CEWASTE

Voluntary certification scheme for waste treatment

A contribution to future Critical Raw Material recycling

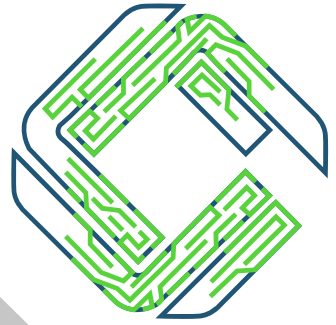
Final Event of the Project

Wednesday 24th March, 09:30 – 12:00 CET

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 820859

Housekeeping

- The Webinar will be **recorded**
- If you have **any questions** for the presenters or for the panellists:
  - We can only have written questions:
  1. Navigate to the designated questions area.
  2. Begin by typing your name and organization.
  3. Type the question underneath.



CEWASTE Stakeholder Network

- Join our **stakeholder network** to stay in touch
  - Final report – end of April 2021

cewaste.eu/get-involved/

Agenda – Session 1

CEWASTE:
A contribution to future Critical Raw Material recycling

Webinar - 24th March 2021, 09:30 - 12:00 CET

9:30 **Welcome and Introduction**
Mathias Schluep - World Resources Forum
Marcin Sadowski - European Commission

9:40 **Critical Raw Materials and Circular Economy - the current situation and the CEWASTE proposition**
Shahrzad Manoochehri, World Resources Forum

9:50 **Recycling of valuable and critical materials - from what and how?**
Otmar Deubzer, United Nations University

10:05 **Fair play - the CEWASTE requirements**
Sonia Valdivia, World Resources Forum

10:20 **Trust is good, control is CEWASTE: the verification system**
Yifaat Baron, Oeko-Institut

10:35 **QUESTIONS**

10:45 **BREAK**

Agenda – Session 2

10:55 **Life after CEWASTE. Ideas for the sustainability of the certification scheme**
Federico Magalini, Sofies

11:05 **Panel discussion: CEWASTE - Paper exercise, for coalitions of the willing or future state of the art?**
Facilitator:
Pascal Leroy, WEEE Forum
Panellists:
Christian Dworak, CENELEC TC111x Environment
Christian Hagelueken, UMICORE
Mattia Pellegrini, DG Environment
Norbert Zonneveld, EERA
Fanny Rateau, ECOS

11:55 **Wrap up**
Laura Petrov - European Commission
Mathias Schluep - World Resources Forum

12:00 **CLOSE**

CEWASTE

Voluntary certification scheme for waste treatment

Critical Raw Materials and Circular Economy
The current situation and the CEWASTE proposition

Shahrzad Manoochehri

World Resources Forum

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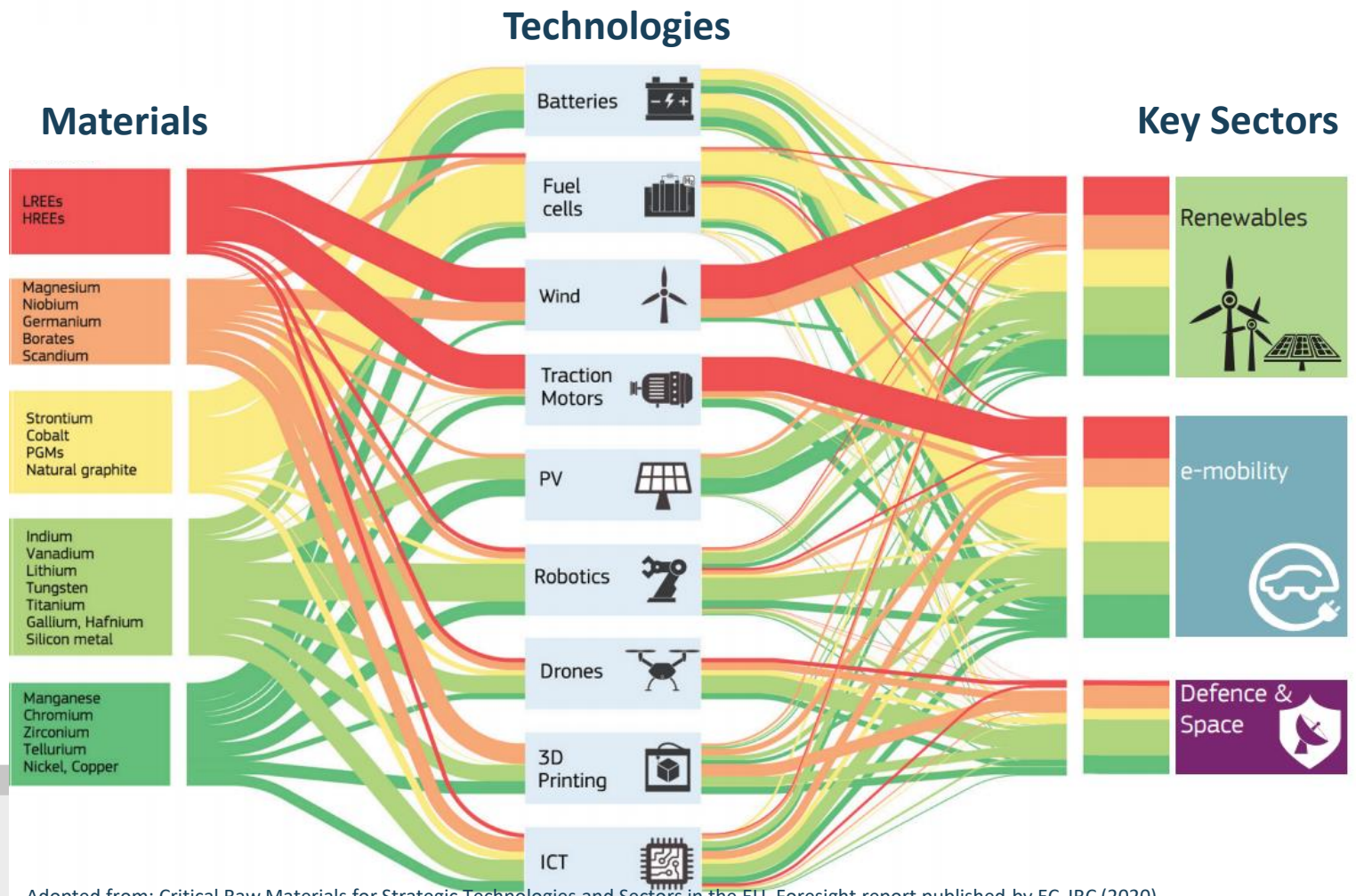
Critical Raw Materials

2020 Critical Raw Materials (new as compared to 2017 in bold)		
Antimony	Hafnium	Phosphorus
Baryte	Heavy Rare Earth Elements (HREE)	Scandium
Beryllium	Light Rare Earth Elements (LREE)	Silicon metal
Bismuth	Indium	Tantalum
Borate	Magnesium	Tungsten
Cobalt	Natural Graphite	Vanadium
Coking Coal	Natural Rubber	**Bauxite**
Fluorspar	Niobium	**Lithium**
Gallium	Platinum Group Metals	**Titanum**
Germanium	Phosphate Rock	**Strontium**

Source: COM(2020) 474 final

Critical Raw Materials: Why are they critical?

