>7.5</b>	Material flow accounting .....	65
<b>7.6</b>	Final provisions .....	66
<b>8</b>	<b>Annex 2: Example of auditor training plan .....</b>	<b>67</b>
<b>8.1</b>	Training Concept .....	67
<b>8.2</b>	Training Curriculum .....	68

## Terms and definitions

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<b>Accreditation</b>	Accreditation is a formal recognition, issued by a third party, confirming that a conformity assessment body is competent, impartial, and operates consistently when performing specific conformity assessment activities.
<b>Accreditation Body</b>	An accreditation body is an authoritative organization responsible for granting accreditation.
<b>Attestation</b>	Attestation refers to the issuance of a statement, based on a decision, which confirms that specific requirements have been met.
<b>Audit</b>	An audit is a process used to gather and objectively evaluate relevant information about a conformity assessment object to determine the extent of compliance with specified requirements.
<b>Batch test</b>	A batch test is a standardized procedure where a definite and well-defined amount of WEEE or fractions thereof is processed to determine the composition of the resulting output fractions, the recycling rate and de-pollution performance.
<b>Certification</b>	Certification is a third-party attestation related to a conformity assessment object, excluding accreditation.
<b>Conformity Assessment</b>	Conformity assessment involves demonstrating that specific requirements have been fulfilled.
<b>Conformity Assessment Body</b>	A conformity assessment body is an organization that performs conformity assessment activities, excluding the act of accreditation.
<b>Conformity Assessment Scheme/ Conformity Assessment Programme</b>	A conformity assessment scheme (or programme) consists of a set of rules and procedures that define the objects of the assessment, identifies the requirements, and provides a methodology for performing the assessment.
<b>Conformity Assessment System</b>	A conformity assessment system includes a set of rules and procedures used to manage conformity assessment schemes.
<b>Declaration</b>	A declaration is an attestation made by the first party, usually the supplier or manufacturer.
<b>Designation</b>	Designation is a governmental authorization allowing a conformity assessment body to perform specific assessment activities.
<b>Depollution</b>	Depollution (or decontamination) is a selective treatment during which certain substances, mixtures and components which pose a risk to human health or the environment are removed from the WEEE stream.
<b>First-party Conformity Assessment Activity</b>	A first-party conformity assessment activity is one performed by the individual or organization that supplies or is the object of the assessment.
<b>Impartiality</b>	Impartiality means maintaining objectivity in the outcome of a conformity assessment activity.
<b>Independence</b>	Independence refers to the freedom of a person or organization from the control or influence of others.
<b>Inspection</b>	Inspection involves examining a conformity assessment object to determine its compliance with either detailed or generally accepted requirements based on professional judgment.
<b>National Standards Body</b>	A national standards body (NSB) generally refers to a standardization organization that is that country's member of the ISO.
<b>Object of Conformity</b>	An object of conformity assessment is any entity to which specific requirements are applied.

<b>Assessment Recognition</b>	Recognition is the acknowledgment of the validity of a conformity assessment result provided by another entity.
<b>Sampling</b>	Sampling is the selection or collection of material or data related to a conformity assessment object.
<b>Second-party Conformity Assessment Activity</b>	A second-party conformity assessment activity is conducted by a person or organization that has a user interest in the object of assessment.
<b>Standardization Body</b>	A standardization body is an organization recognized for its activities in developing and maintaining standards. This includes international, regional, national, or sector-specific bodies engaged in standardization work.
<b>Standards Developing Organization</b>	A standards developing organization (SDO) is an industry- or sector-based organizations that develops and publishes industry specific standards.
<b>Subsistence activities</b>	A subsistence activity is an activity that provides typically self-employed individuals with the minimum to subsist.
<b>Surveillance</b>	Surveillance refers to the systematic repetition of conformity assessment activities to maintain the validity of a conformity statement.
<b>Technical Standard</b>	A technical standard is a publicly accessible document created through the collaboration and consensus of interested parties, reflecting scientific and technical knowledge and adopted by a recognized body for the public's benefit.
<b>Testing</b>	Testing involves determining one or more characteristics of a conformity assessment object according to a set procedure.
<b>Third-party Conformity Assessment Activity</b>	A third-party conformity assessment activity is one carried out by a person or organization that is independent from both the provider and the user of the object being assessed.
<b>Validation</b>	Validation is the confirmation, through objective evidence, that specified requirements have been plausibly fulfilled for a specific intended use or application.
<b>Verification</b>	Verification is the confirmation, through objective evidence, that specified requirements have been truthfully fulfilled.

## Acronyms

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<b>BFR</b>	Brominated Flame Retardants
<b>CA</b>	Conformity Assessment
<b>CAS</b>	Conformity Assessment Scheme
<b>CAB</b>	Conformity Assessment Body
<b>CRT</b>	Cathode Ray Tube
<b>DFFE</b>	Department of Forest, Fishery and the Environment (from South-Africa)
<b>EHS</b>	Environment, Health and Safety
<b>Empa</b>	Swiss Federal Institute for Materials Science and Technology
<b>EPA</b>	Environmental Protection Agency (from Ghana)
<b>EPR</b>	Extended Producer Responsibility
<b>FPD</b>	Flat Panel Display
<b>Icontec</b>	Instituto Colombiano de Normas Técnicas
<b>Inacal</b>	Instituto Nacional de Calidad (from Peru)
<b>NDA</b>	Non-Disclosure Agreement
<b>NSB</b>	National Standardization Body
<b>PCB</b>	Polychlorated Biphenyl
<b>POP</b>	Persistent Organic Pollutants
<b>PRO</b>	Producer Responsibility Organization
<b>PWB</b>	Printed Wiring Boards
<b>SDO</b>	Standards Developing Organization
<b>Seco</b>	Swiss State Secretariate for Economic Affairs
<b>SOP</b>	Standard Operating Procedures
<b>SRI</b>	Sustainable Recycling Industries
<b>WMRA</b>	Waste Management Regulatory Authority (from Egypt)
<b>WRF</b>	World Resources Forum

## Tables

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<b>Table 1</b>	Average material composition of different WEEE categories (main components) .....	13
<b>Table 2</b>	Average metal content of different devices .....	14
<b>Table 3</b>	Hazardous substances contained in different WEEE categories and related risks .....	15
<b>Table 4</b>	Key hazardous substances contained in WEEE .....	15
<b>Table 5</b>	CO <sub>2</sub> -Footprint of primary and secondary production of base and precious metals .....	16
<b>Table 6</b>	Main requirements for collection and handling .....	19
<b>Table 7</b>	Main requirements for manual dismantling, depollution and storage .....	20
<b>Table 8</b>	Main requirements for advanced processing .....	23
<b>Table 9</b>	Overview on international WEEE standards .....	25
<b>Table 10</b>	Overview on national WEEE standards .....	27
<b>Table 11</b>	Aims of a conformity assessment scheme .....	28
<b>Table 12</b>	Structural requirements of a Conformity Assessment Scheme of WEEE operations .....	30
<b>Table 13</b>	Resource requirements of a Conformity Assessment Scheme of WEEE operations .....	30
<b>Table 14</b>	Process requirements of a Conformity Assessment Scheme of WEEE operations .....	31
<b>Table 15</b>	Management system requirements of Conformity Assessment Schemes .....	31
<b>Table 16</b>	Pre-audit activities .....	37
<b>Table 17</b>	On-site audit activities .....	38
<b>Table 18</b>	Post-audit activities .....	39
<b>Table 19</b>	Critical deviations, minor deviations, hints and recommendations .....	40
<b>Table 20</b>	Overview on typical and most common audit techniques of WEEE operations .....	42
<b>Table 21</b>	Main documents of conformity assessment schemes .....	43
<b>Table 22</b>	Code of conduct for auditors in audit preparation .....	45
<b>Table 23</b>	Code of conduct for auditors in audit implementation .....	47
<b>Table 24</b>	Schedule day 1 .....	68
<b>Table 25</b>	Schedule day 2 .....	69
<b>Table 26</b>	Schedule day 4 .....	70

## Figures

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<b>Figure 1</b>	WEEE components containing hazardous substances (examples) .....	16
<b>Figure 2</b>	WEEE value chain from collection to end-processing .....	17
<b>Figure 3</b>	Overview on actors in the WEEE value chain .....	18
<b>Figure 4</b>	Fractions from manual disassembly with hazardous potential .....	21
<b>Figure 5</b>	Impressions of a manual dismantling workshop .....	21
<b>Figure 6</b>	Impressions of a large WEEE plant for advanced processing .....	22
<b>Figure 7</b>	Integrated smelting plant for WEEE components with precious metals .....	22
<b>Figure 8</b>	Essential elements of a WEEE management standard .....	24
<b>Figure 9</b>	Conformity assessment scheme driven individually by competing PRO .....	32
<b>Figure 10</b>	Conformity assessment scheme driven individually by different PRO .....	33
<b>Figure 11</b>	Conformity assessment scheme driven by a group of PROs .....	33
<b>Figure 12</b>	Conformity assessment scheme driven by a PRO association .....	34
<b>Figure 13</b>	Conformity assessment scheme driven by a national standardization body .....	34
<b>Figure 14</b>	Conformity assessment scheme driven by a government authority .....	35
<b>Figure 15</b>	Conformity assessment advantages and disadvantages perceived by WEEE operators .....	36
<b>Figure 16</b>	Overview on audit procedures .....	37
<b>Figure 17</b>	Overview on typical and most common audit techniques of WEEE operations ....	42
<b>Figure 18</b>	Example of an audit protocol frontpage and table of content .....	44

# Executive summary

This handbook serves as a comprehensive guide for the development and implementation of Conformity Assessment Schemes (CAS) in the management of Waste Electrical and Electronic Equipment (WEEE). Developed under the framework of the Sustainable Recycling Industries (SRI) programme, the document responds to the rapidly growing global e-waste stream by promoting standardized, transparent, and accountable recycling practices.

The core motivation behind this work lies in addressing the dual nature of WEEE: its significant potential as a source of valuable secondary raw materials and its risk as a carrier of hazardous substances harmful to human health and the environment. The handbook stresses that without robust regulatory mechanisms, including clear technical standards and effective conformity assessments, many recycling processes – especially in developing countries – remain unsound, unsafe, and environmentally damaging.

Structured in six chapters, the document introduces the technical, environmental, and procedural fundamentals of WEEE management. It explores the value chain from collection to final recovery, outlines international and national treatment standards, and presents operational models for CAS. These models vary from systems led by Producer Responsibility Organizations (PROs) to those administered by governmental authorities or national standardization bodies.

A significant portion of the handbook is dedicated to practical guidance on audit preparation, execution, and follow-up. It defines key compliance terms, describes standard audit techniques (e.g. document review, site tours, interviews, sampling), and offers templates and protocols to support implementation. Furthermore, it provides criteria for assessing conformity levels, managing deviations, and issuing certifications – while ensuring impartiality, confidentiality, and continuous improvement remain central to the audit process.

The handbook aims to foster a level playing field in the WEEE recycling sector, particularly in emerging economies, by aligning technical standards with actionable assessment mechanisms. In doing so, it supports environmental sustainability, resource efficiency, and safe working conditions, contributing to a more circular and responsible global electronics economy.

**Keywords:**

WEEE, e-waste, WEEE recycling, conformity assessment, conformity assessment scheme, audit, Producer Responsibility Organization, Norms and Standards

# 1 Introduction

## 1.1 Motivation

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The global surge in economic growth and digitalization has significantly increased the generation of Waste Electrical and Electronic Equipment (WEEE), commonly known as e-waste. As electronic devices become more integral to daily life, the amount of discarded equipment is growing at an unprecedented rate. According to the Global E-waste Monitor 2024, an estimated 62 million metric tons (Mt) of e-waste were produced worldwide in 2022 – equating to an average of 7.8 kg per person (Baldé, C.P. et al., 2024). This marks a 15% rise in just three years compared to 53.6 Mt reported in 2019 (Forti, V. et al., 2020)

However, formal collection and recycling systems have not kept pace with this growth. In 2022, only 22.3% of total e-waste – around 13.8 Mt – was managed through regulated recycling channels (Baldé, C.P. et al., 2024). This figure fluctuates widely between countries, largely depending on national levels of economic development, regulatory enforcement, and formal sector infrastructure.

E-waste presents a dual challenge. On one hand, it contains valuable secondary raw materials that, if recovered properly, can contribute to resource security, increased resource management efficiency and meeting circular economy goals. On the other hand, it includes hazardous components that pose serious risks to human health and the environment, especially when processed through informal or unregulated methods. Uncontrolled recycling practices can lead to toxic exposure, environmental contamination, and the loss of critical raw materials.

## 1.2 Aim and objectives

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Regulating technical processes in the e-waste recycling sector through clearly defined standards is essential to protect human health and ensure the availability of secondary raw materials for future generations. The development of such standards must be accompanied by robust monitoring and control mechanisms, typically implemented through conformity assessment schemes.

Over the past decade, experience has shown that creating a level playing field amongst WEEE management operators of various sizes and set-ups is crucial for fostering sustainable investment in the e-waste recycling sector. A well-regulated environment encourages the growth of high-quality recycling practices. This is particularly relevant in middle- and low-income countries, where regulatory frameworks and infrastructure often lag behind the rapidly increasing volume of e-waste. The absence of appropriate standards and enforcement mechanisms inhibits the sector's readiness for investment and limits its development potential.

A comprehensive regulatory framework must therefore incorporate state-of-the-art technical standards along with conformity assessment systems. The primary objective of a conformity assessment is to evaluate whether a treatment facility operates in compliance with defined technical and environmental criteria, and to measure its performance against specific treatment benchmarks. These benchmarks typically include both depollution efficiency and the recovery rates of valuable materials such as metals and clean technical plastics.

Conformity assessments are aligned with national or international treatment standards, and their design and implementation are guided by international best

practices, as outlined in various ISO standards (International Standardization Organization (ISO), 2020) (International Standardization Organization (ISO), 2012).

## 1.3 Scope

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This report presents a comprehensive overview of conformity assessment development approaches across all stages of Waste Electrical and Electronic Equipment (WEEE) management – from initial collection through to final processing or environmentally sound final treatment (including disposal and/or incineration). Understanding the potential impacts of these operations on both people and the environment throughout the value chain is essential.

To that end, the report emphasizes the importance of two core aspects: the material composition and properties of WEEE, and the technical challenges associated with processing. Extracting valuable secondary raw materials from the complex mixtures that comprise electrical and electronic equipment requires sophisticated methods. At the same time, components and substances that pose environmental, or health risks must be disposed of safely and in accordance with best practices.

In response to these challenges, the report is structured as follows:

- » **Chapter 2** explores material-related issues, providing insights into the diverse and complex composition of WEEE.
- » **Chapter 3** outlines the WEEE value chain, identifying key processes and actors involved from collection to end treatment.
- » **Chapter 4** details the requirements established by technical processing standards.
- » **Chapter 5** introduces the Conformity Assessment System that serves as a foundation for assessing compliance.
- » **Chapter 6** offers an in-depth description of the Conformity Assessment and audit process itself, illustrating how compliance with standards is verified in practice.

This structure ensures a holistic understanding of the WEEE management system and the role conformity assessment plays in safeguarding environmental and human health while supporting resource efficiency.

# 2 WEEE characteristics

WEEE contains a variety of different materials, the main components being plastics and various base metals such as iron, copper, aluminum, zinc, etc. In smaller quantities, the devices contain precious metals such as gold, silver, platinum and palladium, as well as toxic metals such as lead, mercury, cadmium, barium, strontium, etc. In addition to these hazardous substances, there are chlorinated and fluorinated substances such as PCB, CFC, PVC and brominated plastic compounds.

As such, WEEE presents a dual challenge: it contains valuable recyclable materials of commercial interest, but also hazardous substances that can endanger both human health and the environment. Improper handling, particularly in the absence of technical knowledge or safety measures, can result in serious consequences. The objective of WEEE treatment is therefore twofold: to recover valuable secondary raw materials while ensuring the safe and environmentally sound management of hazardous components. Achieving these goals requires complex and costly processes.

## 2.1 Material composition

The material composition of WEEE varies depending on the specific product and design. Table 1 shows the average composition of various WEEE categories. As can be seen from the table, the weight proportions of metals in the WEEE categories are very different. These are essentially the base metals iron, aluminum, copper, nickel and zinc. Precious metals and critical metals are not included in the proportions. Appliances with a low metal content generally have a higher plastic content. The composition has a significant influence on the yield that can be achieved by processing the appliances. In addition to the base metals, the precious metals play a major role here.

According to (Baldé, C.P. et al., 2017), up to 60 chemical elements are used in electrical and electronic appliances. Only a small number of these are currently recovered due to economic drivers, even though the recovery of additional elements would be technically possible.

*Table 1: Average material composition of different WEEE categories (main components)*

Category	Metals (%)	Plastics (%)	Glass	Other Materials (%)
Large Household Appliances	70-80	5-10	5-10	5-10
Small Household Appliances	50-60	20-30	5-10	5-15
IT & Telecommunications Equipment	50-60	20-30	10-15	5-10
Consumer & Entertainment Electronics	40-50	30-40	10-15	5-10
Lighting Equipment	30-40	10-20	40-50	5-10
Electrical Tools	60-70	15-25	5-10	5-10
Toys, Leisure & Sports Equipment	40-50	30-40	5-10	10-15
Medical Devices	50-70	10-20	10-20	5-10
Monitoring & Control Equipment	50-60	20-30	10-15	5-10
Batteries & Accumulators	50-60	5-15	10-20	10-30

## 2.2 Basic and precious metals

As presented in the previous chapter, WEEE contains up to 80% metals. Iron and aluminum are predominantly present in structural components and casings, while copper is found in cables, motors and coils. WEEE, which contains many electronic components, especially circuit boards and connectors, also contains a high content of the precious metals in specific components like gold, silver, platinum and others (Table 2). The highest content of precious metals can be found in IT equipment and consumer electronics which from an economic perspective makes such devices particularly interesting for recycling.

*Table 2: Average metal content of different devices (Sources: Blaser, F. et al., 2011, Sander, K. et al., 2018)*

Metals ▶	Fe	Al	Cu	Au	Ag	Pd
▼ Electronic devices	g/kg device			mg/kg device		
PC/Server	710	70	50	20	100	8
Laptops	100	120	50	20	126	9
Printers	350	10	20	-	-	-
Mobile phones	10	10	130	150	700	50
LCD-Television	410	50	30	4	27	2
LCD-Monitors	360	70	30	3	17	7

The e-waste monitor estimated the intrinsic value of precious metals in electrical and electronic devices at 55 million US dollars in 2016 and 57 million US Dollars in 2019 (Forti, V. et al., 2020). The lion's share of the critical raw materials<sup>1</sup> in WEEE that are not recovered today are the rare earth metals, in particular neodymium, dysprosium and praseodymium, which are contained in permanent magnets. Other metals in WEEE that are not or just little recovered are yttrium, lanthanum, cerium, holmium, rhenium and europium (Baldé, C.P. et al., 2024).

## 2.3 Hazardous substances

In addition to valuable substances, all WEEE categories also contain hazardous substances, which are usually found in very specific components (see Table 3 on page 15 and Figure 1 on page 16). The Basel Convention defines hazardous properties such as explosiveness, flammability, toxicity, infectivity, corrosiveness, toxicity, and ecotoxicity (Basel Convention). Hazardous substances have potential health effects on the employees involved and lead to environmental pollution affecting the local community and the environment if not handled and processed properly and in an environmentally compliant manner.

Material knowledge is therefore required when processing WEEE and suitable safety precautions must be taken. The selection of technologies has also a significant influence on the quality of pollutant separation and valuable materials recovery. The processing objective is to obtain the recyclable materials in the purest possible quality and at the same time to effectively remove the pollutants from the processes and dispose of them in an environmentally friendly manner.

*1) Critical raw materials are raw materials that are of major economic importance to the EU and for which there is a high risk of supply disruption due to concentration of resources and lack of high quality, affordable substitutes.*

**Table 3: Hazardous substances contained in different WEEE categories and related risks (Source: *European Commission; eWasteGuide.info*; adapted by the authors)**

Table 3 provides an overview of the occurrence of hazardous substances among the various WEEE categories. From the large number of hazardous substances that can be found in WEEE, some key substances that require special attention are highlighted in Table 4.

WEEE Category	Hazardous Substances	Risks
Large Household Appliances	Lead, mercury, brominated flame retardants (BFRs), PCBs, HFCs and HCFCs, asbestos	Toxicity, neurotoxicity, ozone depletion, climate change
Small Household Appliances	Lead, cadmium, mercury, BFRs, asbestos	Carcinogenic, toxic
IT & Telecommunications Equipment	Lead, cadmium, mercury, BFRs, arsenic, beryllium, barium	Heavy metal poisoning, reproductive harm
Consumer & Entertainment Electronics	Lead, cadmium, mercury, phthalates, BFRs, beryllium, barium	Toxicity, endocrine disruption
Lighting Equipment	Mercury, lead, PCBs, phosphor coatings	Neurotoxicity, environmental contamination
Electrical and Electronic Tools	Lead, cadmium, BFRs, PCBs	Heavy metal poisoning, environmental harm
Toys, Leisure & Sports Equipment	Lead, cadmium, phthalates, BFRs	Toxicity, developmental risks
Medical Devices	Mercury, lead, cadmium, radioactive substances	Radiation exposure, heavy metal poisoning
Monitoring & Control Equipment	Lead, mercury, cadmium, BFRs	Neurotoxicity, carcinogenicity
Batteries & Accumulators	Lead, cadmium, lithium, nickel, mercury	Fire hazard, toxicity

**Table 4: Key hazardous substances contained in WEEE**

Substance	Occurrence in devices and components	Environmental and health effects
Arsenic	semiconductors and LCD displays	highly toxic and carcinogenic
Asbestos	cooking stoves, heating plates, electricity distribution box, night storage heaters	highly toxic and carcinogenic (as barium chloride or barium carbonate)
Barium	CRT monitors	highly toxic and carcinogenic (as barium chloride or barium carbonate)
Beryllium	specialized PWB of medical and military devices	carcinogenic
Brominated Flame Retardants (BFRs)	plastic casings, circuit boards	disrupt hormones and are carcinogenic.
Cadmium (Cd)	rechargeable batteries, semiconductors	linked to kidney damage and cancer
HFCs and HCFCs	refrigerant circuits and insulating foams of cooling and freezing devices	ozone depleting, climate active
Lead (Pb)	solder, CRT monitors, and circuit boards	brain damage and developmental issues.
Lithium (Li)	Li-Ion batteries	flammable
Nickel (Ni)	CRT monitors	skin allergic, respiratory diseases
Mercury (Hg)	fluorescent lamps, LCD screens, mercury switches	affects the nervous system and can be fatal
Phthalates	plasticizers	linked to endocrine disruption and reproductive toxicity
Polychlorinated Biphenyls (PCBs)	older capacitors and transformers	highly toxic and persistent in the environment
Radioactive substances	Smoke detectors, old watches	radiation exposure (carcinogenic)

Figure 1: WEEE components containing hazardous substances (examples)



## 2.4 CO<sub>2</sub> benefits of the recycling of secondary metals from WEEE

The recycling of e-waste has a highly relevant environmental benefit, particularly on climate change. Table 5 shows the difference in CO<sub>2</sub> impact of primary and secondary production related to 1 t of the respective metal. It shows that the highest CO<sub>2</sub> savings of secondary production can be achieved for gold, silver, palladium and aluminum.

In addition to the above, the environmental benefits of formal e-waste recycling are further increased by the elimination of hazardous components through depollution and subsequent environmentally sound disposal. Also, the recycling of non-polluted plastics contributes to the overall benefit of e-waste recycling.

The material composition of e-waste varies widely among countries and regions. Additionally, depending on the client structure and the collection strategy, e-waste recyclers have different basket composition which enter their plant. Assessments of environmental benefits of e-waste recycling have been published in different studies<sup>2</sup>.

Table 5: CO<sub>2</sub>-Footprint of primary and secondary production of base and precious metals (Source: (Grimes, S, et al., 2016), Ecoinvent)

Metals		Primary production	Secondary Production	Factor
Aluminum	t CO <sub>2</sub> /t Al	3.83	0.29	13
Copper	t CO <sub>2</sub> /t Cu	1.25 – 1.57	0.44	2.8 – 3.6
Iron	t CO <sub>2</sub> /t Fe	0.7 – 1.67	0.7	1 – 2.4
Gold	t CO <sub>2</sub> /t Au	16'486	968	17
Silver	t CO <sub>2</sub> /t Ag	348	16	22
Palladium	t CO <sub>2</sub> /t Pd	5'247	515	10

2) See for example: <https://www.erecycling.ch/en/wissenswertes/wissensblog/oekobilanz-2023.html>

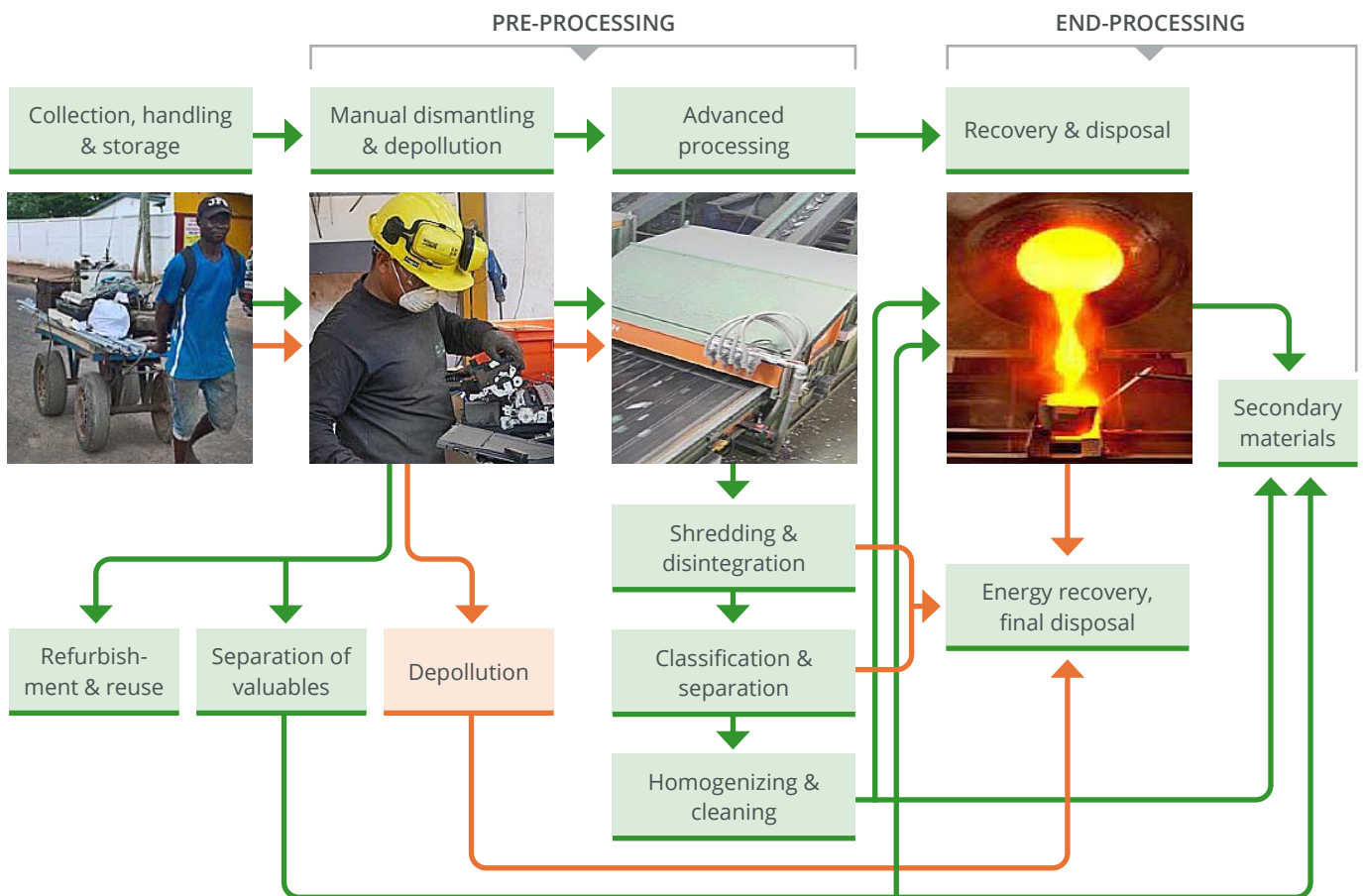
# 3 WEEE value chain

## 3.1 Overview

The conformity assessment of WEEE operations spans the entire value chain – from collection and logistics, through sorting and depollution, to the final recovery of materials or environmentally sound disposal. At each stage, adherence to technical standards and environmental requirements is assessed to ensure proper treatment of valuable and hazardous components. The goal is to maximize the recovery of secondary raw materials while minimizing health and environmental risks, supported by a structured Conformity Assessment System that guides and verifies compliance. Figure 2 shows the usual stages of WEEE processing along the value chain.

Figure 2: WEEE value chain from collection to end-processing.

Valuable ———  
Hazardous ———



### Collection, reception, handling and storage

Depending on the country's level of development, appliances are collected by individual waste collectors, who usually use simple means of transportation, or by companies that collect the appliances from collection points, wholesalers, companies or state institutions. Some of the collected appliances are temporarily stored, handled several times and finally handed over to a primary processor.

### Manual dismantling and depollution

The primary processor removes on the one-hand side valuable components that are easy to disconnect from the appliances, such as cables, and on the other side detaches components that contain harmful substances. The valuable and non-hazardous components are sent to an intermediate processor or are

either sent via a recovery process or directly to the secondary materials market. In some cases, devices that are suitable for further use in terms of age and functionality are sorted out and sent to the processes for preparation for reuse.

### Advanced processing

The remaining material, which is usually a composite mixture of various metals and plastics, is sent for further treatment. The composite materials are first shredded and then classified and separated using mechanical sorting processes. In some cases, they are also cleaned and homogenized. The residual material, which is usually a composite mixture of various metals and plastics, is sent for further treatment. In these processes, additional or further separation of harmful substances, e.g. plastics with hazardous additives, also takes place.

### Recovery and disposal

At the recovery stage, recyclable materials are converted into secondary materials. If this is not or not completely possible, the energy content of the remaining material can be recovered through thermal valorization. Harmful substances, mixtures and components removed during depollution are disposed of in an environmentally friendly manner.

## 3.2 Actors in the WEEE value chain

Figure 3: Overview on actors in the WEEE value chain (courtesy SRI South Africa; S. Karcher)

As shown in Figure 3 many actors are involved in the management of WEEE.

	Government	Regulatory authority, Lays the e-waste management regulatory framework for countries/regions.
	Municipalities	Carry out the overall waste management (incl. e-waste) at the local level. They choose the specific system to handle e-waste.
	Producers of EEE	Under EPR-based legislation, they organize, finance and operate e-waste take-back system, individually or collectively.
	Retailers	Should have a legal obligation to "take back". As the consumer touch-point for producers, retailers are often also their collection centres or take-back points.
	Transporting operators	They are responsible for the transport of e-waste, from one step to another of the whole value chain. Their responsibility also includes safe transporting avoiding any damage of e-waste which would carry to releasing of hazardous substances in the environment.
	Formal and informal collectors	Responsible for collection. Typically done in economically developed countries by formal small and medium collectors. In underdeveloped countries however mainly done by informal collectors.
	Collection facilities	Typically stationary repositories set up by municipalities or via retailers or recyclers for the collection of e-waste.
	Consumers of EEE	Should have a legal obligation to "bring back". Responsible for bringing their end of life, unwanted EEE or generated WEEE to a collection point. They are often considered the weakest link in the WEEE management chain. Unfortunately convenience of collection and the expectation to get paid for what is returned as waste is often the determining factor if they bring back their e-waste.
	Dismantling and shredding operators	Responsible for the proper management of e-waste, the recovery of valuables and safe extraction and further treatment of any potential pollutants and the proper disposal of any of the residual fractions.
	End-Processors	Industrial Recyclers are responsible for the recovery of fractions and delivery of a good quality second raw material.

Their interaction is of fundamental importance for the successful and efficient operation of a value chain. The roles and responsibilities are regulated in national and regional policies and legislation as well as in implementing provisions. These form the framework within which public or privately organized take-back systems operate in accordance with the EPR principle. The actors along the value chain should operate on equal conditions to avoid market distortions. Only in this way can a conformity assessment scheme offer actors a fair and uniform framework for assessing and, if necessary, sanctioning their activities.

### 3.3 Technical and environmental requirements

#### 3.3.1 Collection and handling

WEEE is collected at different points of generation. There are essentially three types of customer relationships: B2C, B2B, and B2A.

- » **B2C** refers to collection at public and private collection points where consumers drop off their devices for disposal.
- » **B2B** includes collection and pickup from business customers.
- » **B2A** refers to collection from public authorities and educational institutions.

Table 6 shows the requirements for environmentally sound collection of WEEE which apply to all points of origin.

Table 6: Main requirements for collection and handling

Aspect	Requirements
Collection facilities	Collection facilities must be suitable for all WEEE types to be collected to avoid breakage of sensitive devices.
Weatherproof covering	Covering should be weatherproof for all devices and components which have not yet been decontaminated.
Handling of devices with hazardous components or substances <sup>3</sup>	Devices shall be handled carefully to avoid damage and subsequent release of hazardous substances. They must be eventually transported separately and not mixed with other WEEE.
Spillage collection	Collection of liquids must be foreseen for devices like oil radiators.
Tipping	Devices with hazardous components or substances should never be tipped in an uncontrolled manner to avoid breakage and leakage of substances.
Recording and documentation	Data on collected devices must be recorded and documented along the categorization of the respective country legislation.

#### 3.3.2 Manual dismantling, depollution and storage

The proper manual removal of components with contaminants is an essential step in the entire value chain. This step ensures that the materials that are returned to the economic cycle are not contaminated in subsequent processes. It requires adequately trained personnel, and the efficiency of the removal of hazardous substances must be continuously monitored. Table 7 shows the requirements for manual dismantling and depollution.

3) e.g. refrigerators, mercury containing lamps, asbestos containing devices, radioactive devices, dental or medical equipment, military devices, screens and monitors

Table 7: Main requirements for manual dismantling, depollution and storage

Aspect	Requirements
Material reception	<ul style="list-style-type: none"> <li>• Incoming devices, components and materials must be registered and classified.</li> <li>• Non-WEEE and unknown or special devices need utmost care and must be separated from the main inflow (e.g. military, medical or dental devices).</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• Devices, components and materials where leakage is possible must be stored on impermeable surface.</li> <li>• All fractions resulting from dismantling and decontamination must be clearly separated and containers must be labeled in all cases.</li> <li>• Containerization must be adequate and consider potential health and environmental impacts.</li> <li>• Protective and access measures are needed in case of fire.</li> <li>• Separate and locked compartments for hazardous waste are needed.</li> <li>• Maximum storage quantities need to be considered for hazardous components and fractions.</li> </ul>
Opening of devices	<ul style="list-style-type: none"> <li>• Cables, printer consumables and casings must be removed in a first instance.<sup>4</sup></li> </ul>
Depollution	<ul style="list-style-type: none"> <li>• Minimum the following components need to be removed and stored separately: <ul style="list-style-type: none"> <li>• Batteries</li> <li>• Capacitors</li> <li>• CCFL backlights<sup>4</sup> (contained in FPD and fotocopiers)</li> <li>• Toner and ink cartridges</li> <li>• Mercury switches</li> <li>• Oils and fuels</li> <li>• Refrigerants (from cooling appliances)</li> <li>• CRTs</li> <li>• PWBs</li> <li>• contaminated plastics<sup>4</sup></li> <li>• components containing asbestos</li> <li>• components containing radioactive substances</li> <li>• valuable fractions<sup>4</sup>, e.g. interior cables, pure metals etc.</li> </ul> </li> </ul>
Spillage collection	<ul style="list-style-type: none"> <li>• Collection of liquids must be foreseen for devices like oil radiators.</li> </ul>
Quality control	<ul style="list-style-type: none"> <li>• Depollution efficiency must be regularly monitored through suitable quality control and monitoring tools.</li> </ul>
Internal flow of materials	<ul style="list-style-type: none"> <li>• The internal flow of devices, components and materials shall be optimized to avoid accidents.</li> </ul>
Adequate working conditions	<ul style="list-style-type: none"> <li>• Working conditions must consider ergonomic aspects, e.g. adequate tables, sufficient lighting, adequate tools etc.</li> </ul>
Adequate safety precaution	<ul style="list-style-type: none"> <li>• PPE must be available and worn in designated areas and for specific tasks (e.g. where exposure to potentially hazardous substances is high).</li> <li>• Fire extinguishers must be regularly controlled and maintained and their access must be ensured at all times.</li> <li>• First aid kits must be available and their access must be ensured at all times.</li> </ul>
Compliance with all applicable national and international legislation	<ul style="list-style-type: none"> <li>• Compliance with international and national legislation must be ensured and demonstrated.</li> <li>• Legally necessary permits and documents for waste shipment must be available.</li> <li>• Conformity with UN waste shipment regulations (ADR) must be ensured.</li> </ul>

4) For these fractions advanced treatment processes will apply

Some components and materials containing pollutants and recyclables can be removed in the subsequent processing steps. These include plastics containing pollutants and the backlights of flat screens, which are removed mechanically by specialized companies observing all safety precautions.