- **High Economic Importance**
- **Supply Risk**

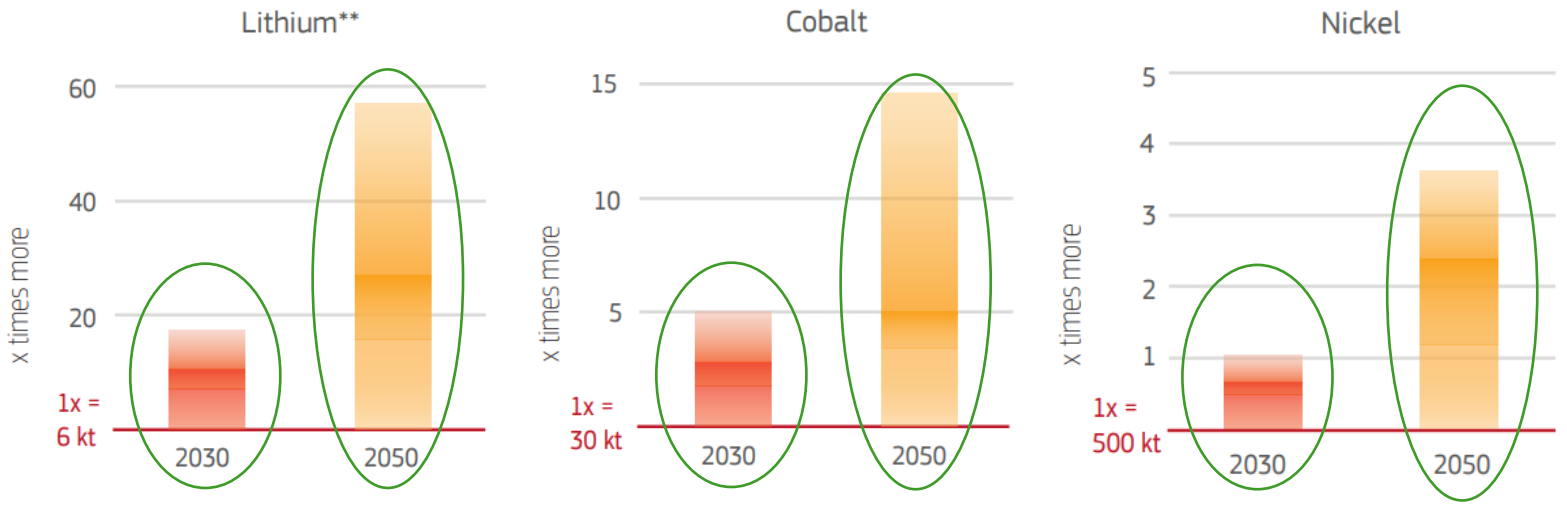


Adopted from: Critical Raw Materials for Strategic Technologies and Sectors in the EU, Foresight report published by EC-JRC (2020)

Critical Raw Materials: Why are they critical?

- **High Economic Importance**
- **Supply Risk**

CRM use in different technologies in the EU in 2030 and 2050 (e.g. key CRMs use in battery production)



Source: Critical Raw Materials for Strategic Technologies and Sectors in the EU, Foresight Study published by EC-JRC (2020)

Critical Raw Materials: Why are they critical?

- **High Economic Importance**

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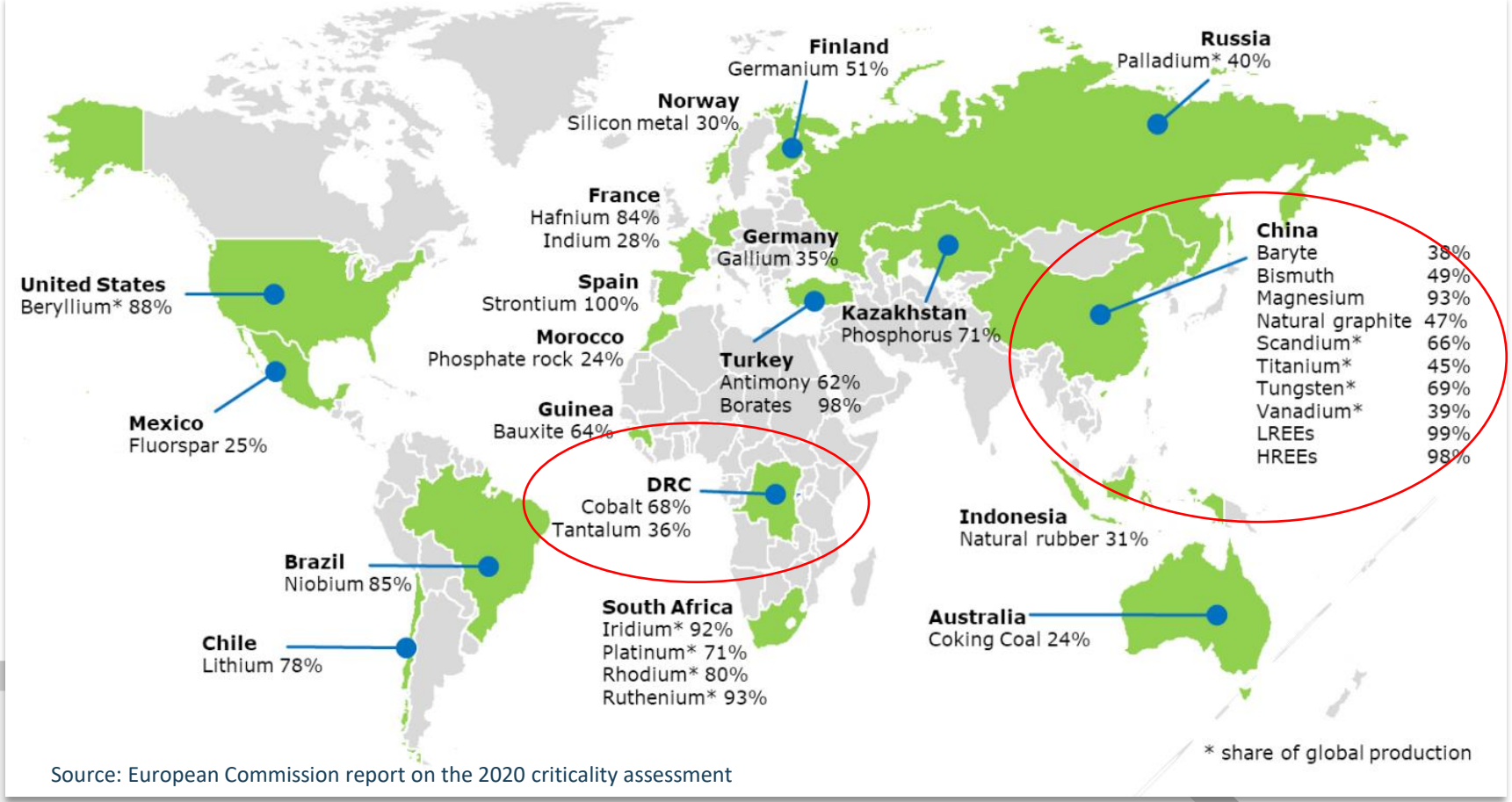
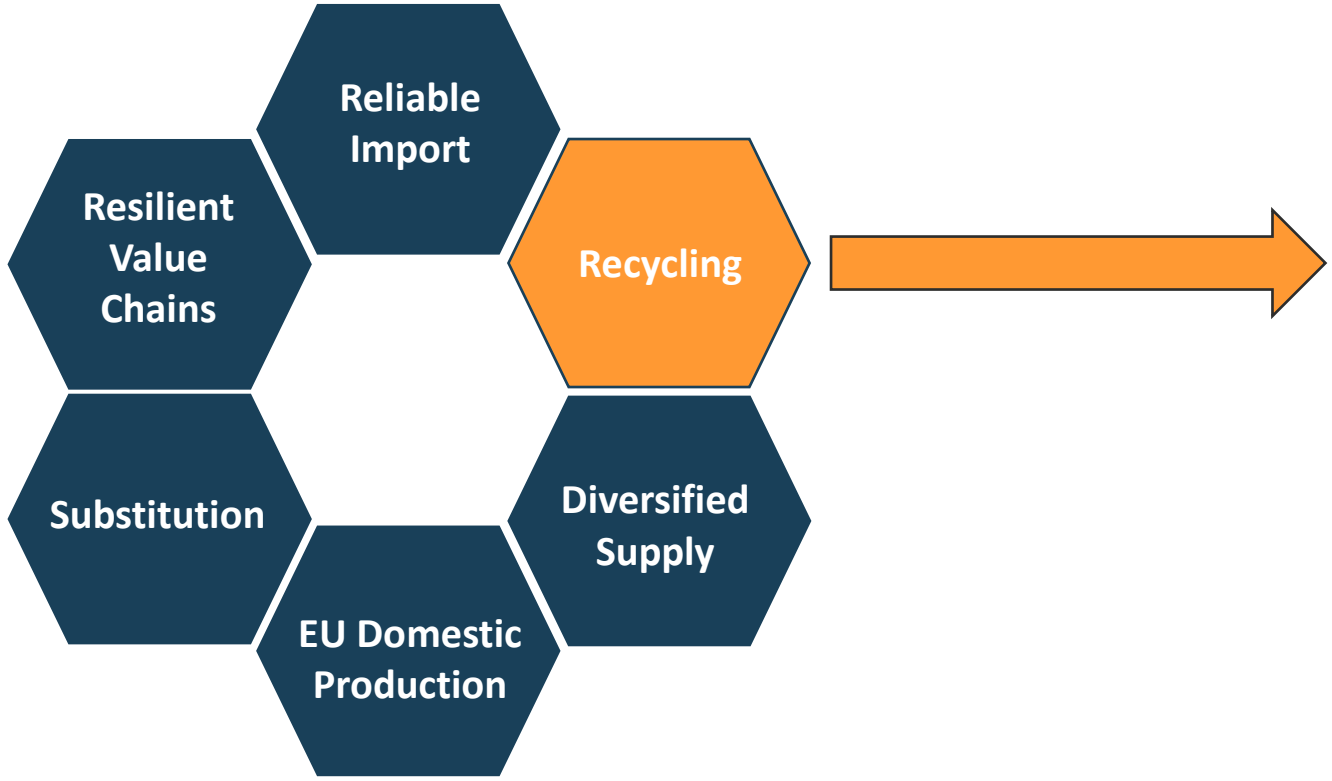
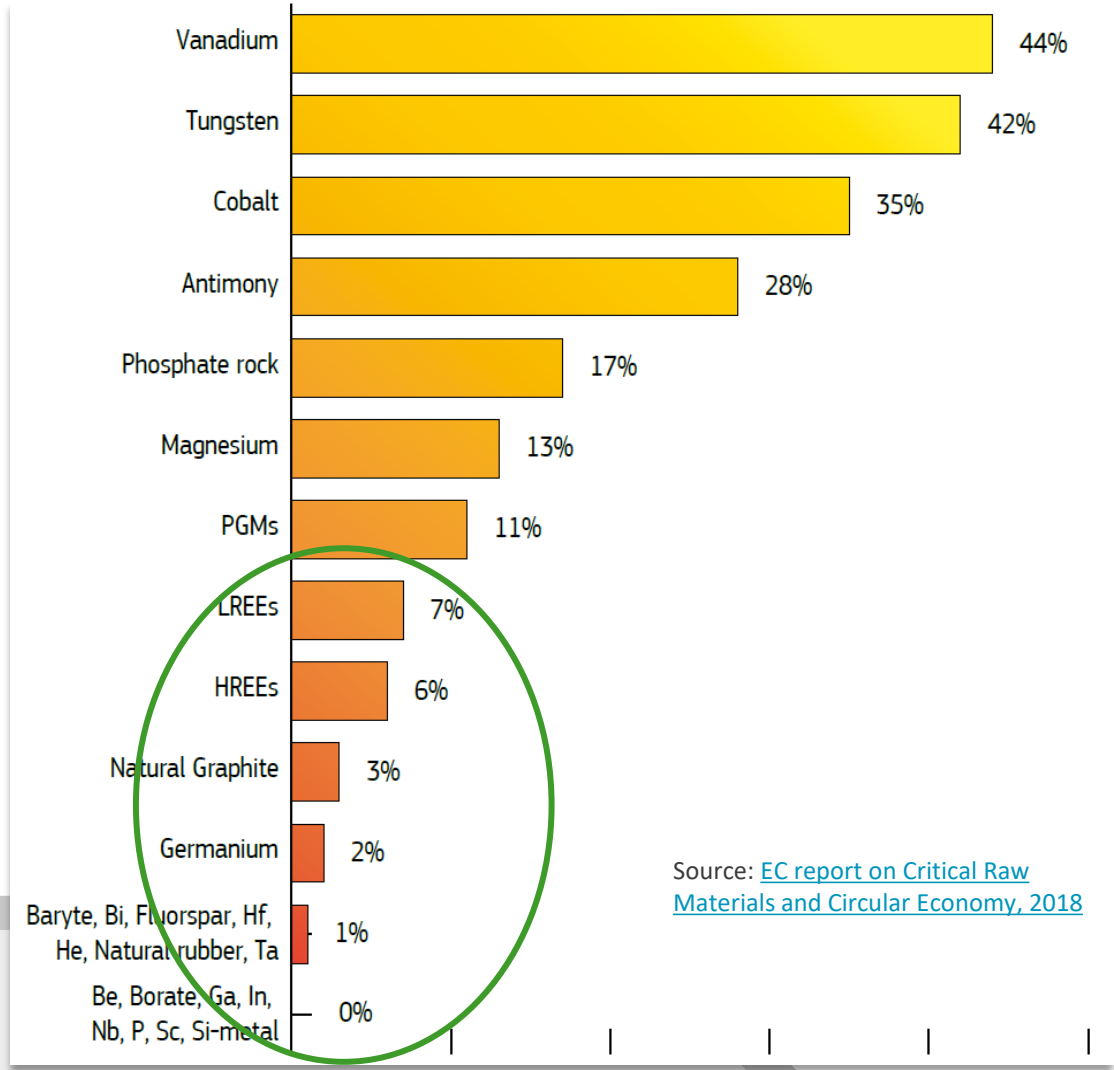