Figure 4 shows a rough subdivision into six groups of material classes that can be distinguished during manual disassembly. The focus is on the materials and components colored red, which are problematic or dangerous.

Figure 4: Fractions from manual disassembly with hazardous potential

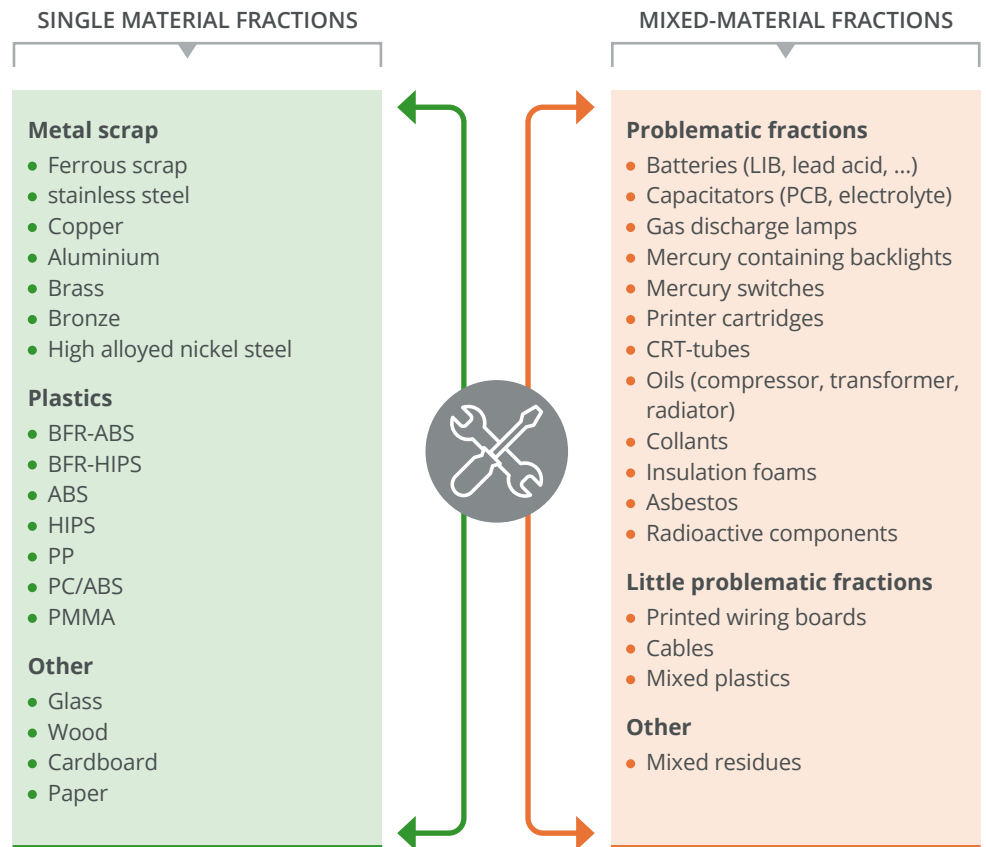
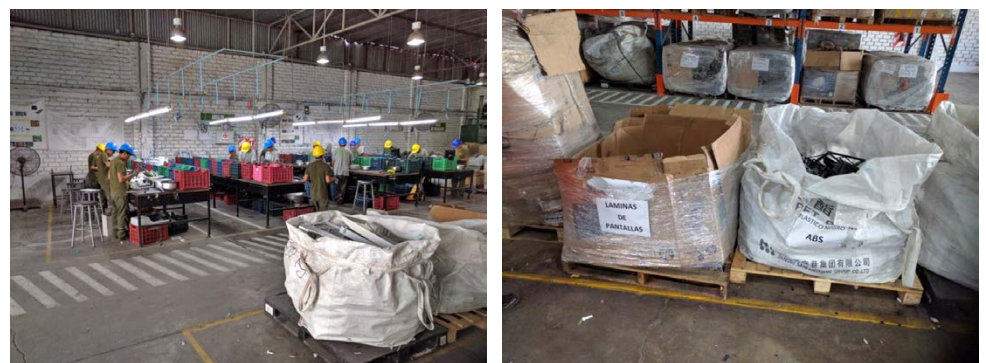


Figure 5: Impressions of a manual dismantling workshop



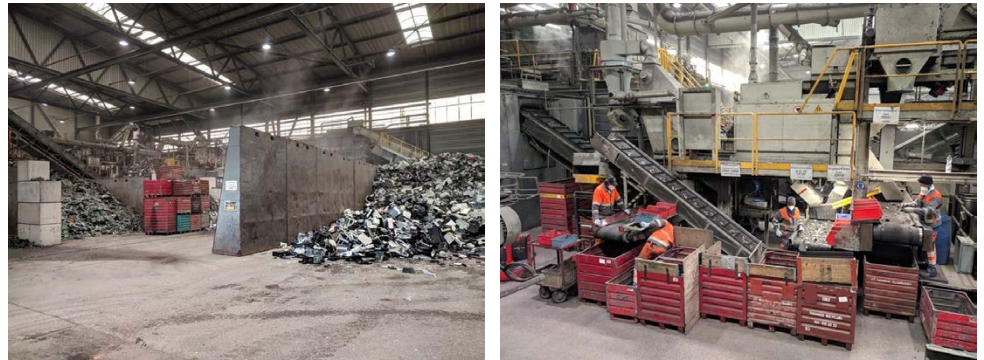
### 3.3.3 Advanced processing

Advanced treatment or advanced processing means any type of processing that involves physical or chemical processes with the aim of size reduction and subsequent separation of valuable materials and removal of hazardous and problematic materials.

The complex composition of the various electrical appliances does usually not allow for purely manual disassembly for the separation of the different ma-

materials. On the one hand, the connections between different materials often cannot be cut with conventional tools. On the other hand, mechanical processing is more efficient and cost-effective for high-volume and/or high labor costs. Therefore, advanced processing technologies are necessary, tailored to the input materials, which can shred the devices and thus largely dissolve the compounds. The resulting material mixtures must then be classified and separated. In some cases, additional homogenization or cleaning steps are necessary.

*Figure 6: Impressions of a large WEEE plant for advanced processing*



### 3.3.4 Recovery and final disposal

The fractions generated in the various pre-processing stages ultimately end up in the final processing stage, where either secondary raw material is obtained, or pollutants and pollutant-containing fractions are disposed of in an environmentally friendly manner. In the case of metals, these are highly specialized integrated smelting plants, which use a series of hydrometallurgical and pyrometallurgical processes to produce secondary raw materials that are returned to the economic cycle. Plastics are separated into different plastic polymers (in the preliminary stage “advanced processing”) and plastics containing pollutants are separated. Pollutant-containing fractions are disposed of in an environmentally friendly manner. Either with energy recovery or, where this is not possible, by depositing them in a specially designed and hazardous waste landfill site.

*Figure 7: Integrated smelting plant for WEEE components with precious metals*



Table 8: Main requirements for advanced processing

Aspect	Requirements
Material reception	<ul style="list-style-type: none"> <li>• Incoming devices, components and materials must be registered and classified.</li> <li>• Non-WEEE and unknown or special devices need utmost care and must be separated from the main inflow (e.g. military, medical or dental devices).</li> </ul>
Shredding and disintegration	<ul style="list-style-type: none"> <li>• Conveyor belt speed must be set to allow for proper depollution.</li> <li>• Depollution before shredding and disintegration must include all components listed under "depollution" in chapter 3.3.2.</li> </ul>
Classification, separation, homogenization and cleaning	<ul style="list-style-type: none"> <li>• The supervision must regularly control the quality of depollution and cleanliness of fractions and take appropriate measures in case of non-compliance.</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• Devices, components and materials where leakage is possible must be stored on impermeable surface.</li> <li>• All fractions resulting from dismantling and decontamination must be clearly separated and containers must be labeled in all cases.</li> <li>• Containerization must be adequate and consider potential health and environmental impacts.</li> <li>• Protective and access measures are needed in case of fire.</li> <li>• Separate and locked compartments for hazardous waste are needed.</li> <li>• Maximum storage quantities need to be considered for hazardous components and fractions.</li> </ul>
Adequate working conditions	<ul style="list-style-type: none"> <li>• Working conditions must consider ergonomic aspects, e.g. adequate tables, sufficient lighting, adequate tools etc.</li> </ul>
Adequate safety precaution	<ul style="list-style-type: none"> <li>• PPE must be available and worn in designated areas and for specific tasks (e.g. where exposition to potentially hazardous substances is high).</li> <li>• Fire extinguishers must be regularly controlled and maintained and their access must be ensured at all times.</li> <li>• First aid kits must be available and their access must be ensured at all times.</li> </ul>
Compliance with all applicable national and international legislation	<ul style="list-style-type: none"> <li>• Compliance with international and national legislation must be ensured and demonstrated.</li> <li>• All legally necessary permits and documents for waste shipment must be available.</li> <li>• Conformity with UN waste shipment regulations (ADR) must be ensured.</li> </ul>
Emission and health monitoring	<ul style="list-style-type: none"> <li>• Emissions to air and water and proof of compliance with the maximum permissible concentration must be controlled in accordance with the relevant legislation.</li> <li>• Control of blood and urine of workers on critical substances must be undertaken regularly (mercury, cadmium etc.) according to applicable health regulations.</li> </ul>
Output documentation	<ul style="list-style-type: none"> <li>• Complete information on material composition and downstream vendor and following treatment processes must be available.</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• Devices, components and materials where leakage is possible must be stored on impermeable surface.</li> <li>• All fractions resulting from dismantling and decontamination must be clearly separated and containers must be labeled in all cases.</li> <li>• Containerization must be adequate and consider potential health and environmental impacts.</li> <li>• Protective and access measures are needed in case of fire.</li> <li>• Separate and locked compartments for hazardous waste are needed.</li> <li>• Maximum storage quantities need to be considered for hazardous components and fractions.</li> </ul>

# 4 WEEE treatment standards

## 4.1 Classification of standards in the context of legislation

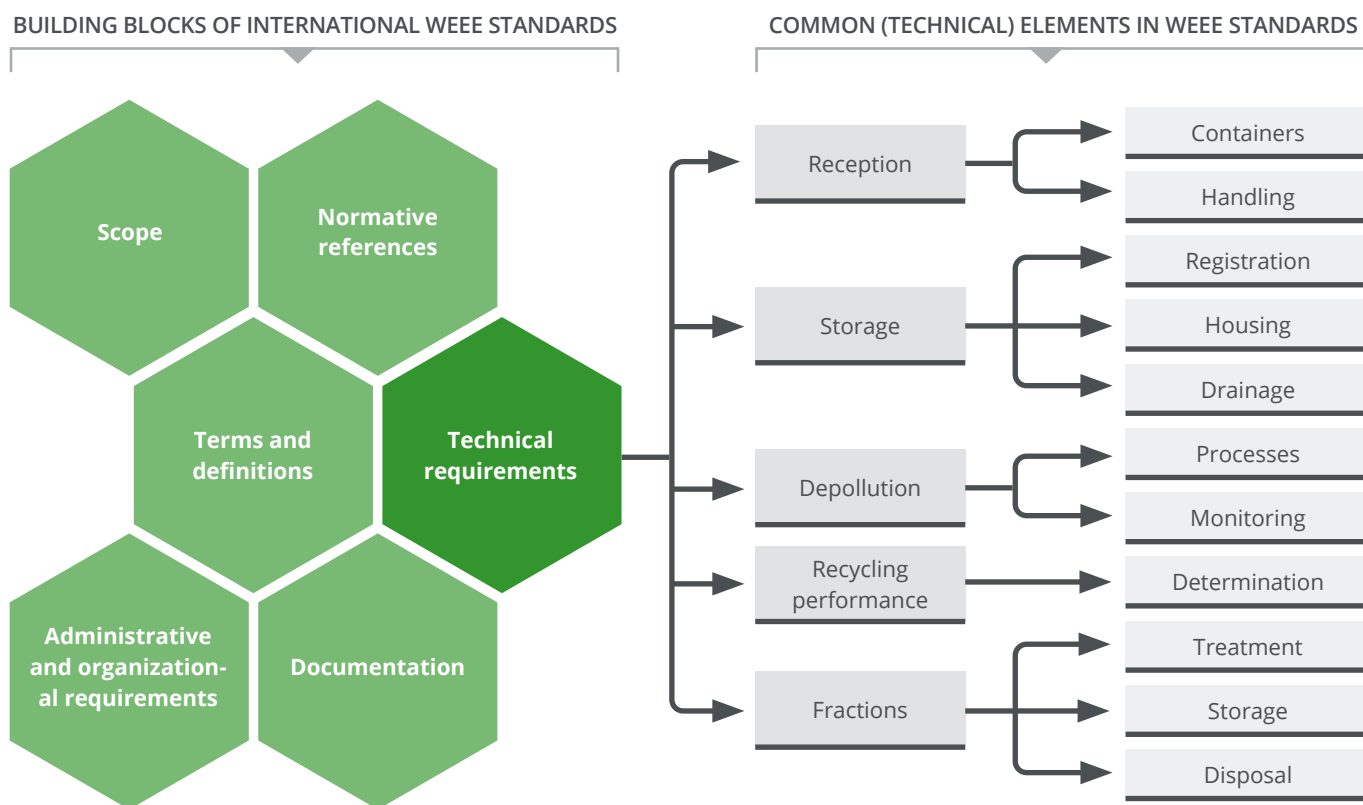
According to the definition of the International Standards Organization (ISO), a technical standard is a “technical specification or document that is accessible to the public, is drawn up with the collaboration of all interested parties and with their consensus or general approval, is based on the combined results of science, technology and experience, aims at the greatest benefit for the general public and has been adopted by a qualified body at the national, regional or international level”. Standards make products compatible, identify safety issues of products and services and allow sharing good ideas and solutions, technological know-how and best management practices.

A generally binding legal character is only given by the legal provisions of an authority (such as laws or ordinances) which, based on the constitution, has sovereign legislative competence. Standards, on the other hand, are issued by private organizations (ISO as an example). Such organizations are not authorized to enact legislation, which means that technical standards lack the character of legal enforceability or the character of a legal norm. However, laws or ordinances and directives regularly refer to standards, which is why standards in such cases can certainly have legal implications. Legal effects also arise when standards have the status of recognized rules of technology (“state-of-the-art” or “best practice”).

## 4.2 Essential elements of a WEEE management standard

Figure 8: Essential elements of a WEEE management standard

Figure 8 shows the building blocks and the most common technical elements of a WEEE management standard.



The focus is on the technical requirements that must be met along the processing chain. The aim is to separate the fractions containing pollutants and recyclables effectively and efficiently, while optimizing the recovery of raw materials.

### 4.3 Overview on international WEEE standards

In the last 10 years, three international technical WEEE standards have been developed (see Table 9).

*Table 9: Overview on international WEEE standards*

\* WEEELABEX certified operators (see: [www.WEEELabex.org](http://www.WEEELabex.org))  
 \*\* source: IERC25 Salzburg: Presentation Mike Easterbrook  
 \*\*\* excl. drop-off sites (107 out of 110 certified companies are located in the U.S)

Standard	Title	Publisher	Geographical scope	No of certified companies
CEN 50625 series	CEN 50625-1:2014: Collection, logistics and Treatment requirements for WEEE – General treatment requirements  Others: <a href="#">European Standards for Waste Electrical and Electronic Equipment (WEEE)</a>	CEN	Europe	437* (March 25)
R2v3:2020	The Sustainable Electronics Reuse and Recycling (R2) Standard	SERI	Global	1'245** (Dec 24)
e-stewards_v4.1:2022	The e-stewards Standard for Ethical and Responsible Reuse, Recycling, and Disposition of Electronic Equipment and Information Technology	BAN	United States	110*** (March 25)

#### 4.3.1 CEN 50625 series

The development of the CEN 50625 series of standards<sup>5</sup> began in the early 2010s with the involvement of numerous experts and stakeholders from industry, associations, waste management and regulatory authorities. The aim was to create a set of standards that would meet both technical and legal requirements and address the practical challenges of dealing with electrical and electronic waste.

Prior to the development of the CEN 50625 series of standards, there were no uniform European standards for the collection, recycling and disposal of electrical and electronic equipment. Different companies and countries had different processes and technologies, which led to inefficiencies and difficulties in complying with legal requirements. To achieve harmonization, the CEN (European Committee for Standardization) and other standardization organizations were commissioned at the European level to develop standards for the collection, recycling and disposal of electrical and electronic equipment. The CEN 50625 series of standards was an attempt to address this gap.

5) Main standard: ("Collection, logistics & Treatment requirements for WEEE – Part 1: General treatment requirements," 2014)

### 4.3.2 R2v3 standard

The R2v3 standard is an evolution of the original R2 standard (“The Sustainable Electronics Reuse & Recycling (R2) Standard,” 2020) which was launched in 2008 by Sustainable Electronics Recycling International (SERI). It is used to certify companies involved in the recycling, reprocessing and disposal of WEEE. The original R2 standard was developed to promote best practices in WEEE management. It aims to certify companies that adhere to high environmental, safety, and social standards.

### 4.3.3 e-stewards standard

A large volume of WEEE from developed countries has historically been exported to developing nations under the guise of “reuse” or “recycling,” where inadequate infrastructure and unsafe practices often result in serious environmental and human health impacts. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted in 1989, aimed to prevent hazardous waste dumping in developing countries. Despite this international treaty, loopholes and lack of enforcement led to continued illegal exports of WEEE.