Source: European Commission report on the 2020 criticality assessment

How to mitigate supply risks to ensure EU's resilience?



Current contribution of recycling to meet EU demand of CRMs: End-Of-Life recycling Input Rate (EOL-RIR) (JRC elaboration based on the 2017 CRM study and on the MSA study 2015)



Source: [EC report on Critical Raw Materials and Circular Economy, 2018]

How to improve CRMs recycling rates?

Policy actions, regulations and improved legislative frameworks

Standardization needed to support policy actions

-) Adopted from: Recycling critical raw materials from waste electronic equipment, Buchert et.al., Oeko Institute
-) List not exhaustive

Why CEWASTE?

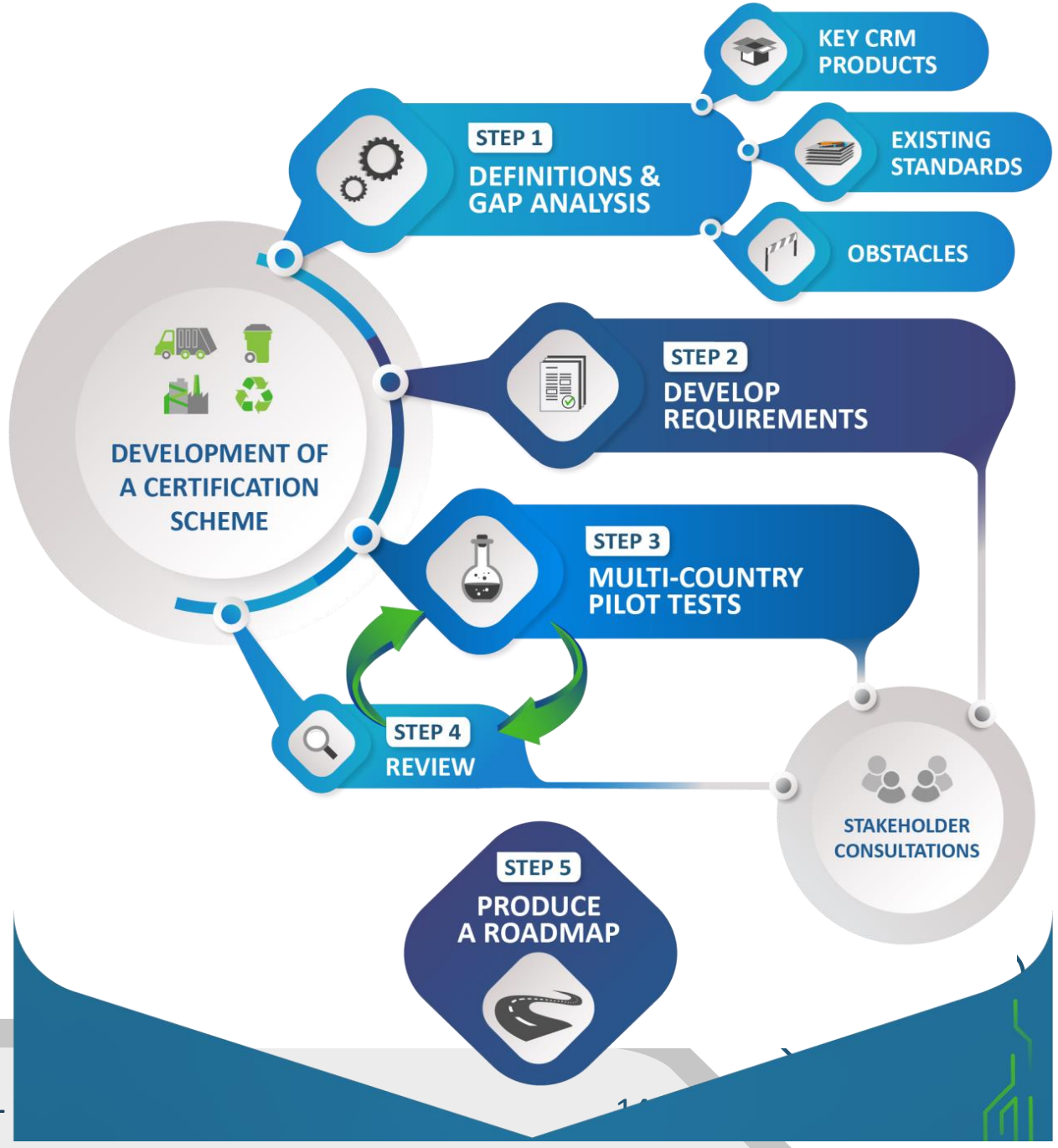
The project **"Voluntary Certification Scheme for Waste Treatment" (CEWASTE)** has developed and validated a voluntary certification scheme for collection, transport and treatment facilities of key types of waste containing sufficiently high amounts of valuable and critical raw materials.

Approach

- Identify **key CRM equipment and components** and understand **existing recovery practices, standards and verification schemes**
- Leverage existing normative requirements to **develop new requirements for CRM recycling**
- Develop an **assurance system and related verification procedures**
- Validate the new voluntary scheme through **pilots**
- Define long term sustainability of the scheme, resulting in a **roadmap**
- Implement a **transparent stakeholder process**

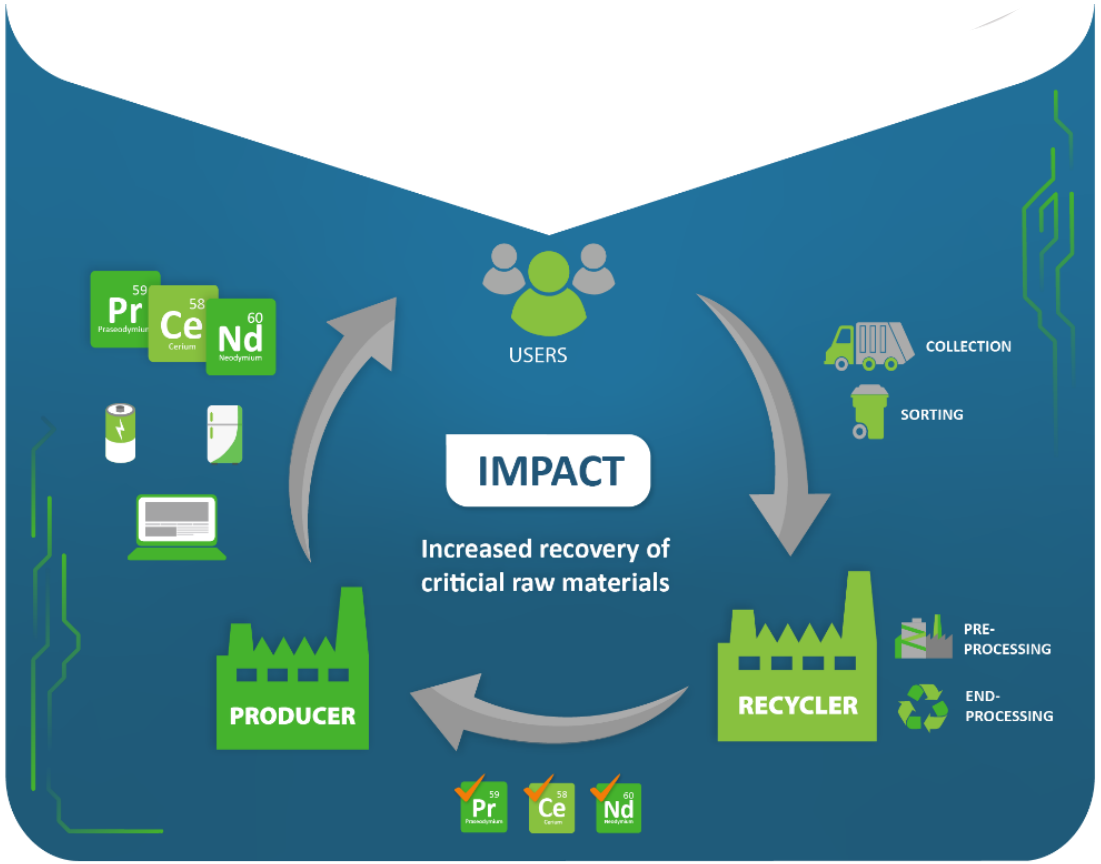
Nov. 2018

Apr. 2021



Expected Impact

- More environmentally and socially sound recycling systems for CRM recycling are developed globally,
- Increased recovery rates of valuable and critical raw materials and a more circular economy for Europe,
- Criteria for a more level playing field and rules for fair competition is provided,
- Framework conditions for the sustainable development of and investment in innovative solutions in the EU are improved.



Project Partners

Advisory Board

ADVISORY BOARD
Agence de l'Environnement et de la Maitrise de l'Energie (ADEME)
Aluminium Stewardship Initiative (ASI)
CENELEC TC111x Environmental Standards (CENELEC)
Colombian Institute of Technical Standards and Certification (ICONTEC)
International Union for Conservation of Nature (IUCN)
DG Joint Research Center (JRC)
Public Waste Agency of Flanders (OVAM)
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Southern African e-Waste Alliance (SAEWA)
Swiss Federal Institute for Materials Science and Technology (Empa)
Umwelt Bundesamt (UBA)
WEEELABEX
Eurometaux
Basel Convention

Thank you for your attention!

Shahrzad Manoochehri

World Resources Forum

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Voluntary certification scheme for waste treatment

Recycling of valuable and critical raw materials - from what and how?

Dr. Otmar Deubzer

United Nations University (UNU)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 820859

Identification of Key CRM Equipment (KCE): Technical Criteria

- **Product** scope: WEEE and batteries in WEEE and ELVs
- **Material** scope: Materials on the COM's 2017/2019 Critical Raw Materials (CRM) list + valuable materials such as Au and Ag
- **Final processing** technically feasible (or foreseeably feasible), TRL at least 7
- Pre-processing technically capable to provide **input required for end-processing**
- Recycling of CRMs does **not conflict with precious metal (PM) recycling**

Identification of Key CRM Equipment: Economic Criteria

- Economic feasibility under current economic framework **not necessary**
- **Exclusion of hopeless cases:** CRM concentration in Key CRM Components (KCCs) within “reasonable limits”:
  - Concentration/content below technical limits or very low even after separation of components
  - Severe imbalance between required effort and benefit
- Prominent victims:
  - Tantalum capacitors
  - Indium in flat panel displays

Key CRM Equipment (KCE) and Key CRM Components (KCC)

	WASTE TYPE	CRMs	Required/Viable Input for End-processing	Current Business Practice
PCBs Desktop computers, professional IT Laptops Mobile phones Tablets External CDDs/ODDs, devices with internal CDDs/ODDs	WEEE	Au, Ag, Bi, Pd, Sb	PCBs (shredded and unshredded), CuPM granulates, mobile phones w/o. batteries	✓
Li-ion BATTERIES Laptops Mobile phones Tablets Li-ion batteries in other WEEE	WEEE	Co, Li	Batteries	✓*
BEV, (P)HEV	ELV			
LEAD-ACID BATTERIES Uninterruptable Power Supplies Other WEEE (e-scooters without seats, ride-on toys,...)	WEEE	Sb**	Batteries	✓
Cars containing LABs, other vehicles (e-scooters with seats, ...)	ELV			
FLUORESCENT POWDERS Fluorescent lamps CRT monitors and TVs	WEEE	Eu, Tb, Y, Ce, La, Y, Tb, Eu, Gd, La, Ce	Fluorescent Powder	✗
Nd-MAGNETS Temperature exchange equipment (engine, compressor) Large household appliances other than temperature exchange equipment (motors/drives) Laptops (HDD) Desktop computers, professional IT (HDD)	WEEE	Nd + Dy, Gd, Pr, Tb	Magnets	✗
BEV, (P)HEV (electro engine)	ELV			

BEV - Battery Electric Vehicle
CDDs - Compact Disk Drives
CuPM – Copper Precious Metal
HDD - Hard Disk Drive
ODDs - Optical Disk Drives
PCB - Printed Circuit Boards
(P)HEV - (Plug-in) Hybrid Electric Vehicle

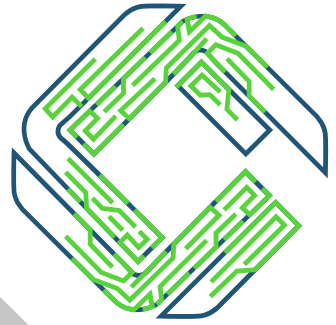
The current business practice of recycling CRMs from the Key CRM Equipment is deemed to be achievable with current or foreseeable technologies if the economic and/or legal framework conditions for collection, sorting and treatment are adapted.

*Current business practice does not (yet) include recycling of Li
**Current feasibility refers to recycling with lead (Pb)

The Re-invention of the Wheel?

Why do we need new requirements?

Isn‘t there enough out there already?