By the early 2000s, it became clear that voluntary standards were needed to address WEEE recycling responsibly and transparently, ensuring compliance with international laws like the Basel Convention and holding recyclers accountable.

BAN, an environmental advocacy organization focused on hazardous waste issues, spearheaded the creation of the e-Stewards Standard in 2008 (Basel Action Network (BAN), 2022). BAN recognized that many recyclers in the U.S. and other countries were exporting WEEE to developing nations or using unsafe recycling methods domestically.

The e-Stewards certification program was officially launched in 2009 to provide a third-party audited system for WEEE recyclers committed to responsible practices. It was designed to ensure that WEEE is managed ethically and sustainably, without causing harm to workers, communities, or ecosystems.

## 4.4 ISO 59014

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ISO 59014 (ISO – International Standardization Organization, 2024) replaced the International Workshop Agreement Nr. 19 published by ISO in 2017 (ISO – International Standardization Organization, 2017). In ISO/IWA Nr. 19 the focus was on secondary metals. The ISO standard 59014:2024 widened the scope to secondary materials. It furthermore emphasizes the importance of maintaining the functional value of objects, devices and components through the application of non-destructive processes.

ISO 59014 provides principles, requirements and guidance for organizations in fostering the sustainability and traceability of activities and processes for the recovery of secondary materials and specifies requirements and provides guidance for organizations that engage with individuals involved in subsistence activities (SAs) as part of the organization’s activities and processes for the recovery of secondary materials, with the aim of ensuring safe and healthy working conditions and the continual improvement of the well-being, livelihoods and professional practices of those individuals

The preparation and processing of products or components for their reuse or reprocessing (e.g. for repurposing, remanufacturing, refurbishment and repair) and the energy recovery and disposal are outside the scope of ISO 59014. It is –

in contrast to the WEEE standards introduced above – not a technical standard which e.g. defines technical criteria along the value chain, such as collection, recycling and recovery targets or limit values in target fractions, but tackles the managerial sphere of influence on the sustainable management of secondary materials.

## 4.5 National WEEE standards in the Global South

In recent years, various countries in the global South have developed their own technical regulations supported by international cooperation projects. Within the SRI program, standards have been developed or are being developed, which have been or will be issued by state authorities (Ghana, Egypt and South Africa) or by private standardization organizations (Colombia, Peru) (see Table 10).

Table 10: Overview on national WEEE standards

Standard	Title	Publisher	Geographical scope	Character	Status
NTC 6352-1:2019	Gestión de residuos de aparatos eléctricos y electrónicos (RAAE). Requisitos para la logística y el tratamiento de RAAE.	Icontec	Colombia	private	issued
NTC 6352-2:2019	Parte 1: Logística	Icontec	Colombia	private	issued
NTC 6359:2019	Gestión de residuos de aparatos eléctricos y electrónicos (RAAE). Requisitos para la logística y el tratamiento de RAAE.	Icontec	Colombia	private	issued
NTP 900.064:2022	Parte 2: Tratamiento	Inacal	Perú	private	issued
NTP 900.065:2022	Principios guía para la gestión sostenible de metales secundarios	Inacal	Perú	private	issued
NTP 900.066-1:2016	Gestión de residuos. Manejo de residuos de aparatos eléctricos y electrónicos. Generalidades	Inacal	Perú	private	issued
NTP 900.066-2:2016	Gestión de residuos. Manejo de residuos de aparatos eléctricos y electrónicos. Generación, recolección interna, clasificación y almacenamiento. Puntos de acopio.	Inacal	Perú	private	issued
EPA 2022	Technical Guidelines on environmentally sound e-waste management. For collectors, collection centers, transporters, treatment facilities and final disposal in Ghana	Environmental Protection Agency (EPA) Ghana	Ghana	public	issued
-	Technical Standard for Environmentally Sound WEEE Management – For Collection, Storage, Transportation, Dismantling, Recycling and Disposal in Egypt	Waste Management Regulatory Authority (WMRA)	Egypt	public	in preparation
-	National Norms and Standards for the Management of Waste Electrical and Electronic Equipment (WEEE)	Department of Forestry, Fishery and the Environment (DFFE)	South-Africa	public	in preparation

# 5 Conformity Assessment Scheme

## 5.1 Aims and objectives

Conformity with standards and regulations plays a critical role in modern business and manufacturing. It serves multiple purposes that collectively support quality, safety, innovation, and global market competitiveness. Table 11 summarizes the aims and objectives for implementing a conformity assessment scheme.

Table 11: Aims of a conformity assessment scheme

Aspect	Aims and objectives
Compliance with standards and regulations	helps organizations and manufacturers to comply with legal and industry standards and reduces the risk of legal penalties and market access restrictions
Product Safety and Quality	ensures that products meet safety, performance, and reliability standards and at the same time reduces the likelihood of defects and failures, protecting consumers
Trade and market access	allows businesses to enter global markets by demonstrating compliance with international standards (e.g., ISO, CE, FDA) and reduces trade barriers by providing mutual recognition of certifications
Consumer confidence	provides assurance to customers that the product or service meets established quality and safety criteria and strengthens brand reputation and consumer trust
Fair competition	creates a level playing field by ensuring that all competitors meet the same standards and prevents unfair advantages from substandard or unsafe products.
Business risks	minimizes liability risks by ensuring products and services conform to regulations and helps prevent costly recalls, rework, and reputational damage
Innovation and continuous improvement	encourages companies to improve products and processes to meet evolving standards and supports research and development efforts by setting clear performance benchmarks
Supply chain integrity	ensures that suppliers and subcontractors meet quality and safety standards and reduces the risk of defective components affecting the final product

Firstly, **compliance with standards and regulations** helps organizations adhere to legal and industry requirements, reducing the risk of legal penalties and market access restrictions. This foundational aspect also contributes to product safety and quality by ensuring that products meet established safety, performance, and reliability criteria, thereby protecting consumers from defects and failures.

Another important benefit is **facilitating trade and market access**. Adhering to international standards such as ISO, CE, or FDA allows businesses to enter global markets more easily, as mutual recognition of certifications helps reduce trade barriers. This, in turn, enhances consumer confidence, providing assurance that products and services meet recognized quality and safety benchmarks, which strengthens brand reputation and trust.

Standards also promote **fair competition by creating a level playing field**. They ensure all market players are held to the same requirements, preventing the advantages that might otherwise be gained from substandard or unsafe products.

Furthermore, adherence to regulations helps reduce business risks by minimizing liability exposure and preventing costly recalls, rework, or reputational harm.

In addition, the presence of evolving standards encourages **innovation and continuous improvement**, pushing companies to enhance their products and processes. This environment supports research and development by offering clear performance targets. Finally, supply chain integrity is reinforced when all suppliers and subcontractors follow the same quality and safety standards, reducing the risk of flawed components compromising the final product.

Altogether, aligning with standards not only ensures compliance but also contributes to overall organizational resilience and long-term success.

The arguments often put forward against conformity assessment schemes are the high costs, the large amount of time involved, possible bias and conflicts of interest, a false sense of security, a certain inflexibility for innovations and corruption allegations.

## **5.2 Requirements of Conformity Assessment Schemes<sup>6</sup>**

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### **5.2.1 Impartiality, independence and confidentiality**

The credibility of a scheme places indispensable demands on its impartiality and independence. Possible risks to these basic requirements must be identified and eliminated to ensure the continued existence of a scheme. Information obtained from the auditees during the conformity assessment shall be treated with absolute confidentiality and shall only be disclosed or published after consultation with and approval of the auditees.

### **5.2.2 Structural requirements**

The Conformity Assessment Body shall be a legal entity or an identifiable part of a legal entity to ensure accountability for audit activities. It shall have a documentation of activities, processes, roles and responsibilities and have a clear reporting structure. It shall furthermore have adequate provisions to cover liabilities (e.g. assurance, reserves) arising from its operations.

The structure and management of the Conformity Assessment Body must always safeguard impartiality. It shall be organized and managed to enable and maintain the capability of performing all activities professionally and in the required time periods.

### **5.2.3 Resource requirements**

The Conformity Assessment Body shall define the competences for all personnel involved in the conformity assessment activities. The personnel shall have appropriate qualifications, training, experience and a satisfactory knowledge of the requirements of the inspections to be carried out.

Besides knowledge and experience in conducting conformity assessments the personnel shall also have relevant knowledge about the composition and hazardousness of WEEE and the processes and technologies used for recycling of WEEE along all stages of the supply chain. The personnel should understand defects and deviations and their consequences arising from the improper management of WEEE. Staff shall be trained regularly, and the training activities and application of the learnings needs to be monitored and documented. Subcontracting of external personnel shall only involve competent and trained individuals. Adequate facilities and calibrated measuring equipment shall always be provided.

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6) Basis: ISO 17020:2012

**Table 12: Structural requirements of a Conformity Assessment Scheme of WEEE operations**

Aspect	Requirements
Administrative requirements	<ul style="list-style-type: none"> <li>• Conformity assessment body hosted by:               <ul style="list-style-type: none"> <li>• Single PRO or PRO association</li> <li>• Recycler Association</li> <li>• Producer(s) or Producer Association</li> <li>• Industry association</li> <li>• Regional or National Government Authority</li> <li>• International organization (e.g. ISO)</li> <li>• National Standardization Body</li> <li>• Private Standardization Body</li> </ul> </li> </ul>
Organization & management	<ul style="list-style-type: none"> <li>• Policies</li> <li>• Liabilities</li> <li>• Governance:               <ul style="list-style-type: none"> <li>• Strategic</li> <li>• Operational (administrative, technical, environmental)</li> <li>• Support &amp; advice</li> <li>• Decision making processes</li> </ul> </li> <li>• Roles &amp; responsibilities</li> </ul>
Scope of the Conformity Assessment	<ul style="list-style-type: none"> <li>• Collection, transportation and storage</li> <li>• Handling and classification</li> <li>• Manual dismantling and depollution</li> <li>• Advanced processing</li> <li>• Recovery and disposal</li> </ul>
Accreditation	<ul style="list-style-type: none"> <li>• Cost/benefit considerations</li> <li>• Accreditation requirements &amp; procedures</li> </ul>

**Table 13: Resource requirements of a Conformity Assessment Scheme of WEEE operations**

Aspect	Requirements
Personnel	<ul style="list-style-type: none"> <li>• Competences</li> <li>• Training concept &amp; curriculum</li> <li>• Knowledge about WEEE</li> <li>• Duties &amp; responsibilities</li> <li>• Job descriptions</li> <li>• Procedures for selection &amp; certification</li> </ul>
Facilities	<ul style="list-style-type: none"> <li>• Suitable and adequate facilities for all activities</li> <li>• Access &amp; usage rules</li> </ul>
Equipment	<ul style="list-style-type: none"> <li>• Collection, transportation and storage</li> <li>• Handling and classification</li> <li>• Manual dismantling and depollution</li> <li>• Advanced processing</li> <li>• Recovery and disposal</li> </ul>
Subcontracting	<ul style="list-style-type: none"> <li>• Competences</li> <li>• Information to clients</li> <li>• Register of subcontractors</li> </ul>

## 5.2.4 Process requirements

All conformity assessment methods and procedures shall be based on regulations, standards and legal specifications. Instructions on audit planning and sampling and auditing techniques need to be documented, including non-standard audit methods and procedures. Documentation shall include the process for receiving, evaluating and making decisions on complaints and appeals.

*Table 14: Process requirements of a Conformity Assessment Scheme of WEEE operations*

Aspect	Options and questions
Methods & procedures	<ul style="list-style-type: none"> <li>• Conformity assessment process</li> <li>• Conformity assessment techniques</li> <li>• Conformity assessment documents</li> <li>• Eligibility for conformity assessment</li> <li>• Documentation</li> <li>• Financing</li> <li>• Technical reference of the conformity assessment               <ul style="list-style-type: none"> <li>• Private standard (e.g. ISO 59014)</li> <li>• Public standard (e.g. CEN 50625 series)</li> <li>• Own standard</li> </ul> </li> <li>• Criteria for conformity</li> </ul>
Items & samples	<ul style="list-style-type: none"> <li>• Identification</li> <li>• Labeling</li> </ul>
Records	<ul style="list-style-type: none"> <li>• Record system</li> <li>• Traceability of documents</li> </ul>
Reports & certificates	<ul style="list-style-type: none"> <li>• Conformity assessment reports</li> <li>• Documents of evidence</li> <li>• Conformity certificate</li> </ul>
Complains & appeals	<ul style="list-style-type: none"> <li>• Appeal procedures</li> <li>• Corrective actions</li> <li>• Tracking system</li> <li>• Communication channels</li> </ul>

## 5.2.5 Management and system requirements

The conformity assessment body shall establish and maintain a management system that can achieve the consistent fulfilment of the requirements of this International Standard in accordance with either Option A or Option B.

*Table 15: Management system requirements of Conformity Assessment Schemes*

Option A	Option B
The management system of the conformity assessment body shall address: <ul style="list-style-type: none"> <li>• Documentation of the management system</li> <li>• Control of documents and records</li> <li>• Management review</li> <li>• Internal audit</li> <li>• Corrective and preventive actions</li> <li>• Complaints and appeals</li> </ul>	Existence of a quality management system with ISO 9001 certification

## 5.3 Operational models

There are various conceivable options for how a conformity assessment scheme (CAS) can be structured. The decisive factor here is which body takes the lead in planning and operating the system. From the perspective of the operator of the system, four different groups can be distinguished:

- » **Private international standards** that are on the market determine how a system is designed and implemented.
- » Manufacturers, importers and wholesalers, who are members of **Producer Responsibility Organizations (PRO)**, plan and operate a compliance assessment scheme individually or in cooperation.
- » A **National Standardization Body** plans and operates the system. This is often the same organization that developed the associated processing standard.
- » A **Governmental Authority** is solely and conclusively responsible by law for ensuring compliance with the processing regulations it has issued.

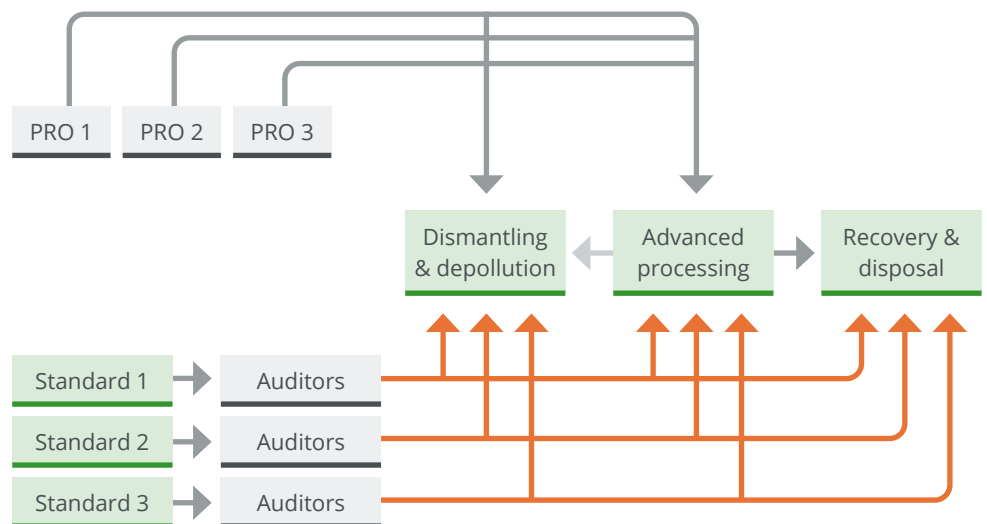
### 5.3.1 CAS driven by private international standards

In recent years, various international and often competing processing standards for WEEE have been established (see chapter 4.3). They are structured differently depending on their origin and focus and include different requirements. Due to market and customer requirements, it may be that individual recycling companies have to comply with several of these standards at the same time. This inevitably leads to several audits being carried out independently of each other. Without coordination, the effort for the individual recycling company can become very high.

This model exists in many countries where neither PROs nor standardizing organizations or governmental authorities operate a CAS.

Figure 9: Conformity assessment scheme driven individually by competing PRO.

Contractual relationship —  
Conformity assessment —



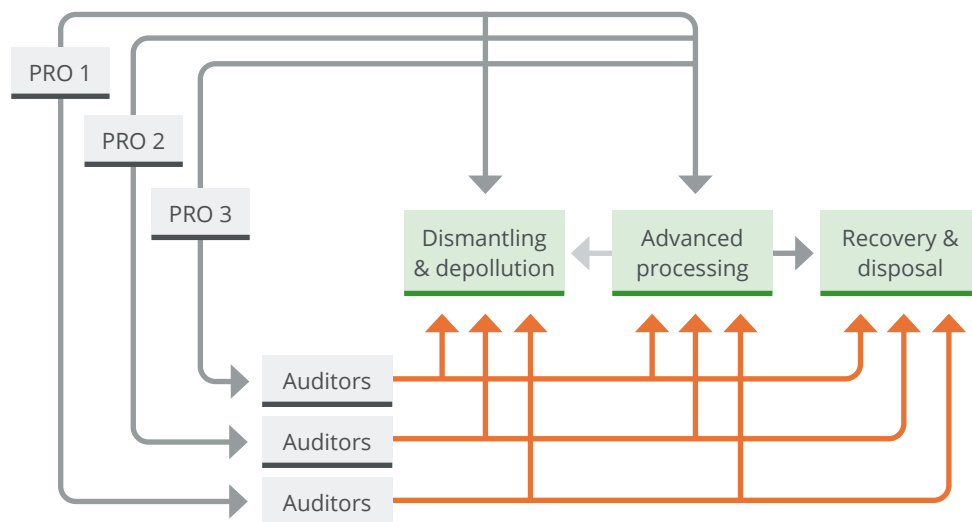
### 5.3.2 CAS driven by Producer Responsibility Organizations (PRO) Individually by different PRO

#### Individually by different PRO

In this model, several PRO carry out parallel conformity assessments, often with the same processing partners. The PRO might even have different technical and environmental regulations, which their processing partners must comply with. It is obvious that in such a system, the time and costs for both the PRO and the recycling companies are unnecessarily high.

**Figure 10:** Conformity assessment scheme driven individually by different PRO

Contractual relationship —  
Conformity assessment —



In the 1990s, this model was used by two PRO in Switzerland (Sens and Swico). Switzerland began to commission external bodies to control WEEE recycling companies as early as 1992 and 1994 respectively (Böni, H., 2012).