Analysis of More than 60 Documents with Normative Requirements

- Generally relevant non-technical requirements identified
- Very few CRM-specific non-technical requirements
- Very few technical requirements with relevance for Key CRM Components
- Hardly any technical requirements specifically
  - for collection and transport to facilitate
  - pre-treatment of KCE to enable
  - recycling of CRMs from KCCs

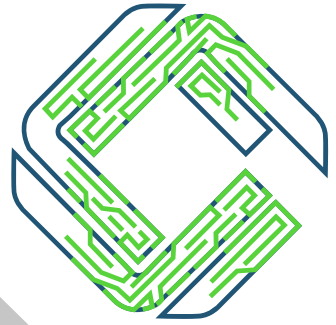
Main Identified Gap!

Thank you for your benevolent critical attention!

Another valuable and scarce material...

Dr. Otmar Deubzer

United Nations University (UNU)



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Fair play – the CEWASTE Requirements

Sonia Valdivia

World Resources Forum

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Addressing Challenges

Main Outcome

- A new set of normative requirements for improving CRM recycling from WEEE and waste batteries,

- These include management, sustainability, traceability and technical requirements for collection, logistics and treatment facilities.

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General Approach

- The **EN 50625-series** were adopted as the starting point considering them as the most comprehensive and suitable set of standards for the purpose of CEWASTE

  Source: CEWASTE WP1 Deliverable: Baseline and Gap Analysis

  If 50625 was not sufficient, references to other standards were considered

- Requirements for **collection points, collection facilities, logistics operators, pre-treatment and final treatment facilities** in the value chain

- CRM bases on the European List for the EU (COM (2020))

General Approach

- Development of new texts if no appropriate references were available: for example: **CRM-specific technical requirements are developed for 4 components, traceability and sustainability requirements.**

Technical requirements for four components:

- batteries
- magnets
- fluorescent **powders**
- **PCBs**

Traceability requirements (upstream)

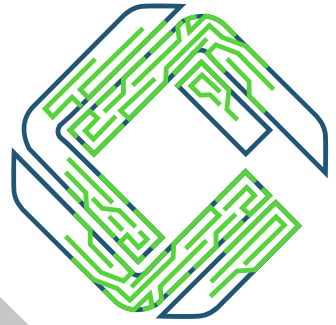
Sustainability requirements

General Approach

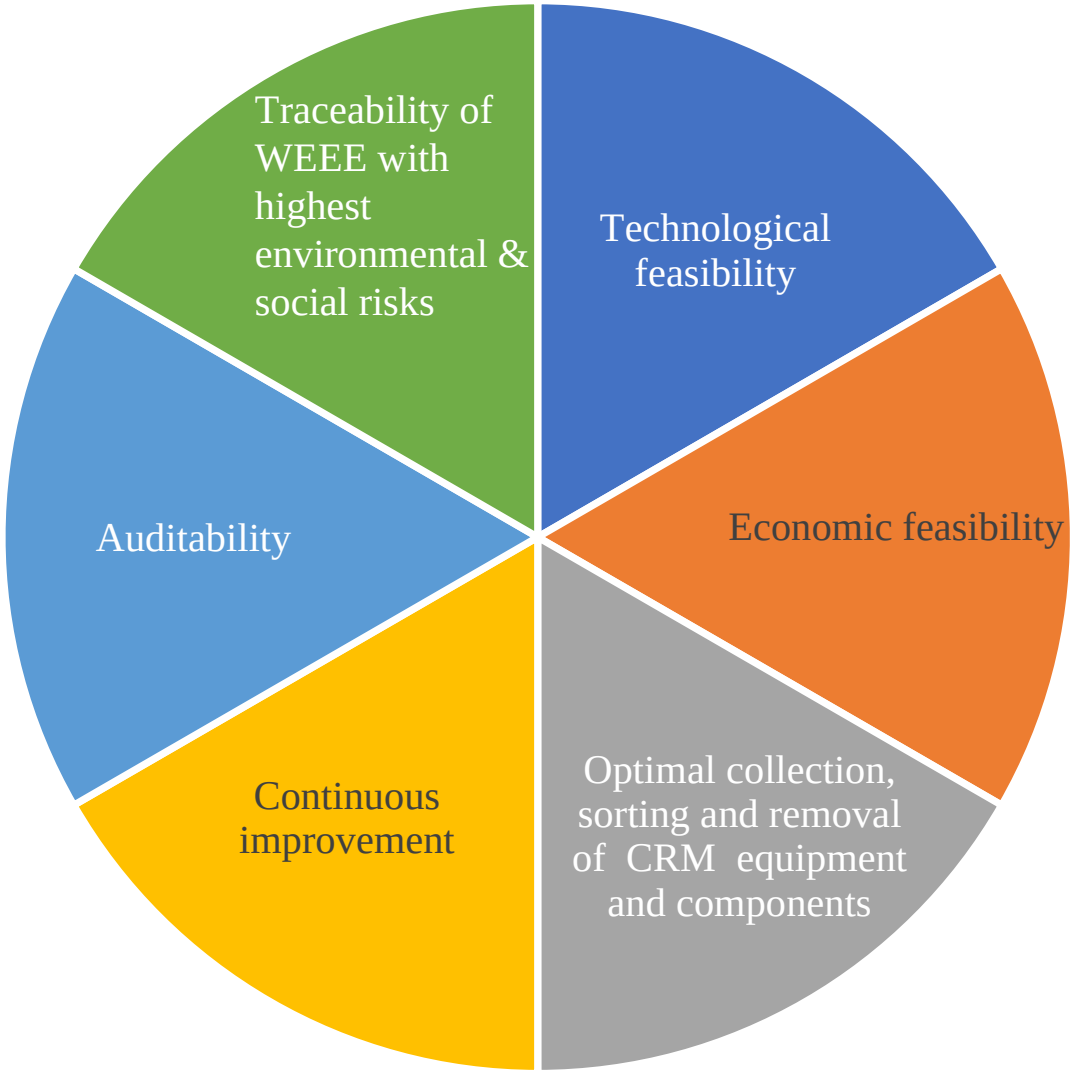
- T**raceability requirements** apply to *lead-acid batteries and printed circuit boards* whenever they are *sourced from Non-OECD countries.* The due diligence approach will allow for "second- or third-party verification" and aim to prevent shipments of WEEE and waste batteries from operators whose operations fail to comply with the purpose of this normative document.

  Source: Adapted from the OECD Due Diligence Guidelines for Multinational Enterprises

- **Other sources for sustainability and technical requirements** in the absence of national requirements (e.g. on chemicals exposure, transboundary movements beyond Europe)



Principles guiding the requirements development



CEWASTE Requirements Structure

Introduction

1. Scope

2. Normative references

3. Definitions

4. Managerial, traceability and sustainability requirements

5. Technical requirements

6. De-pollution monitoring

Annex I: List of KCE, CRM contained and toxics in WEEE

Annex II: Monitoring and evaluation plan - Example

Annexes III-VI: Examples of treatment options

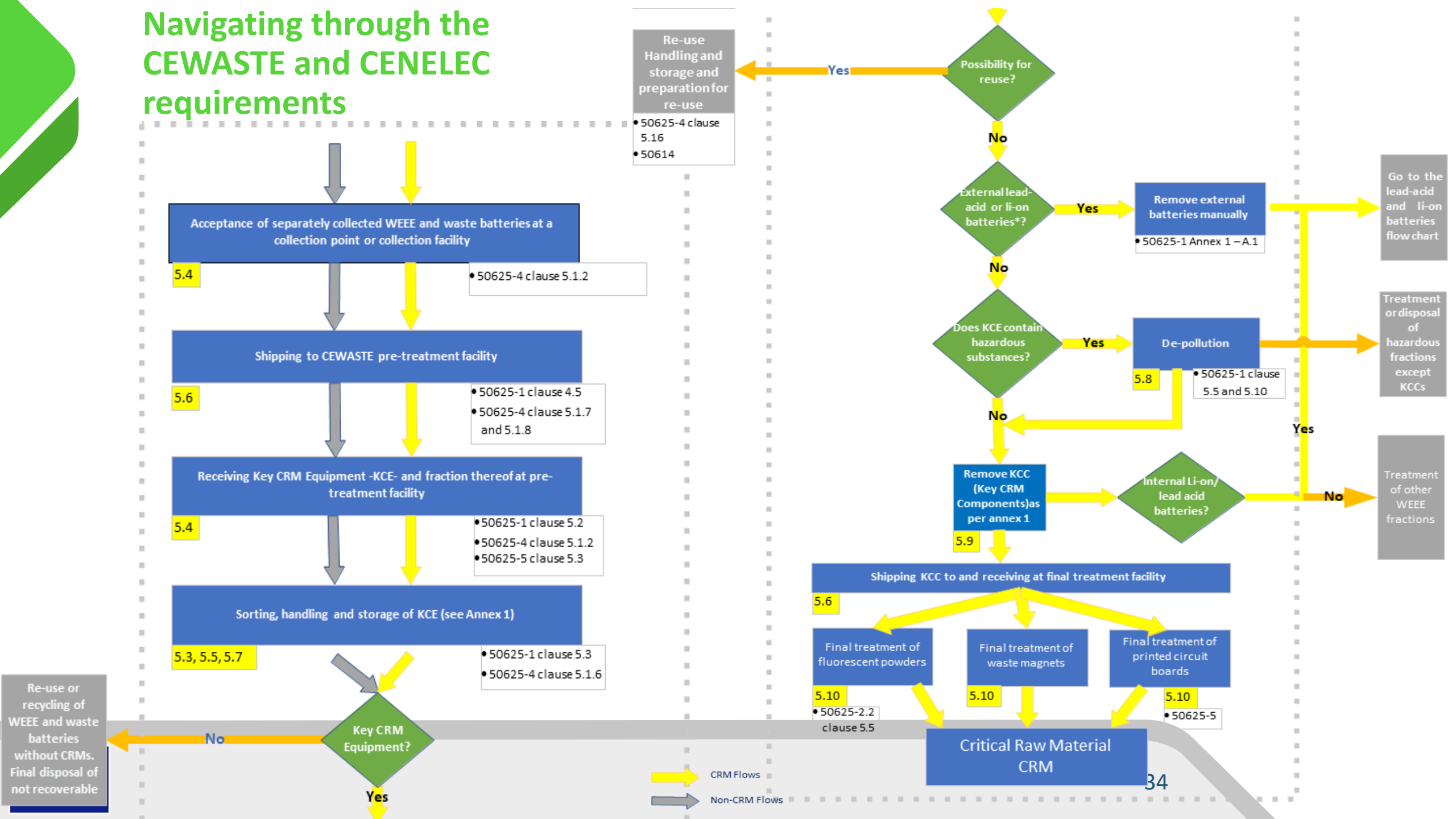
4.1 Managerial
- Management Principles
- Compliance with legal requirements
- Management system
- Risk management
- Monitoring
- Documentation
- Communication and awareness raising
- Personnel Management

4.6 Traceability

4.10 Sustainability

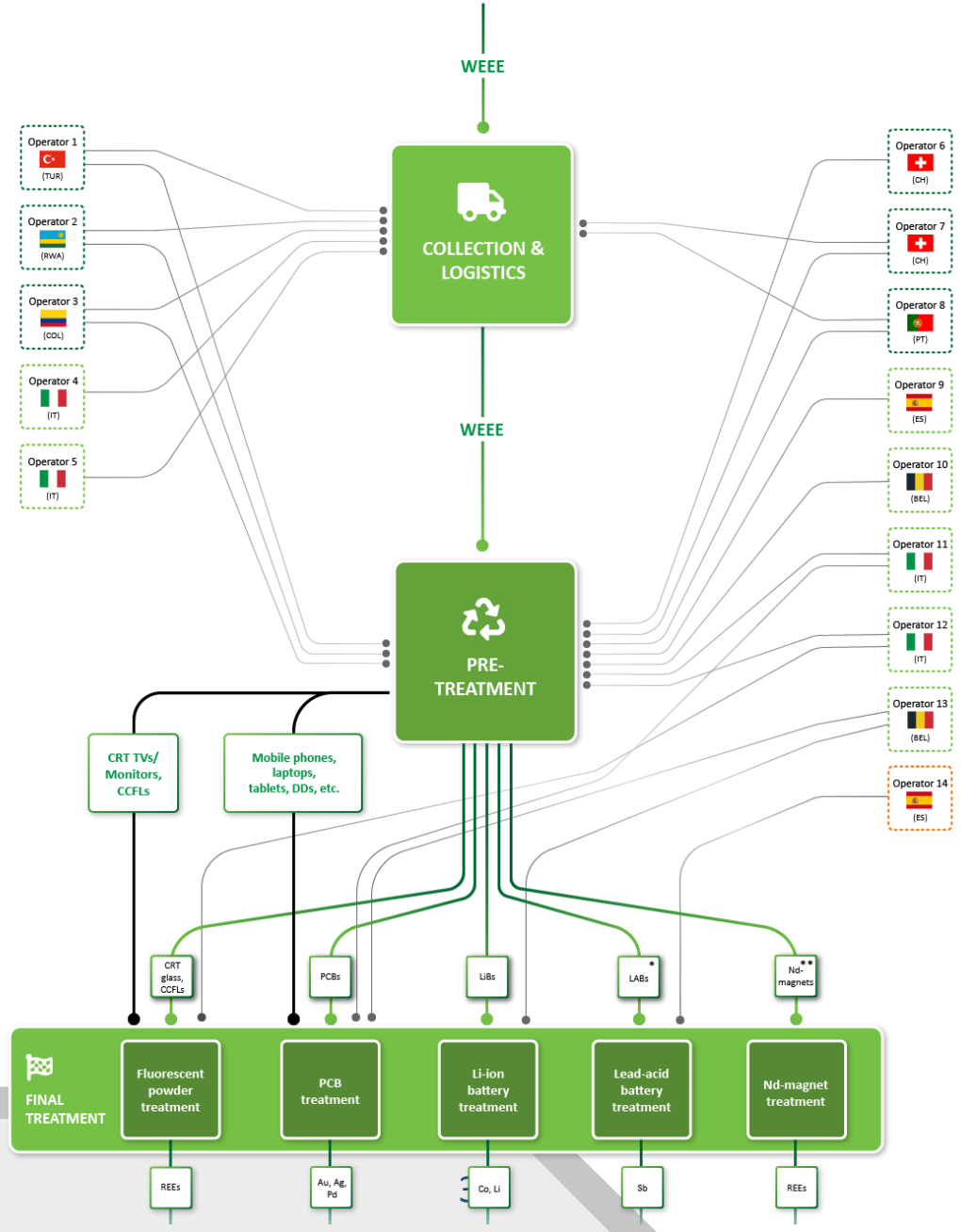
5.1 General technical requirements
5.2 Technical and infrastructural pre-conditions
5.3 Handling
5.4 Receiving and acceptance
5.5 Storage at collection and treatment facilities
5.6 Shipping
5.7 Sorting
5.8 De-pollution at treatment facilities
5.9 Removal of CRM-containing components
5.10 Final treatment for recycling CRM fractions
- Waste batteries
- Fluorescent powders
- Waste magnets
- Printed circuit boards