**A group of PRO**

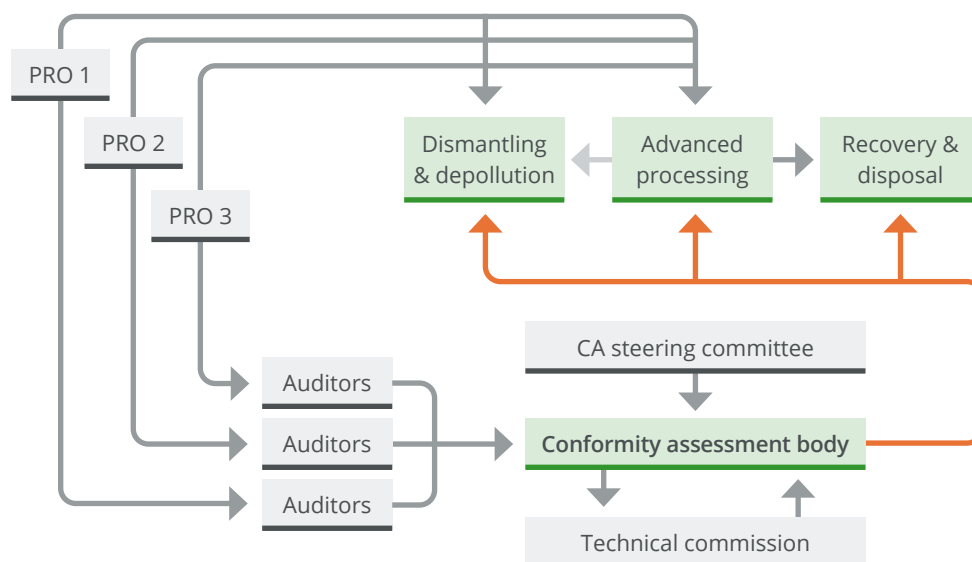
To improve the inefficiency that results from each PRO individually operating a CAS, several PRO can jointly employ a Conformity Assessment Body, which is composed of auditors from the respective PRO. A steering group, in which all PRO are represented, monitors and controls its activities. The audits are then carried out by one or two auditors from the joint team of auditors. The audit results are recognized by all participating PRO.

The technical processing standard is developed and regularly updated by a technical commission. All the necessary audit documents are also jointly prepared and further developed.

This model represents the further development of the model originally operated in Switzerland (see above). After a few years, the two PRO Swico and Sens agreed on a joint Conformity Assessment Body and joint technical regulations in the controls of the recycling companies (Böni, H., 2012).

**Figure 11:** Conformity assessment scheme driven by a group of PROs

Contractual relationship —  
Conformity assessment —

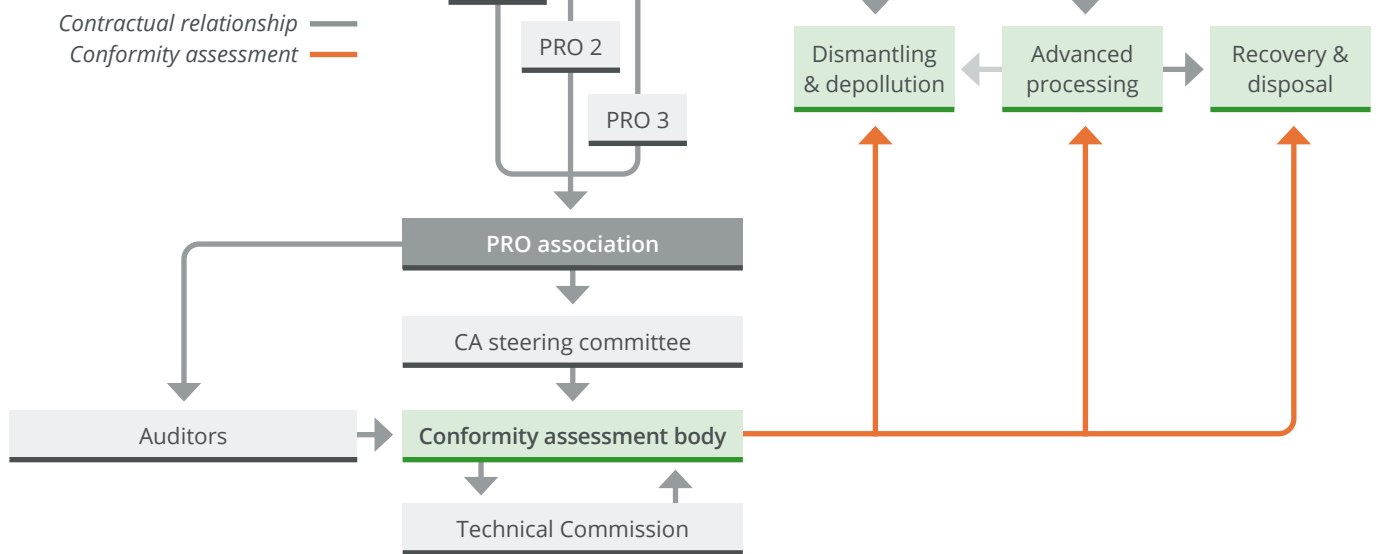


### A PRO Association

An even stronger cooperation between the PROs than in the previous model can be achieved if the PRO jointly form an association that uses a steering group to appoint a conformity assessment body. The association then uses independent auditors who are selected and recruited jointly. By forming an association, tasks that go beyond the actual auditing can also be tackled together (annual reports, studies, further training, etc.).

The technical processing standard is developed and regularly updated by a technical commission. All the necessary audit documents are also jointly prepared and further developed.

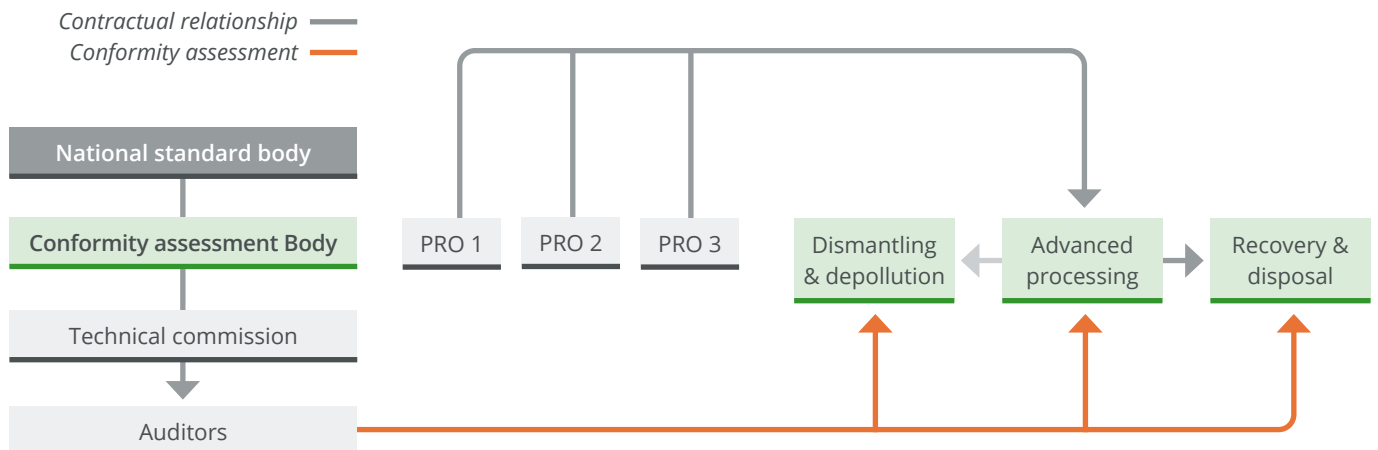
Figure 12: Conformity assessment scheme driven by a PRO association



The authors are not aware of the existence of such model in practice. However, it is currently being discussed in South Africa.

### 5.3.3 CAS driven by a national standardization body

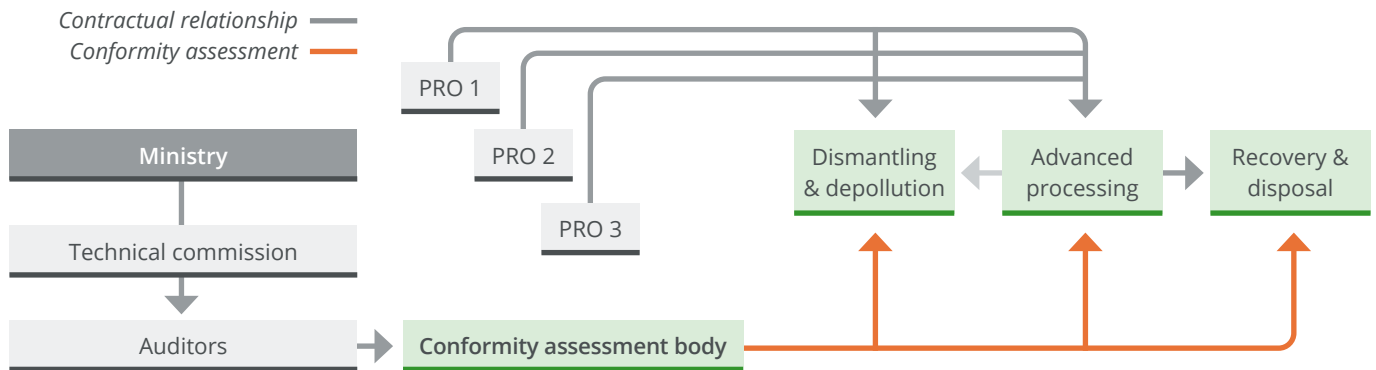
Figure 13: Conformity assessment scheme driven by a national standardization body



A national standardization body can develop a processing standard and take over the planning and operation of a CAS. The standard and the control of the companies by the national standardization body or an external institution can be accepted as the “state of the art” by the relevant state authorities and replace the authorities’ own control. This model was implemented in Peru and Colombia by the respective standardization bodies Inacal and Icontec.

### 5.3.4 CAS driven by a governmental authority

Figure 14: Conformity assessment scheme driven by a government authority



If state authorities issue their own technical processing regulations, they may want to carry out the conformity assessment themselves and not outsource them to third parties. Such a model exists in Ghana and is being prepared in Egypt. In Ghana the Environmental Protection Agency (EPA) and in Egypt the Waste Management Regulatory Authority (WMRA) oversee the CA.

## 5.4 Accreditation

Accreditation is the formal recognition of the technical and organizational competence of a body to carry out a specific service described in the scope of the accreditation. Competence is the key to transparency, trust and comparability.

National accreditation bodies can accredit certification bodies. The certification bodies are usually private institutions that carry out conformity assessments according to given regulations (e.g. control and certification of ISO standards). In this respect, the accreditation of a CAS of WEEE operations is limited to CAS under the direction of private institutions (e.g. PRO). However, the financial costs of an accreditation are often too high compared to the number of annual Conformity Assessments, so that for cost reasons, accreditation is usually not sought.

# 6 Conformity assessment

## 6.1 Why WEEE conformity assessments?

In 2015 and 2016, the European WEEELABEX organization, consisting of 25 European WEEE PRO, carried out a comprehensive investigation on the impacts of their conformity assessment of the at that time, 150 WEEELABEX certified recycling companies (WEEE-Forum, 2016). The WEEELABEX Organization (short for WEEE LABEL of EXcellence) is a non-profit entity based in Prague, established in April 2013. It was created to enhance the management of Waste Electrical and Electronic Equipment (WEEE) across Europe by developing and implementing harmonized standards for the collection, transport, and recycling of WEEE. In 2016 the WEEELABEX organization was accredited by the Czech accreditation institute.

Figure 15 shows the most mentioned advantages and disadvantages perceived by WEEE operators all over Europe. The figure shows that the advantages clearly outweigh the disadvantages. The circles give an indication of the number of mentions by the recycling companies surveyed.

Among the advantages, three are particularly noteworthy: lower environmental impact, better quality of the output fractions and uniform and detailed requirements for all companies. In contrast, the main disadvantages are the time required to meet the administrative requirements and the lack of support from state authorities.

Figure 15: Conformity assessment advantages and disadvantages perceived by WEEE operators



## 6.2 Audit procedures

It is important to understand the difference between a conformity assessment and an audit:

- » A **conformity assessment** involves demonstrating that specific requirements have been fulfilled whereas an **audit** is a process to gather and objectively evaluate relevant information about a conformity assessment object to determine the extent of compliance with specified requirements.



Figure 16: Overview on audit procedures

### 6.2.1 Pre-audit activities

The quality, benefits and effectiveness of an audit are closely linked to its preparation. Many aspects and questions can be clarified before the audit itself takes place (see Table 16).

The first step is to obtain initial information about the audited company. Good information is often already available on the company's website or in press articles. The local situation can be captured with the help of Google Earth. With all this information, the scope and costs of the audit mandate can be estimated – if not already done – and the audit can be planned and prepared in detail. This also includes questions about possible measurements and investigations in the company, for example the quality of decontamination. Once all the information has been gathered, the audit report can be partially completed and prepared for the actual audit.

Table 16: Pre-audit activities

Procedure	Content
Obtain preliminary information from the company	<ul style="list-style-type: none"> <li>• <b>Company information:</b> Size (annual quantities, number of employees, surface etc.), publicly available documents, statistical data</li> <li>• <b>WEEE activities:</b> WEEE treated, processes, test results, environmental measurements (air quality, noise, wastewater etc.)</li> <li>• <b>Authorizations:</b> Operational license, environmental license etc.</li> <li>• <b>Certificates:</b> ISO certificates, WEEE certificates etc.</li> </ul>
Regulation of contractual arrangements	<ul style="list-style-type: none"> <li>• <b>Contract:</b> Clarification of client, effort and contract conditions</li> <li>• <b>NDA:</b> Clarification of confidentiality</li> </ul>
Audit planning	<ul style="list-style-type: none"> <li>• <b>Audit type:</b> Scope, objective and content of the audit</li> <li>• <b>Formation of the audit team:</b> qualifications, roles and responsibilities, framework conditions</li> <li>• <b>Time requirement:</b> Process and schedule</li> </ul>
Audit preparation	<ul style="list-style-type: none"> <li>• <b>Documents:</b> Preparation of documents required</li> <li>• <b>Measuring equipment:</b> Determination of the necessary devices and containers (in case of sampling)</li> </ul>

### 6.2.2 On-site-audit activities

As there is often only one working day available for an audit<sup>7</sup> – even for larger companies. Therefore it is important to clearly regulate the time schedule and

7) This is defined by the CAS and can vary.

the division of labor between the auditors (see Table 17).

Table 17: On-site-audit activities

Procedure	Content
Opening meeting	<ul style="list-style-type: none"> <li>• <b>Audit aim and scope:</b> Clarification of aim and scope of the foreseen audit; determination of excluded areas</li> <li>• <b>Introduction of those present:</b> Name and function of audit team and company representatives</li> <li>• <b>Time schedule:</b> Begin and end, breaks; operation times</li> <li>• <b>Policy issues:</b> Security, photographic restrictions, access restrictions, confidentiality etc.</li> </ul>
Information by the company	<ul style="list-style-type: none"> <li>• <b>Company presentation:</b> Organizational chart, input material, mass flows, process description, output fractions, downstream operators etc.</li> </ul>
Verification of documents & records	<ul style="list-style-type: none"> <li>• <b>Documents:</b> Licenses, export documents, SOP, manuals, reports, monitoring data, work instructions, internal procedures, training schedules etc.</li> <li>• <b>Records:</b> Mass flows, process diagrams, business interruptions, accidents, continuous improvement measures, proofs of evidence, training certificates etc.</li> </ul>
Interview with management	<ul style="list-style-type: none"> <li>• <b>Main areas:</b> Environment, health and safety measures and control systems etc.</li> </ul>
Company walkthrough	<ul style="list-style-type: none"> <li>• <b>Route:</b> From material reception to downstream delivery</li> <li>• <b>Areas of special interests:</b> Decontamination, advanced processing, intermediate fractions, quality control, storage of hazardous fractions, output fractions (quality, storage)</li> <li>• <b>Observations:</b> working conditions, use of PPE, access and escape routes, labelling of containers, etc.</li> <li>• <b>Interview with operational staff:</b> Instructions provided by supervisors, possible incidents, behavior in case of incidents, quality control, error culture etc.</li> </ul>
Provisional concluding remarks & de-briefing	<ul style="list-style-type: none"> <li>• <b>Preparation by the auditors:</b> Preparation of observations and assessment given to the management</li> <li>• <b>Provisional concluding remarks:</b> Main observations, minor and critical deviations, hints, recommendations, possible measures, immediate actions, remaining questions etc.</li> <li>• <b>De-briefing:</b> Next steps and deadlines</li> </ul>

Experiences of the authors have shown, that audits are best done in a pair of two auditors. In such cases, one of the auditors is responsible for recording all information, observations and findings, while the other auditor concentrates on moderating and asking questions. These functions can also be alternated within the process of the audit.

The large volume of documents viewed and received does usually not allow for all details to be recorded during the audit. It is therefore advantageous if documents are also handed in or if one of the auditors briefly reviews the documents and checks that they are complete. It may also be necessary to make specific inquiries during or after the audit based on the information in the documents. During the company tour, the focus is on understanding the processes carried out as well as material management from reception to forwarding to a downstream operator. This includes the decontamination of the material and the storage of hazardous or problematic fractions.

Questions for employees in production also form an essential part of the audit. Do the employees know exactly what their tasks and responsibilities are? How do they deal with unknown material and how do they behave in the event of incidents? What incidents and risks do they expect? Questions to employees are important to show respect to them and to recognize the importance of their tasks.

At the end of the on-site audit, additional questions are put to the management about individual observations and findings from the company walkthrough and additional documents are inspected if necessary. The most important findings are presented to the management and, if necessary, initial measures are discussed and defined. The next steps are also discussed: By when can the company expect to receive the draft audit report? How long does it have to study it and provide feedback and what happens after the audit report has been completed?

### 6.2.3 Post-audit activities

The work involved in following up the audit results from the on-site audit is often considerable and can take up to twice as long as the on-site audit. Ultimately, the aim is to use all the information to conclude on the compliance of the company's activities with the requirements of the technical and environmental guidelines (see Table 18).

The assessment is made up of all the aspects examined and leads to minor or critical deviations, hints and recommendations. The compliance assessment must be comprehensible for the company representatives. All deviations and hints must be clearly and unambiguously related to the requirements of the technical and environmental guidelines. Recommendations do not necessarily have to relate to this.