Navigating through the CEWASTE and CENELEC requirements

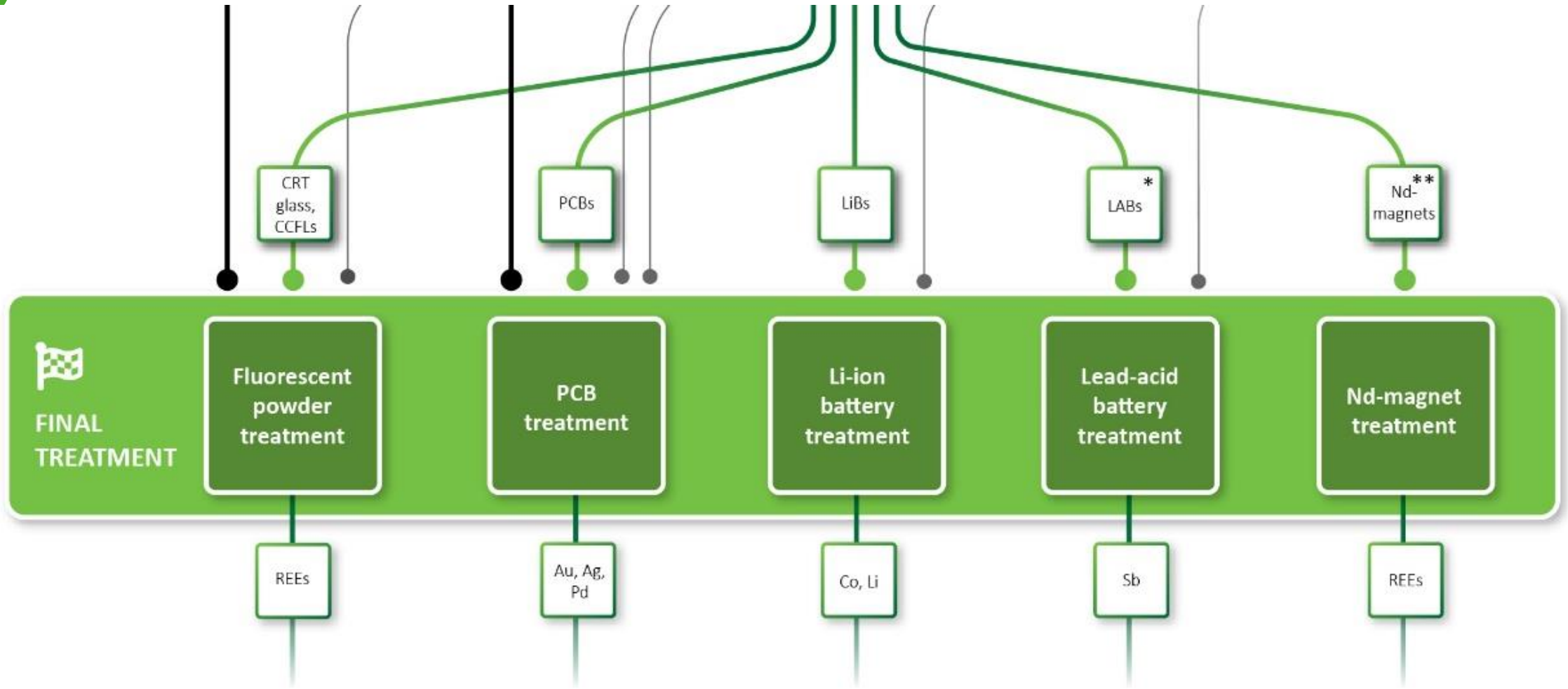


Pilot audits

- 20 pilot audits conducted between March and December 2020
  - 13 **companies** (more than 1 audit type at some companies)
  - Scope of **activities**: collection (3), logistics (4), pre-treatment (10), final treatment (3)
  - **Countries**: Belgium (4), Colombia (1), Italy (5), Portugal (1), Rwanda (2), Spain (1), Switzerland (5), Turkey (1)
  - Audit **format**: physical (10.5), virtual (9.5)
- Team of **auditors** included consortium members + external auditors trained through webinars
- Additionally, **questionnaire** sent to 5 PROs for input on feasibility/relevance of CEWASTE requirements on **collection**



Pilot audits



Pilot audits

- Pilot audits served a dual purpose:
  - Receive feedback on feasibility / relevance of CEWASTE requirements
  - Assess the extent to which CEWASTE requirements are complied with (“readiness level assessment”) as well as the effort needed to reach compliance

- Audits resulted in more than 600 comments provided by auditors and operators, which were reviewed by consortium partners to decide on necessary revision of normative requirements, assurance system and/or verification procedures

Thank you for your attention!

Sonia Valdivia

World Resources Forum

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Trust is good, control is CEWASTE:

The verification system

Yifaat Baron

Oeko-Institut

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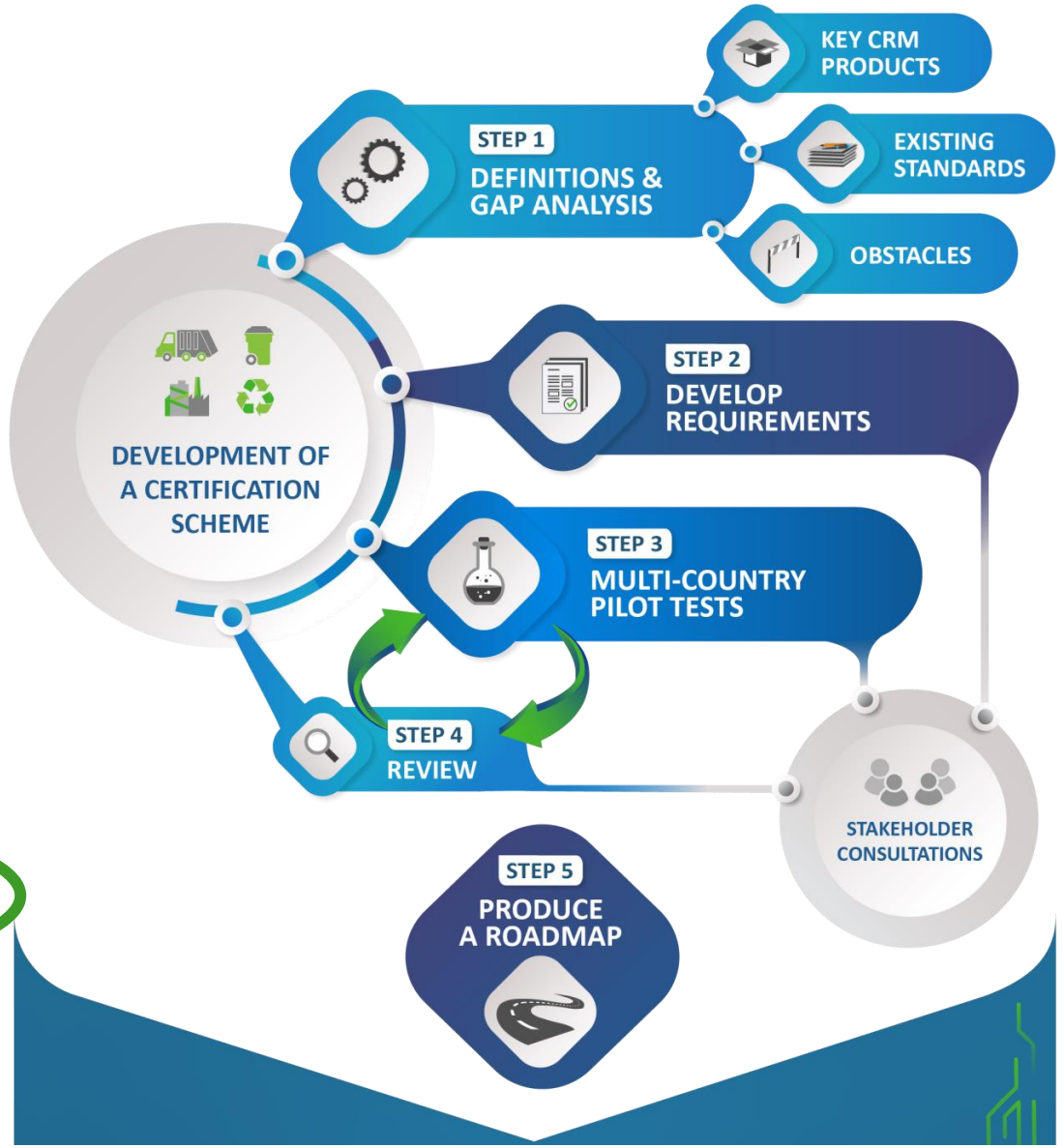
Background

Having developed new requirements for CRM recycling, it was also necessary to ensure their implementation.

The **CEWASTE** scheme was developed, to provide the framework for certification of the compliance of the waste management value chain with the CEWASTE requirements and has two main parts.

- The **assurance system** specifies rules and procedures to be followed by various actors involved with the scheme implementation.
- The **verification system** was developed to support the processes addressed in the assurance system, i.e., auditing of facilities against the CEWASTE requirements, and preparation of operators for these audits.



Main parts of the CEWASTE scheme

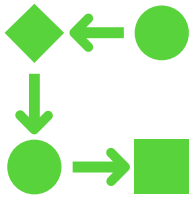
- The assurance system operates on three levels, or processes:

Scheme Rules

The framework for the functioning of the certification scheme and of CEWASTE Certification Bodies

Scheme Processes

The rules, templates and guidance's that support the auditing of facilities in the course of CEWASTE certification.