After completion of the audit report, the implementation of the corrective measures must be accompanied by the auditors and monitored in terms of content and deadlines.

Table 18: Post-audit activities

Procedure	Content
Verification	<ul style="list-style-type: none"> <li>• <b>Documents:</b> Detailed revision of provided documents, check on completeness, request for further documents and evidence</li> <li>• <b>Measurements:</b> Result of sampling and chemical analyses</li> <li>• <b>Processes:</b> Results of batch tests</li> </ul>
Assessment of compliance	<ul style="list-style-type: none"> <li>• <b>Assessment:</b> Identification and formulation of minor and critical deviations, hints and recommendations</li> <li>• <b>Improvement measures:</b> Determination of the framework for necessary improvement measures and deadlines</li> </ul>
Draft audit report	<ul style="list-style-type: none"> <li>• <b>Draft audit report:</b> Elaboration of the complete draft report as a basis for consultation with the company</li> </ul>
Revision of the draft audit report	<ul style="list-style-type: none"> <li>• <b>Revisions to draft report:</b> Revision by the audited company with the aim to identify possible misunderstandings or errors in the assessment. The company has no right to have its suggestions for adjustments to the draft audit report taken into account. If the results of the audit are rejected by the company, it has the option of lodging an objection. The procedure must be regulated in the CAS.</li> </ul>
Finalization of audit report	<ul style="list-style-type: none"> <li>• <b>Final audit report:</b> Finalization and legally valid signature by the auditors</li> </ul>
Follow-up	<ul style="list-style-type: none"> <li>• <b>Follow-up:</b> Control of improvement measures &amp; deadlines through document evidence, photographs or additional on-site visits</li> </ul>

## 6.3 Conformity assessment

### 6.3.1 Deviations, hints and recommendations

During an audit, deviations are formulated, and corrective measures are scheduled. Their implementation is checked by the auditors. The status of implementation is documented and assessed in a follow-up audit in the case of critical deviations and in the following year's regular audit in the case of minor deviations. The conformity assessment leads additionally to hints and recommendations. Table 19 shows how deviations, hints and recommendations are differentiated.

*Table 19: Critical deviations, minor deviations, hints and recommendations*

Findings	Characteristics
Critical deviation	Critical deviations include deviations related to standards if there are violations of laws or standards whose impact on health, safety and the environment is likely or significant.
Minor deviation	Minor deviations include significant incomplete implementation of requirements related to standards whose impact on health, safety and the environment is unlikely or insignificant in the short term. If a minor deviation is not implemented within the specified period, it must be assessed as critical in the next audit.
Hint	Hints are a preliminary stage of a deviation. They are related to the technical requirements. No formal deadlines are set here. However, the subsequent audit will check whether and, if so, how the recycling company has addressed them. If there is no plausible statement from the recycling company, the auditor will convert the note into a minor deviation.
Recommendation	Recommendations are potential areas for improvement to which the auditors attach particular importance. They are not necessarily related to the technical regulations. No review takes place here.

### 6.3.2 Formulation of deviations

The deviations must always be formulated in three parts:

- » In the first part, the deviation is described as specifically as possible and the corresponding reference to the technical standard is established.
- » In the second part, the corrective action (if necessary, in consultation with the audited recycling company) must be defined.
- » The third part sets the deadline for the fulfilment of the deviation. This also includes determining how the fulfilment of the measure is to be reported to the auditors. There are various options for this (examples!):
  - Confirmation of completion by e-mail to the auditor with a photo of a physical implementation in the company
  - Summary of the results of a clarification, if necessary, with confirmation from the responsible authorities
  - Delivery of a missing document to the auditor

In the event of critical deviations, the auditor may have to check the implementation in person on site after the deadline has expired.

### 6.3.3 Deadlines for minor deviations

Minor deviations can often be corrected within a short period. However, some might need a bit more time. The deadlines could be set in such a way that all or most corrective actions must be implemented on the same date. This facilitates deviation management for the auditor and the person responsible for the operation.

### 6.3.4 Deadlines for critical deviations

The defined corrective measures for critical deviations must be implemented within a limited time after protocol release (e.g. within 6 months<sup>8)</sup>). The implementation of the corrective measures for critical deviations is reviewed by the auditor as part of a follow-up audit.

### 6.3.5 Non-conformity

The assessment of conformity with technical and environmental guidelines depends on the design and maturity of the conformity assessment scheme. When introducing a new CAS, a maximum number of critical and minor deviations resulting from the audit can be defined, above which the company is assessed as non-conform. In a more mature CAS, this threshold might be decreased to foster the continuous improvement of the sector.

In the case of already well-developed conformity assessment schemes in which conformity assessments have already been carried out over several years, temporary non-conformity may already be given in the case of a critical deviation. As a rule, the company is granted a deadline within which it must implement the measures to eliminate the critical deviation. If the measures can be implemented on time and in accordance with the content, the company is compliant.

It is not advisable to introduce a points system, as this means that the individual results are lost in the overall results. The distinction between critical and minor deviations has proven its worth in many schemes and enables targeted corrective measures to be proposed at the level of the individual deviations.

## 6.4 Audit techniques

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A successful audit depends on the selection of suitable methods that are both structured and practical. A combination of different audit techniques has proven particularly effective in systematically recording all relevant environmental aspects.

An audit usually begins with a document review. This involves reviewing permits, environmental reports, measurement protocols, and waste balances. These provide information about legal compliance and a company's internal environmental management processes. However, to obtain a realistic picture of actual practice, a site tour is essential. On site, environmental aspects such as the storage of hazardous substances, the condition of equipment, and potential sources of emissions can be observed directly.

In addition, interviews with employees provide valuable insights into the environmental awareness and knowledge of the workforce. It is particularly helpful to compare the documented theory with practical actions in everyday operations.

Checklists and standardized questionnaires are often used to structure the audit. In certain cases, measurements and sampling are also necessary, for example to record wastewater quality, or quality of final fractions. This allows environmental performance to be evaluated on a fact-based basis.

For further optimization, **benchmarking** is recommended, which involves comparison with best practice examples or industry-specific standards. Finally, taking **photographs** of specific situations in processes or activities of the audited company helps in the documentation of the audit results in the audit report or protocol.

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<sup>8)</sup> This need to be defined in the CAS.

The combination of these methods ensures that an environmental audit not only meets formal requirements but can also be used as an effective tool for continuous improvement.

Table 20 and Figure 17 provide an overview of typical and commonly used audit techniques for auditing WEEE operations.

Figure 17: Overview on typical and most common audit techniques of WEEE operations

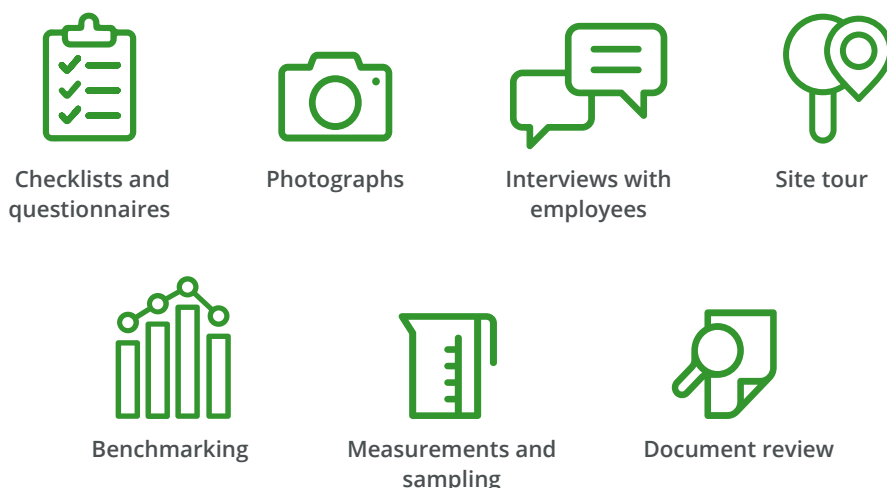


Table 20: Overview on typical and most common audit techniques of WEEE operations

Audit technique	Objective	Advantage	Tips
Document review	Verification of compliance with legal and internal environmental requirements	Provides a good overview of structures, responsibilities, and processes	Allocate sufficient time and ask for copies for review after the on-site audit
Site tour	Inspection of environmental and technical aspects on site	Helps to identify problematic processes and activities (e.g., leaks, improper storage, missing signage)	Go along the material flow and give special focus on critical areas (e.g. storage)
Interviews with employees	Understanding of current practices, awareness, and training status	Helps to reveal discrepancies between theory (documentation) and practice	Operations managers, environmental officers, but also “normal” workers
Checklists and questionnaires	Systematic review of relevant aspects	Helps to structure recording and enables comparability between audits	Specify questionnaire to processes and activities; focus on comparability
Measurements and sampling	Objective assessment of emissions and final fraction quality and contamination	Fact-based, especially important for monitoring limit values.	Sampling of critical waste fractions (e.g. fine fractions, mixed fractions)
Benchmarking	Comparison with best practices or industry standards	Identifies potential for improvement and innovation	Can be internal (site comparison) or cross-company
Photographs	Documentation of a specific condition on spot (can be positive or negative)	Assists documentation in the audit report/protocol; Useful for suggesting improvement measures	Recording details without facial recognition of employees. Queries as to how photos can be used.

## 6.5 Main documents of a CAS

The **conformity assessment framework** is supported by a range of essential documents that guide both auditors and companies through the process. These documents serve different purposes and are tailored to the specific needs of the involved parties:

- » The **Conformity Assessment Guidelines** form the foundational document and are intended for both auditors and companies. They provide a comprehensive overview of all relevant processes, including the evaluation of conformity and non-conformity.
- » The **Application Document** is required for both auditors and companies and outlines the formal procedure to initiate participation in the conformity assessment scheme.
- » **Certification and Recertification Documents** are primarily relevant to auditors and describe the conditions and procedures required to achieve or renew certification status.
- » In cases of disagreement or dispute, the **Appeal Procedure Document** – targeted at companies – details the rules and forms associated with appeal processes, ensuring transparency and fairness.
- » The **Handbook for Auditors** serves as a practical reference exclusively for auditors, helping them interpret and apply specific clauses of the technical and environmental regulations.
- » Finally, the **Material Flow Proof Document**, applicable to both auditors and companies, plays a critical role in verifying downstream processes and the involvement of relevant partners in the material flow chain.

Together, these documents establish a structured, transparent, and effective system for assessing and ensuring compliance with defined standards and regulations. Table 21 provides an overview of the main documents needed for operating a conformity assessment scheme.

*Table 21: Main documents of conformity assessment schemes*

Document	Auditor	Company	Content
Conformity assessment guidelines	✓	✓	General document on all processes, incl. assessment of conformity/non-conformity
Profile of auditors	✓		Required education, experiences, skills etc.
Application	✓	✓	Application for auditors and companies
Training curriculum	✓		Training concept, content and schedule
Certification and re-certification	✓	✓	Process and conditions
Code of conduct	✓		Behavior rules of certified auditors
Appeal procedure	✓	✓	Form and rules of appeal processes
Audit protocol*	✓	✓	Documentation of audit results
Handbook for auditors	✓	✓	Interpretation and application of clauses of the technical and environmental regulations
Audit agreement	✓	✓	Agreement between auditor and company
Material flow proof	✓	✓	Verification document for the downstream processes and partners
Mass flow recording	✓	✓	Procedures for recording the WEEE input, stocks and outputs of the companies

## 6.6 Design features of audit protocols

The primary aim of the audit protocol is to translate complex standard requirements into a practical and user-friendly procedure for assessing conformity. This approach ensures that auditors can effectively evaluate compliance while maintaining clarity and usability throughout the audit process.

The design of the protocol is intentionally aligned with the natural sequence of a typical conformity assessment. This logical structure supports the auditor in navigating through the assessment in a consistent and efficient manner, reflecting the actual progression of environmental or operational processes.

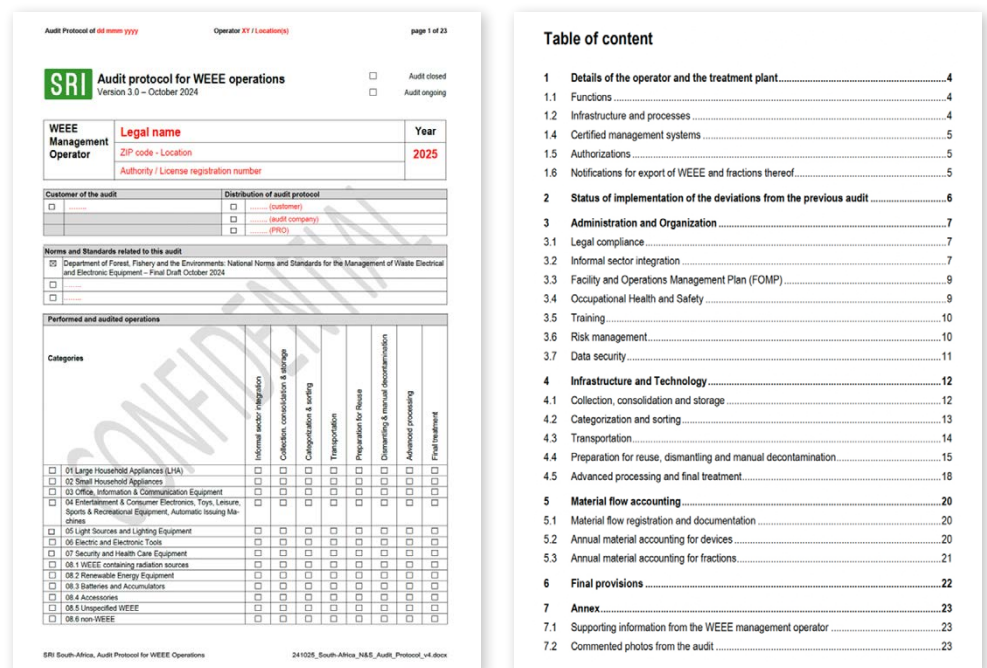
Unlike conventional checklists that rely on simple yes/no answers, a protocol demands a more qualitative evaluation. Each aspect under review must be addressed with a clear description, an informed assessment, and – where relevant – substantiating evidence. This method encourages critical thinking and ensures a deeper understanding of each compliance element.

During the evaluation, the auditor is responsible for determining whether each requirement is fulfilled or if there are deviations. These deviations are categorized as either critical or minor, based on their significance and impact on the normative and standard (N&S) requirements.

The protocol's questions are directed primarily at the auditor. In many cases, they are required to reformulate or adapt the questions to the specific context of the audited entity. This flexibility allows for a tailored and meaningful assessment, rather than a rigid application of pre-defined queries.

The outcome of the audit is a clearly defined summary of identified deviations – both critical and minor. This transparency not only supports internal improvement processes but also enhances the organization's overall compliance with the applicable norms and standards. Ultimately, it serves as a valuable tool for continuous development and performance enhancement.

Figure 18: Example of an audit protocol frontpage and table of content



## 6.7 Code of Conduct for auditors

The Code of Conduct for auditors is an essential prerequisite for a fair, balanced, and successful audit. It also ensures that different auditors working for a CAS apply the same rules and standards of conduct. Ultimately, this creates trust and increases the willingness of audited companies to implement the requirements. It should be noted that the Code of Conduct applies not only during the on-site audit, but throughout the entire process, including preparation and follow-up activities.

### 6.7.1 Preparation of the audit

A company audit focuses on two key areas to ensure compliance with legislation and the N&S (presumably a set of specific standards or guidelines). First, the auditor must verify that the company is aware of the necessary procedures and understands how to execute them correctly. This ensures that internal processes are aligned with legal and regulatory requirements.

Second, and more challenging, the auditor must assess whether these procedures are effectively implemented in everyday operations. This involves inspecting facilities and equipment to gather concrete evidence within a limited timeframe – typically just a few hours. The goal is to determine whether the company can maintain compliance throughout 2,000 annual operating hours. Given the time constraints, it is not feasible to examine every detail exhaustively. Therefore, auditors must set clear priorities during both the preparation and execution phases of the audit, focusing on the most critical areas of compliance.

Table 22: Code of conduct for auditors in audit preparation

Aspect	Code of conduct
Purpose	<p>A company audit has two main foci:</p> <ol style="list-style-type: none"> <li>1. The auditor must check whether the company knows what to do and how to do it so that the processing complies with the legislation and the N&amp;S.</li> <li>2. The auditor must check whether implementation in day-to-day operations complies with the legislation and the N&amp;S by auditing facilities and equipment.</li> </ol> <p>The second focus is a major challenge, as facts and evidence must be collected within a few hours to enable an assessment to be made as to whether the company operates in compliance for 2,000 annual operating hours.</p>
Set priorities	<p>It is impossible to check all aspects in detail during the time normally available. The auditor should set priorities during the preparation and the implementation of the audit.</p>

### 6.7.2 Implementation of the audit

The Code of Conduct outlines essential principles to be followed during company audits to ensure consistency, professionalism, and compliance with legal standards.

#### Audit Scheduling and Safety

The audit team is responsible for establishing and adhering to a clear audit schedule. During audits at companies with mechanical processing, safety protocols must be strictly followed. Auditors must wear safety shoes, and safety vests and helmets are typically provided by the host company. Entry is only allowed when accompanied by an authorized company representative, and all safety instructions must be followed.

**Handling Disagreement and Sensitive Topics**

When disagreements on deviations from the N&S arise, auditors should propose clear and constructive wording for the draft protocol. This allows both sides to reflect and respond. If consensus cannot be reached, the auditor must make an authoritative decision. Previous audit experience and consistency help in gaining acceptance. Auditors must also avoid discussions about internal issues of PRO (Producer Responsibility Organizations) in case PRO are involved in the CAS, emphasizing their neutrality and independence.

**Avoiding Distractions and Maintaining Focus**

Evasive discussions and comparisons with other recyclers must be avoided to maintain objectivity. Regulations apply universally and are enforced equally, with no exceptions or favoritism.

**Time and Information Management**

To document observations accurately, auditors are encouraged to pause periodically during audits for note-taking. Photographing relevant documents and scenes is efficient and serves as a useful reference. A dedicated reflection time before the final debriefing helps organize findings, especially in complex situations or with new companies.

**Precision and Confidentiality**

Audit results must be recorded in clear, coherent text. All company-specific information must be kept strictly confidential by the auditors.

**Authority Contact and Confirmation**

Direct communication with governmental authorities regarding a specific audit requires the recycler's consent. General procedural or clarification inquiries without company reference are permitted. Finally, auditors must formally acknowledge their understanding and acceptance of the Code of Conduct by signing it.

*Table 23: Code of conduct for auditors in audit implementation*

Aspect	Code of conduct
<b>Audit schedule</b>	The audit team is responsible for setting and adhering to the audit schedule.
<b>Safety measures during the audit</b>	Auditors must ensure that they wear safety shoes during audits in companies with mechanical processing. Safety vests and safety helmets are usually provided by the company. Access to the plant is only permitted when accompanied by a designated person of the company. The safety instructions must be followed.
<b>Disagreement</b>	If no agreement on deviations from the N&S is reached during the audit, the auditor should find a suitable wording for the required measures when preparing the draft protocol. This gives both recyclers and auditors the opportunity to reflect on their own position and the recycler can comment on it. Ultimately, however, in the absence of agreement, there is no getting around authoritarian decisions. Acceptance already gained from previous audits and the resulting authority through the demonstration of one's own consistency can avoid later conflicts.
<b>Discussion about the PROs</b>	Discussions about organizational, financial or communication problems with the PROs must be avoided by referring to the auditing company's own independence from the client and the lack of responsibility.
<b>Attempted distraction</b>	Involvement in evasive discussions must be avoided. It should also be emphasized that the regulations apply to everyone and are enforced everywhere. Discussions about other recyclers are taboo.
<b>Time management</b>	The description of the observations during the audit requires time from the auditor. It is therefore advisable to interrupt the audit periodically to take the appropriate notes. A photograph of documents and observations helps to save time and can also be used as a reminder for later formulation of the observations.
<b>Reflection time</b>	Especially in new companies and in difficult situations, it is advisable to schedule a reflection period before the final debriefing in the company so that the (provisional) findings can first be reflected on and organized.
<b>Adequate wording</b>	The result of the audit should be recorded precisely as a coherent text.
<b>Confidentiality</b>	The auditors are subject to a strict duty of confidentiality regarding company-specific information and data on the audited companies.
<b>Contacting governmental authorities</b>	No contact with the authorities should be made without the consent of the recycler. Procedural or comprehension questions to the authorities without reference to the inspected company are permitted.
<b>Confirmation by auditor</b>	The auditors appointed by the PROs must confirm their knowledge of and agreement with this Code of Conduct by signing it.

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# 7

## Annex 1: Example of an audit protocol

### Audit protocol for WEEE operations

Audit status:  finished  ongoing

<b>WEEE Management Operator</b>	<b>Legal name</b>	<b>Year</b>
	ZIP code - Location	....
	Authority / License registration number	

Customer of the audit		Distribution of audit protocol	
<input type="checkbox"/>	.....	<input type="checkbox"/>	..... (customer)
		<input type="checkbox"/>	..... (audit company)
		<input type="checkbox"/>	..... (PRO)

Norms and Standards related to this audit	
<input type="checkbox"/>	.....
<input type="checkbox"/>	.....
<input type="checkbox"/>	.....

Performed and audited operations									
Categories		Informal sector integration	Collection. consolidation & storage	Categorization & sorting	Transportation	Preparation for Reuse	Dismantling & manual decontamination	Advanced processing	Final treatment
<input type="checkbox"/>	01 Large Household Appliances (LHA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	02 Small Household Appliances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	03 Office, Information & Communication Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	04 Entertainment & Consumer Electronics, Toys, Leisure, Sports & Recreational Equipment, Automatic Issuing Machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	05 Light Sources and Lighting Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	06 Electric and Electronic Tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	07 Security and Health Care Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.1 WEEE containing radiation sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.2 Renewable Energy Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.3 Batteries and Accumulators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.4 Accessories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.5 Unspecified WEEE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	08.6 non-WEEE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Information on the audit			
Location	address		
	zip code	place	
Date Time	.....	..... - .....	
Audit participants	Representatives of the WEEE management operator	First name last name / function / phone / email	
		First name last name / function / phone / email	
		First name last name / function / phone / email	
	Lead auditor	First name last name / function / phone / email	
	Second auditor	First name last name / function / phone / email	
	Representative of XX	First name last name / function / phone / email	
Audit Typ	<input type="checkbox"/> Initial audit	<input type="checkbox"/> Repeat audit	Previous audit <span style="float:right">date</span>

The situation found during the audit at the WEEE management operator's site can be summarized as follows			
Number of deviations		Critical	Minor
<input type="checkbox"/>	Level 1: Conform	<b>There is maximum 10 minor<sup>9</sup> deviations, but no critical<sup>10</sup> deviations.</b> The implementation of the corrective measures for minor deviations according to Chapter 6 must be implemented and monitored within the specified deadlines. Conformity is confirmed until the date of the next audit, but not later than 31 December of the following year following this audit.	
<input type="checkbox"/>	Level 2: Close to conform	<b>There is maximum 3 critical deviations or more than 10 minor deviations</b> Conformity is suspended. It will be confirmed by the date of correction of the critical deviations but not later than 31 December of the following year if: <ul style="list-style-type: none"> <li>The corrective actions for critical deviations as defined in chapter 6 have been implemented within 3 months after protocol approval (dd.mm.yy);</li> <li>the implementation of the corrective measures for critical deviations is reviewed by the auditor in a post-audit and judged as sufficient.</li> </ul>	
<input type="checkbox"/>	Level 3: On the way	<b>There are between 3 and 6 critical deviations.</b> Conformity is suspended. It will be confirmed by the date of correction of the critical deviations but not later than 31 December of the following year if: <ul style="list-style-type: none"> <li>The corrective actions for critical deviations as defined in chapter 6 are have been implemented within 3 months after protocol approval (dd.mm.yy);</li> <li>the implementation of the corrective measures for critical deviations is reviewed by the auditor in a post-audit and judged as sufficient.</li> </ul>	
<input type="checkbox"/>	Level 4: Not conform	<b>There are more than 6 critical deviations.</b> Conformity is suspended. It will be confirmed by the date of the next audit, but not later than 31 December of the following year if: <ul style="list-style-type: none"> <li>The corrective actions for critical deviations as defined in chapter 6 are implemented within 6 months after protocol approval (dd.mm.yy);</li> <li>the implementation of the corrective measures for critical deviations is reviewed by the auditor in a post-audit and judged as sufficient.</li> </ul>	

The operator took/did not take the opportunity to comment on the draft protocol within a period of 30 working days. The opinion of dd.mm.yy has been taken into account for the conclusion of the audit protocol.

The protocol was released on date by auditor's name last name, company.

Follow-up audit required?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
If yes: Envisaged month/day		
Areas/topics to be audited		

9) marked as "M" in the audit protocol  
10) marked as "C" in the audit protocol

## 7.1 Information on the Operator and the Treatment Plant

### 7.1.1 Functions

Function	Name, First name	Remarks
Owner	Name, First name	
Managing Director	Name, First name	
Site Manager	Name, First name	
EHS Manager	Name, First name	
Dangerous Goods Manager	Name, First name	
Occupational Health and Safety Manager	Name, First name	
Organizational chart of personnel	Issue date	
<b>Notes: ...</b>		

### 7.1.2 Infrastructure and processes

Infrastructure	Data		
Operational area	[m <sup>2</sup> ]	Treatment area	[m <sup>2</sup> ]
Covered area	[m <sup>2</sup> ]		
Number of employees	[number]		
Processes	Description		
<input type="checkbox"/> Informal sector integration	Description		
<input type="checkbox"/> Collection, Consolidation & storage	Description		
<input type="checkbox"/> Categorization & sorting	Description		
<input type="checkbox"/> Transportation	Description		
<input type="checkbox"/> Preparation for Reuse	Description		
<input type="checkbox"/> Dismantling & manual decontamination	Description		
<input type="checkbox"/> Advanced processing	(e.g.) Shredder for .... manual sorting of contaminants, magnetic separation, eddy current separation, sieve classification ...float / sink, water table		
<input type="checkbox"/> Final treatment	Description		
<input type="checkbox"/> Changes in processes since the last audit	Description		
<b>Notes: ...</b>			

### 7.1.3 Certified management systems

None

Norm	Date certificate	Date of expiry	Date last audit	Deviations / corrective measures in the field of the WEEE
ISO 9001	...	...	...	...
ISO 14001	...	...	...	...
ISO 45001	...	...	...	...
...	...	...	...	...
<b>Notes:</b> ...				

### 7.1.4 Authorizations

Date	Name	Granting authority	Special requirements	Date of expiry
...	Operational license	....	Restrictions	XX.YY.ZZZZ
...	Environmental impact assessment	...	...	...
...	...	...	...	...
...	...	...	...	...
<b>Notes:</b> ...				

### 7.1.5 Notifications for export of WEEE and fractions thereof

None

The operator has the following notifications for export of WEEE or fractions thereof under the Basel Convention.

Number	Recipient	Fraction	Volume / number	Date of expiry
...	...	...	...	...
...	...	...	...	...
...	...	...	...	...
...	...	...	...	...
<b>Notes:</b>				

## 7.2 Status of Implementation of Deviations

<input type="checkbox"/> First audit
--------------------------------------

The deviations from the previous audit are listed unchanged in the following table and assessed in terms of completeness and compliance with deadlines.

Nr.	Classification		Deviation as regards to the N&S	Corrective measures	Deadline	Status*
	Critical	Minor				
D1	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D2	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D3	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D4	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D5	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D6	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D7	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D8	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D9	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
D10	<input type="checkbox"/>	<input type="checkbox"/>	...	...	...	...
<b>Notes:</b> ...						

**\*Options for status:**

1 = Completely resolved, in time

2 = Completely resolved, delayed for XY days/weeks

3 = Not yet resolved/pending

## 7.3 Administration and Organization

### 7.3.1 Due diligence

Aspects and reference to the N&S <sup>11</sup>		Evidence / description / assessment	Deviation	
			C	M
3.1.1	Is the treatment facility registered with the relevant competent authorities?	Date of registration / authority	<input type="checkbox"/>	<input type="checkbox"/>
3.1.2	How is it assured that the WEEE management operator does not transfer, trade or deliver WEEE to any operator who is not operating in conformance with the N&S?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
3.1.3	How is it assured that the WEEE management operator only imports and exports WEEE with explicit permission by the authorities?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
3.1.4	Is all legally required reporting always accessible to a wider public and civil society?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
3.1.5	Is access provided to all records and documents required by the N&S to any relevant authority or duly mandated third party auditing authority upon request or during inspections?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
3.1.6	How is it assured that the WEEE management operator does not have business relations with informal sector actors engaging in unofficial or illegal business activities such as dismantling activities of WEEE types not permitted by the N&S?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
<b>Notes:</b> ...				

### 7.3.2 Informal sector integration

<input type="checkbox"/> Not applicable
---

#### 7.3.2.1 Collection

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.2.1.1	Is a procedure in place to verify that informal workers engaged in collection are registered on any required database?	Description and assessment of documentation of the WEEE management operator on informal sector actors he is cooperating with	<input type="checkbox"/>	<input type="checkbox"/>
3.2.1.2	Are informal workers engaged in collection trained on the correct handling of WEEE and avoidance of potential OH&S impacts and adverse effects on reuse, repair, material recycling and decontamination?	Description and assessment of training	<input type="checkbox"/>	<input type="checkbox"/>
3.2.1.3	Are informal workers engaged in collection provided with any relevant PPE free of charge?	Description and assessment of PPE provided (completeness and frequency of provision)	<input type="checkbox"/>	<input type="checkbox"/>
3.2.1.4	Are informal workers engaged in collection compensated duly, promptly and fairly?	Description and assessment of remuneration system	<input type="checkbox"/>	<input type="checkbox"/>
3.2.1.5	Are procedures in place which assure that WEEE	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>

11) « N&S » refers to Technical and environmental Norms & Standards of the respective country

Aspects and reference to the N&S	Evidence / description / assessment	Deviation	
		C	M
	received is not dismantled?		
<b>Notes: ...</b>			

### 7.3.2.2 Dismantling

Aspects and reference to the N&S	Evidence / description / assessment	Deviation		
		C	M	
3.2.2.1	Is a procedure in place to verify that informal workers engaged in dismantling are registered on any required database?	Description and assessment of documentation of the WEEE management operator on informal sector actors he is cooperating with	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.2	Are informal workers engaged in dismantling adequately instructed not to engage in dismantling of CRT or FPD screens and temperature exchange equipment?	Description and assessment of instructions	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.3	Are informal workers engaged in dismantling adequately instructed not to remove components requiring decontamination according to Appendix E of the N&S except for batteries, printer consumables and plastic casings and parts?	Description and assessment of instructions	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.4	Are informal workers engaged in dismantling adequately instructed not to damage any of the components requiring manual decontamination according to Appendix E?	Description and assessment of instructions	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.5	Are informal workers engaged in dismantling instructed to pass on all generated fractions and residues to the WEEE management operator?	Description and assessment of instructions	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.6	Are informal workers engaged in dismantling trained on potential OH&S impacts the required protection measures and the expected response in case of emergency?	Description and assessment of trainings	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.7	Are informal workers engaged in dismantling provided with any relevant PPE free of charge?	Description and assessment of PPE provided (completeness and frequency of provision)	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.8	Are informal workers engaged in dismantling remunerated duly, promptly and fairly?	Description and assessment of remuneration system	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2.9	Are procedures in place that verify that subsistence workers providing dismantling services adhere to this N&S and act upon discrepancies found?	Description and assessment of procedures	<input type="checkbox"/>	<input type="checkbox"/>
<b>Notes: ...</b>				

### 7.3.3 Facility and Operations Management Plan<sup>12</sup>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation		
			C	M	
3.3.1	Does the WMO have a Facility and Operations Management Plan in place which addresses the following key aspects:				
a	the scope of permitted activities as per these N&S?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
b	proof of ensuring the health and safety of all persons and the environment exposed to the operations of the facility?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
c	the legal compliance for all operational activities following the applicable laws?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
d	the assurance of operational and technical quality for the materials reused, recycled, or recovered following Appendices B and E?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
e	a basic Emergency Response Strategy (ERS) describing the coordinated operational response protocol during any emergency?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
3.3.2	Is the Facility and Operations Management Plan reviewed every 3 years and are procedures in place and applied to act on any discrepancies?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
3.3.3	Can the WEEE Management Operator demonstrate continuous improvement of the critical processing activities through a review and management process?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
3.3.4	Does the WEEE management operator have a business closure strategy which includes showing a feasible solution for all hazardous waste types requiring final treatment?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Notes:</b> ...					

### 7.3.4 Occupational Health and Safety

Aspects and reference to the N&S		Evidence / description / assessment	Deviation		
			C	M	
3.4.1	Are interested and potentially affected parties adequately informed about all risks related to the WEEE materials handled by them?	Description and assessment of type and adequateness of information	<input type="checkbox"/>	<input type="checkbox"/>	
3.4.2	Are personnel involved in any aspect of WEEE management informed of any health, safety and environmental risks?	Description and assessment of type and adequateness of information	<input type="checkbox"/>	<input type="checkbox"/>	
3.4.3	Are personnel equipped with adequate personal protective equipment?	Description and assessment of type and adequateness of equipment	<input type="checkbox"/>	<input type="checkbox"/>	
3.4.4	Are persons entering the facility informed about any relevant health and safety measures to adhere to as part of an Emergency Response Strategy?	Description and assessment of type and adequateness of information	<input type="checkbox"/>	<input type="checkbox"/>	
3.4.5	Are injuries documented including information regarding the type and severity of injuries incurred and are the respective records available?	Description and assessment of documentation	<input type="checkbox"/>	<input type="checkbox"/>	

<sup>12)</sup> The need for such type of a plan might exist with a different denomination in the respective country.

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.4.6	Are measures taken to avoid similar accidents in the future?	Description and assessment of measures taken	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

### 7.3.5 Training

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.5.1	Are induction trainings provided to all staff regarding potential OH&S impacts of the relevant WEEE management activities, required protection measures and expected response in case of an emergency?	Description and assessment of induction trainings	<input type="checkbox"/>	<input type="checkbox"/>
3.5.2	Are trainings beyond in-house training provided by a duly accredited and specially appointed training institution?	Description and assessment of ongoing trainings	<input type="checkbox"/>	<input type="checkbox"/>
3.5.3	Are continuous trainings provided to all personnel regarding relevant specific WEEE management activities?	Description and assessment of ongoing trainings	<input type="checkbox"/>	<input type="checkbox"/>
3.5.4	Are all trainings documented including information about the type and content of the training as well as the names of the participants?	Description and assessment of training documentation	<input type="checkbox"/>	<input type="checkbox"/>
3.5.5	Is effectiveness of the training regularly checked?	Description and assessment of effectiveness	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

### 7.3.6 Risk management

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.6.1	Does the WEEE management operator have an in-house risk assessment of all activities performed on site and is the infrastructure in terms of size, technology installed, and characteristics of the activities performed on site suitable and are potential risks adequately addressed?	Description and assessment of the suitability of infrastructure on site and the respective risk assessment	<input type="checkbox"/>	<input type="checkbox"/>
3.6.2	Are all locations identified and clearly designated which require the use of personal protective equipment and respective procedures to be followed?	Description and assessment of areas which require PPE and the compliance with procedures to be followed	<input type="checkbox"/>	<input type="checkbox"/>
3.6.3	Is all WEEE handled with appropriate and safe tools, containments and fixings a way that it does not adversely affect its reuse, repair and recycling potential and subsequent decontamination?	Description and assessment of the risk assessment process	<input type="checkbox"/>	<input type="checkbox"/>
3.6.4	Is all WEEE that cannot be decontaminated and treated according to the N&S by the WEEE management operator forwarded to a specialized WEEE management operator which complies with the N&S?	Description and assessment of the risk assessment process	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.6.5	Is the facility adequately secured and protected against entry and theft?	Description and assessment of type and adequateness of information	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

### 7.3.7 Data security

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
3.7.1	Are procedures in place that assure compliance with all respective data protection legislation?	Description of procedures	<input type="checkbox"/>	<input type="checkbox"/>
3.7.2	Is there a procedure to prevent, detect and respond to data security incidents by informing and cooperating with authorities?	Description of procedures	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

## 7.4 Infrastructure and Technology

### 7.4.1 Collection, consolidation and storage

#### 7.4.1.1 Facility management

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.1.1.1	Are all facilities and collection setups suitable for all types of WEEE received and stored and do they provide adequate consolidation and storage space?	Description and assessment of suitability for all WEEE types received	<input type="checkbox"/>	<input type="checkbox"/>
4.1.1.2	Are recorded WEEE types and quantities corresponding with all relevant transport documentation?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.1.1.3	Are the WEEE quantities stored not surpassing the quantity of 50% of the average annual input by weight?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

#### 7.4.1.2 Storage

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.1.1.1	Are the consolidation and storage facilities organized and maintained to provide safe access and egress from the site?	Description and assessment of the organization access and egress	<input type="checkbox"/>	<input type="checkbox"/>
4.1.1.2	Is storage of not fully decontaminated WEEE protected from weather either under a roof or by using a weatherproof covering?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.1.1.3	Are hazardous components and fractions resulting	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
	from decontamination and further processing of WEEE stored on impermeable and chemical resistant surfaces and protected from weather either under a roof or using weatherproof covering?			
4.1.2.4	Are potentially reactive WEEE types (that might be corrosive, explosive or a fire hazard) and their components stored in risk corresponding, leakage safe, fire safe and sealable containers?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
<b>Notes: ...</b>				

#### 7.4.1.3 Specific requirements for devices

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.1.3.1	Are temperature exchange equipment stored and transported upright and adequately protected?	Description and assessment of the storage and condition of temperature exchange equipment	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.2	Are CRT monitors and TVs handled and stored with care?	Description and assessment of the storage and condition of CRT monitors and TVs	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.3	Are flat panel displays transported and stored in separate containers?	Description and assessment of the storage and condition of flat panel displays	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.4	Are mercury containing lamps stored in sturdy and sealable containers which are clearly labelled?	Description and assessment of the containers used to store and transport mercury containing lamps	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.5	Are lead-acid batteries stored and transported upright and in clearly labelled, acid-resistant and leak-proof containers?	Description and assessment of the containers used to store and transport lead-acid batteries	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.6	Are LIBs stored and transported with the necessary precautions to avoid thermal runaway and fires?	Description and assessment of the precautions taken for storage and transportation of LIB	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.7	Are mixed household batteries stored and transported in clearly labelled, sturdy and leak-proof containers?	Description and assessment of the containers used to store and transport mixed household batteries	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.8	Are capacitors stored and transported in clearly labelled, sturdy and leak-proof containers?	Description and assessment of the containers used to store and transport capacitors	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.9	Are insulation foams from cooling and freezing appliances neither compressed, nor crushed or shredded prior to transportation?	Description and assessment of transportation of insulation foams	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3.10	Are any oils stored in leak-proof containers on impermeable floors and with additional spillage-protection?	Description and assessment of the containers and spillage protection measures used for the storage of oils.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Notes: ...</b>				

## 7.4.2 Categorization and sorting

### 7.4.2.1 Categorization

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.2.1.1	Are WEEE types categorized along the WEEE categories as to Annex D?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

### 7.4.2.2 Sorting for Reuse

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.2.2.1	Is incoming WEEE visually inspected for assessing its reuse potential?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.2.2.2	Which criteria are applied when doing the inspection for assessing the potential for reuse?	Description and assessment of the criteria: signs of damages, wear and tear, missing components, loose connections, forbidden substances, outdated technology	<input type="checkbox"/>	<input type="checkbox"/>
4.2.2.3	Does the WEEE management operator maintain detailed records of incoming WEEE as regards to their reuse potential and distinguish functional and non-functional equipment and components to ensure correct mass balance calculations?	Distinction between functional and non-functional equipment and components	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

## 7.4.3 Transportation

### 7.4.3.1 Legal aspects

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.3.1.1	Can the WEEE management operator provide evidence of vehicle insurances for all vehicles in operation for transportation?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.3.1.2	Are alle vehicles used for transportation in line with the requirements of the National Road Traffic Act?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

### 7.4.3.2 Documentation

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.3.2.1	Does the operator have written instructions regarding safety measures during loading, transportation and unloading?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.3.2.2	Are incidents which led to damage of shipment or injury of personnel involved occurred during loading, transportation and unloading of WEEE documented?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

#### 7.4.3.3 Transport operations - General

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.3.3.1	Does labelling of the WEEE consignments indicate nature of the content and have all additional labels including any necessary hazard symbols or warning labels as legally required and is it done by competent and trained personnel?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.2	Is WEEE kept separate from other wastes?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.3	Are WEEE consignments prepared for transportation documented in form of a manifest or inventory?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.4	Are the consignments for hazardous materials in line with the relevant hazardous packaging requirements?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.5	Are measures taken to minimize the breakage of fragile WEEE as to Annex C of the N&S?	Description and assessment	<input type="checkbox"/>	<input type="checkbox"/>

#### 7.4.4 Preparation for reuse, dismantling and manual decontamination

##### 7.4.4.1 Documentation

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.1.1	Are Standard Operating Procedures (SOP) in place which describe all steps of dismantling with significance and occurrence of relevant pollutants?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

##### 7.4.4.2 Preparation for reuse

<input type="checkbox"/> Not applicable
---

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.2.1	Do WEEE management operators conducting preparation for reuse activities follow the Appendix B "Preparation for Reuse" requirements?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.2.2	Are detailed records available on information provided to the buyer about any known or suspected defects and performance for all devices which were identified and sold as reusable?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

#### 7.4.4.3 Dismantling and manual decontamination

<input type="checkbox"/> Not applicable				
Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.3.1	Do small scale dismantlers refrain from applying mechanical processing?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.4.3.2	Does the WEEE management operator have documented procedures to identify WEEE types that require decontamination? <a href="#">N&amp;S section 39.1</a>	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.4.3.3	Are the following components, mixtures and substances removed derived in decontamination removed, kept separated and recorded as identifiable and controllable stream?			
a	Capacitors containing PCB	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
b	Cathode Ray Tubes	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
c	Devices and components containing mercury	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
d	Batteries and accumulators	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
e	Printed Circuit boards	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
f	Liquid crystal displays	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
g	Printer consumables	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
h	Plastics containing brominated flame retardants	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
i	Devices and components containing asbestos	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
j	Components containing radioactive substances	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
k	Volatile fluorocarbons and volatile hydrocarbons contained in CFC appliances	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
l	Oil containing appliances	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.4.3.4	Is decontamination done in a way which assures that components are not damaged or destroyed in a way that hazardous substances can be released to the environment?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

#### 7.4.4.4 Downstream treatment

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.4.1	Are procedures in place and applied which assure that WEEE and fractions thereof which cannot be adequately treated in house, which require further processing, or which go to final treatment are sent to an authorized downstream WEEE Management Operator in compliance with these N&S?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.4.2	Are downstream treatment operators properly informed about decontamination activities undertaken according to Appendix E of all WEEE or fractions thereof forwarded to them for further processing and required decontamination activities?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

#### 7.4.5 Data security

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.4.5.1	Are WEEE management operators providing data sanitation services ensuring complete sanitation and destruction of data by means of software wiping or manual destroying memory-bearing components and are they able to verify that the data has been destroyed?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

#### 7.4.6 Advanced processing and final treatment

<input type="checkbox"/> Not applicable
---

##### 7.4.6.1 Documentation

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.5.1.1	Does the WEEE management operator maintain process diagrams of all processes operated at the plant? Are the diagrams understandable and are they consistent with the processes taking place?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes: ...				

##### 7.4.6.2 Operations

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
4.5.2.1	Are procedures in place and applied which assure that the WEEE management operator receives only WEEE which he is technically equipped to deal with?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.2.2	Do the processes applied assure that pollutants contained in WEEE, or fractions thereof are not transferred to fractions where a subsequent process within or outside the company can assure its removal?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

Aspects and reference to the N&S	Evidence / description / assessment	Deviation	
		C	M
Notes: ...			

#### 7.4.6.3 Technology and infrastructure

Aspects and reference to the N&S	Evidence / description / assessment	Deviation	
		C	M
4.5.3.1 Does the treatment facility possess an impervious floor and roofed building structure?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.3.2 Does the treatment facility possess proper ventilation?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.3.3 Does the treatment facility possess appropriate fire precaution system?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.3.4 Does the treatment facility possess clearly demarcated and distinguishable stormwater and sewerage systems and signage and a bundled effluent collection system for run-off from the processing area to protect against any spillage?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
Notes:			

#### 7.4.6.4 Downstream treatment

Aspects and reference to the N&S	Evidence / description / assessment	Deviation	
		C	M
4.5.4.1 Are all WEEE and fractions thereof which cannot be adequately treated by the WEEE management operator sent to a specialized downstream operator who complies with these N&S?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.4.2 Are downstream operators adequately informed about the decontamination status of the sent WEEE?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.4.3 Are all fractions and substances obtained during processing of WEEE in house or received from upstream WEEE management operators which require final treatment transferred to an authorized treatment facility?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>
4.5.4.4 Are disposal records available for hazardous fractions or substances sent for final treatment?	Evidence and assessment	<input type="checkbox"/>	<input type="checkbox"/>

## 7.5 Material flow accounting

### 7.5.1 Material flow registration and documentation

Aspects and reference to the N&S		Evidence / description / assessment	Deviation	
			C	M
5.1.1	Are all incoming and outgoing shipments of WEEE and fractions thereof documented according to the "Material Accounting" requirements described in Appendix A?		<input type="checkbox"/>	<input type="checkbox"/>
5.1.2	Is the recording of items received in compliance with all relevant legal documentation requirements, and do operators maintain good records accordingly?		<input type="checkbox"/>	<input type="checkbox"/>
<b>Notes:</b>				

### 7.5.2 Annual material accounting for devices

	A Input year <b>XX</b>	B Input stock 31.12. <b>XX-1</b>	C Output year <b>XX</b>	D Output stock 31.12. <b>XX</b>	A + B - C - D Balance	Balance / A+B Ratio
Cat 1: Large household appliances						
Cat 1: refrigerators, freezers and air conditioners						
Cat 1: Small household appliances						
Cat 3: IT and telecommunications equipment						
Cat.4: Consumer Equipment						
Cat 5: Lighting Equipment						
Cat 6: Electrical and electronic tools						
Cat 7: Toys, leisure and sports equipment						
Cat 8: Medical devices						
Cat 9: Monitoring and control instruments						
Cat 10: Automatic dispenser						
Cat 11: Batteries						
Cat 12: Security and military equipment						
Cat 13: Fluorescent tubes						
<b>TOTAL</b>						
<b>Notes:</b>						

### 7.5.3 Annual material accounting for fractions

	A Input year <b>XX</b>	B Input stock 31.12. <b>XX-1</b>	C Output year <b>XX</b>	D Output stock 31.12. <b>XX</b>	A + B - C - D Balance	Balance / A+B Ratio
CRT-Tubes						
Mixed batteries						
Lead-acid batteries						
Lithium-Ion batteries						
Capacitors						
Printer cartridges						
LCD displays						
Hg containing lamps						
Flame-retardant plastics						
Mixed plastics						
Volatile Fluorocarbons						
<b>Notes:</b>						

### 7.6 Final provisions

The following corrective measures must be implemented within the specified period or from the date specified.

Nr.	Reference (Number of aspect)	Classification	Deviation	Corrective measures	Deadline
D1		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>
D2		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>
D3		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>
D4		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>
D5		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>
D6		<input type="checkbox"/> minor <input type="checkbox"/> critical	<i>description</i>	<i>description</i>	<i>dd.mm.yyyy</i>

# 8

## Annex 2: Example of auditor training plan

### 8.1 Training Concept

#### 8.1.1 General Approach

The training of WEEE auditors is conducted as a **combined theoretical and practical training course over a period of four days**. The aim is to provide the participating auditors with the most important technical and environmentally relevant basic knowledge for the sustainable handling of electronic waste and to equip them with the necessary knowledge and tools to prepare, carry out and evaluate an audit at an e-waste recycler.

The training is based on the draft of the **National Norms and Standards for the Management of Waste Electrical and Electronic Equipment (WEEE)** (in short "N&S") and the corresponding **Guidance Document**. The N&S were drafted in close consultation with the participating PROs. Based on this, an **audit protocol** was developed, which serves as the basis for the training. A handbook will be available to support the auditors in the audits, explaining in more details the aspects to be audited.

Day 1 of the training has been shaped for a larger audience including Government officials.

#### 8.1.2 Number of trainees

XX trainees (of which XX are independent auditors with the remainder being PRO affiliated staff).

#### 8.1.3 Profile of the trainees

The trainees should ideally fulfill the following criteria:

- » University degree (bachelor or master)
- » Minimum 3 years of working experience in auditing or compliance based waste management
- » Balanced representation of women and men

#### 8.1.4 Training venues and dates

The training will be 75% classroom based and 25% in the WEEE recycling company. The practical training will take place at XXX. The classroom training takes place at XXX.

#### 8.1.5 Auditor training

Day 1	Open day fro a broader audience
Day 2	Classroom training
Day 3	Practical training for all trainees in 1 WEEE company
Day 4	Classroom training and de-briefing

#### 8.1.6 Trainers

The following trainers will conduct the auditor training: ....

#### 8.1.7 Training Certificate

All participants receive a training certificate upon successful completion of the training.

#### 8.1.8 Costs & financing

The costs of the trainers will be financed by .... The trainees or the sending organisation have to finance transportation to and from the training and lodging during the training.

## 8.2 Training Curriculum

### 8.2.1 Day 1: Legal framework, national WEEE management scheme and value chain, WEEE management and recycling

Date: ...  
Time: ...  
Location: ...

**Objective day 1:** To become familiar with the legal framework and the WEEE situation in ..., the proposed conformity assessment scheme and general aspects of WEEE management and recycling

Element	Time	Content	Trainer
	08:30-09:00	Arrival and Registration of participants	
Welcome, opening and introduction	09:00-09:30	<ul style="list-style-type: none"> <li>• Welcome and opening by SRI</li> <li>• Presentation of participants and trainers incl. expectations</li> <li>• Program of the training</li> </ul>	
Module 1: Policy and legal framework; WEEE value chain; general aspects	09:30-10:15	<b>WEEE Management Value Chain in ...</b>	
	10:15-11:00	<b>Policy and legal framework for WEEE management in ...</b>	
	11:00-11:15	Coffee break	
	11:15-12:15	<b>WEEE general aspects</b> <ul style="list-style-type: none"> <li>• Overview</li> <li>• WEEE treatment goals</li> <li>• Final treatment of fractions</li> <li>• Q&amp;A</li> </ul>	
	12:15-13:30	Lunch break	
Module 2: WEEE management and recycling	13:30-14:30	<b>WEEE recycling processes</b> <ul style="list-style-type: none"> <li>• Collection, reception, handling and storage</li> <li>• Manual dismantling &amp; depollution</li> <li>• Mechanical processing</li> <li>• Downstream processes</li> <li>• Q&amp;A</li> </ul>	
	14:15-15:00	<b>Health and safety aspects</b> <ul style="list-style-type: none"> <li>• Hazardous substances</li> <li>• Worker's health</li> <li>• Community &amp; Environment</li> <li>• Q&amp;A</li> </ul>	
	15:00-15:15	Coffee break	
Module 3: Conformity Assessment	15:15-15:45	<b>Conformity assessment</b> <ul style="list-style-type: none"> <li>• General principles</li> <li>• Approach and structural set-up</li> <li>• Development of a CA scheme</li> </ul>	
	15:45-16:15	<ul style="list-style-type: none"> <li>• Experiences from Switzerland</li> <li>• Experiences from other SRI countries</li> </ul>	
	16:15-16:45	• Q&A and discussion	
	16:45-17:00	<b>Closing of day 1</b>	

Table 24: Schedule day 1

**8.2.2 Day 2: Health and safety, hazardous substances and depollution, auditing techniques and audit preparation**

Date: ...  
 Time: ...  
 Location: ...

**Objective day 2:** To know the hazardous substances in WEEE and their safe handling and depollution; to know about the WEEE auditing techniques; to prepare the audit.

Element	Time	Content	Trainer
	09:00-09:15	Recap of previous day's modules	
Welcome, opening and introduction	09:15-10:15	<b>Health, Safety &amp; Environmental Impacts – Risk Management</b> <ul style="list-style-type: none"> <li>• Introduction &amp; Recap</li> <li>• Risk assessment</li> <li>• Risk remediation</li> <li>• Good practices</li> </ul>	
	11:00-11:15	Coffee break	
Module 5: Protocol & Handbook	10:45-11:30	<b>Introduction into the audit protocol</b> <ul style="list-style-type: none"> <li>• Design features of the protocol</li> <li>• Going through the protocol</li> <li>• Auditor handbook</li> </ul>	
	11:30-12:00	Q&A	
	12:00- 13:30	Lunch break	
Module 6: Audit preparation	13:30-14:15	<b>WEEE auditing techniques</b> Approach and implementation of an audit of a WEEE company	
	14:15-15:45	<b>Classroom audit training</b> <ul style="list-style-type: none"> <li>• In two groups of 5 – 6 trainees</li> </ul>	
	15:45-16:00	Coffee break	
Training audit preparation	16:00-17:00	<b>Preparation of the audit</b> <ul style="list-style-type: none"> <li>• 2 groups of 5-6 trainees</li> </ul>	
	17:00-17:30	Q&A	

Table 25: Schedule day 2

**8.2.3 Day 3: Practical audit training**

Date: ...  
 Time: ...  
 Location: ...

**Objective day 3:** Implementation of a practical audit

**8.2.4 Day 4: Results of the audits and debriefing**

Date: ...  
 Time: ...  
 Location: ...

**Objective day 4:** To review the audits results/de-briefing

Element	Time	Content	Trainer
Module 8: Presentation and discussion of audit results	09:00-10:00	Presentation and discussion results of audit group 1	
	10:00-10:30	Coffee break	
	10:30-11:30	Presentation and discussion results of audit group 2	
	11:30-12:30	Lunch break	
Module 9: Exam, certificate and closing	12:30-14:00	Exam and certificate distribution	
	14:00-14:30	Final remarks and closing of the training	

Table 26: Schedule day 4

- 8.2.5 Supporting documents**
- » WEEE Norms & Standards
  - » Guidance document for WEEE Value Chain Operators
  - » Audit protocol for WEEE operations and auditor handbook



**SUSTAINABLE  
RECYCLING  
INDUSTRIES**

[sustainable-recycling.org](https://sustainable-recycling.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.