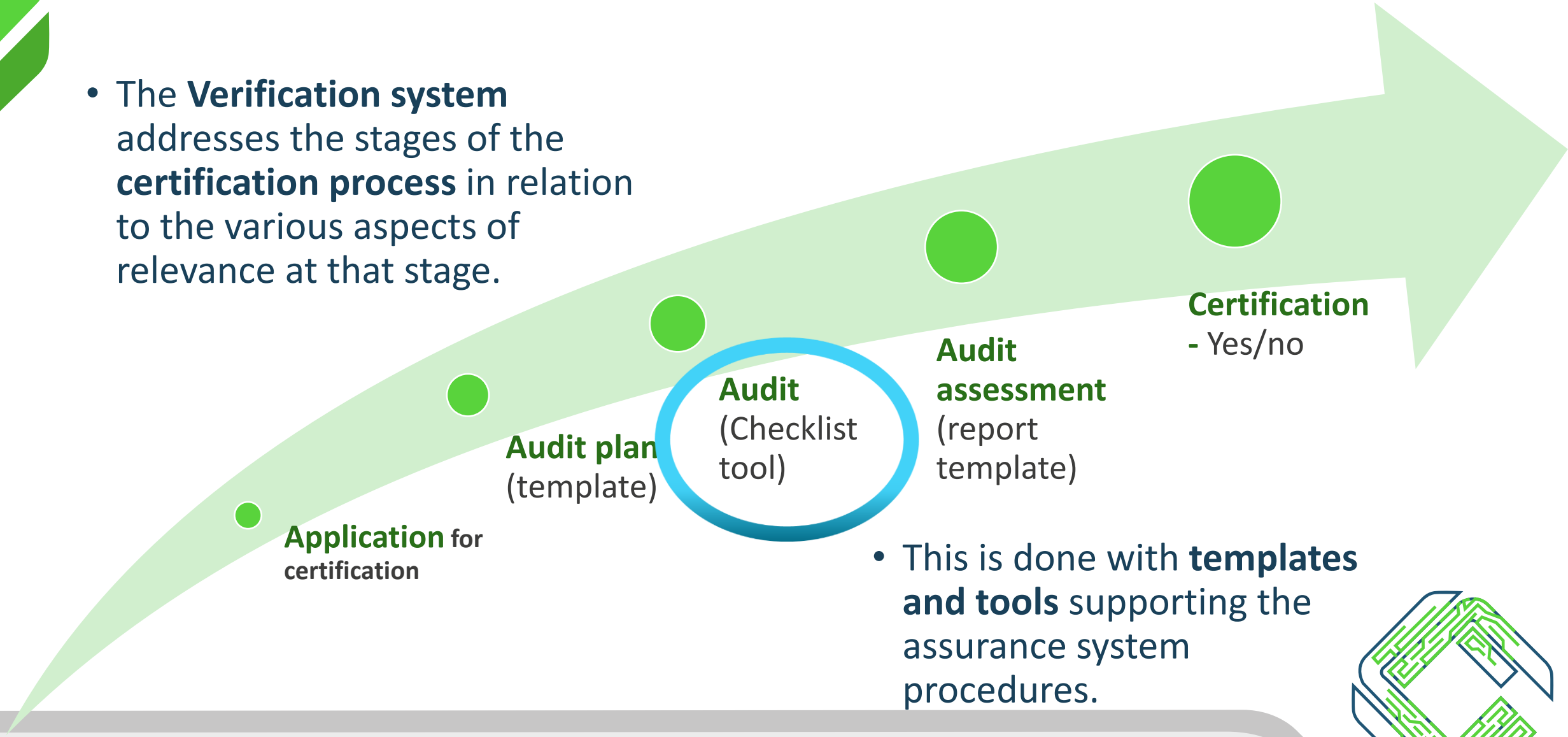


Scheme Assessment:

The rules, templates and guidance's for supporting the review of audit results and decisions on certification

The certification process vis-à-vis the CEWASTE verification system

- The **Verification system** addresses the stages of the **certification process** in relation to the various aspects of relevance at that stage.

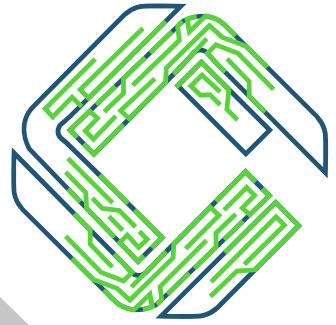


- This is done with **templates and tools** supporting the assurance system procedures.

Development of the checklist tool-

- Inspiration for the development of the checklist tool:
  - Existing verification systems for E-waste facility certification were analysed (e.g., WEEELABEX, SWICO, etc.), looking at methods for verification:
    - Check-lists → questions;
    - Manuals → Explanatory information;

  But also looking at available tools (SWICO) to address the CENELEC requirements
  - Experience of auditors was also considered at various stages:
    - Convenience of use (documents, excel tool);
    - Ease of preparation of an audit; navigation between requirements during audit;
    - Check of sufficieny of developed tools

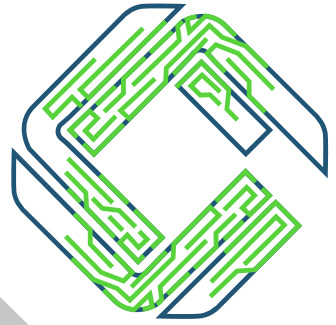


The checklist-tool

The checklist tool is devised as a working instrument for supporting the auditing procedure for both the auditor and the operator.

- **Questions** and **Explanatory Information** allow preparation/ assessment of each requirement;
- **Filtering options** allow making the tool fit for purpose (a specific facility, a specific audit);
- **Introductory** and **annex texts** integrated to some degree as background information;
- Specification of **requirements** as "**high relevance**" and "**other**" eases the identification of major non-conformities
- The **Assessment sheet** summarises nonconformities for the auditor;

➲ Checklist tool



The checklist-tool – Filtering options

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Audit questions for Management Requirements

Use instructions for the auditor

- Before an audit use the filters in columns B and C to select **management requirements** and questions applicable according to the scope of the audit.
- Use columns S-X to filter the questions applicable to the type of operator/facility that is to be audited.
- During the audit please follow the questions in Column I and mark the answers with and X in columns J to M. Whenever a question is answered with NO, a non-conformity will be visible in column N and its type will be specified in colum O.
- Please use the Column P to provide additional comments regarding compliance or issues related to each requirement.

Note about Non-conformities

During the audit please take note column F **"Type of requirement"** of the Requir
categorised as having "high relevance" and as "other":
For the assessment of the audit, in cases where "high relevance" requirements
relevance non-conformity (HRNC) and will be visible in column O, requiring the
relevance requirements) and to pass a revision audit as a condition to certificat
For the assessment of the audit, the number of "HRNC" and "other" requireme
non-conformities"

Operator	Type of WEEE	Audit scope	No.	CEWASTE Section (V6)	Type of requirement	CEWASTE Requirement (V6)	Question ID	Audit question	Yes	No	N/A
All	All (WEEE and waste batteries)	CEWASTE only	4.1	Management principles		Main management principles of the management system that shall be in place include 'legal requirements and identification and review of compliance', 'risk assessment and mitigation' and 'competency development' and 'continuous improvement'. Additional specific requirements of a management system are listed in "clause 4.3 Management system".		Refer to question Q4.2.0.1 and question Q4.2.0.2			
All	All (WEEE and waste batteries)	CEWASTE only	4.1	Management principles	High relevance	Main management principles of the management system that shall be in place include 'legal requirements and identification and review of compliance', 'risk assessment and mitigation' and 'competency development' and 'continuous improvement'. Additional specific requirements of a management system are listed in "clause 4.3 Management system".	Q4.1.0.0	Does the management system of the operator include a mechanism for risk assessment and mitigation related to environment, health and safety risks (i.e. are procedures documented in the management plan and do they specify the frequency at which risk assessment of various aspects should be carried out?)?			
All	All (WEEE and waste batteries)	CEWASTE only	4.1	Management principles	Other	Main management principles of the management system that shall be in place include 'legal requirements and identification and review of compliance', 'risk assessment and mitigation' and 'competency development' and 'continuous improvement'. Additional specific requirements of a management system are listed in "clause 4.3 Management system".	Q4.1.0.1	Does the risk assessment cover continuity of conformity with the applicable CEWASTE requirements ?			
All	All (WEEE and waste batteries)	CEWASTE only	4.1	Management principles	Other	Main management principles of the management system that shall be in place include 'legal requirements and identification and review of compliance', 'risk assessment and mitigation' and 'competency development' and 'continuous improvement'. Additional specific requirements of a management system are listed in "clause 4.3 Management system".	Q4.1.0.2	Does the risk assessment cover the indentification of those locations and activities that require the use of PPE and procedures to be followed?			
All	All (WEEE and waste batteries)	CEWASTE only	4.1	Management principles		Main management principles of the management system that shall be in place include 'legal requirements and identification and review of compliance', 'risk assessment and mitigation' and 'competency development' and 'continuous improvement'. Additional specific requirements of a		Refer to questions for clause 4.9.1 for aspects related to			

The checklist-tool – “Manuals” for operators and auditors

essment of the audit, the number of "HRNC" and “other” requirements not complied with will be summarised in "Summary mities"

Audit question	Yes	No	N/A	Open ans.	NC	NC Type	Comment from auditor	Verification manual (For auditors)	Assurance manual (For operators)
to question Q4.2.0.1 and question Q4.2.0.2								See text for question Q4.2.0.1 and question Q4.2.0.2	See text for question Q4.2.0.1 and question Q4.2.0.2
the management system of the operator include a anism for risk assessment and mitigation related to onment, health and safety risks (i.e. are procedures mented in the management plan and do they specify equency at which risk assessment of various ts should be carried out?)?								The auditor shall check that operators have identfied r	The operator shall develop rules and procedures on ri
the risk assessment cover continuity of conformity he applicable CEWASTE requirements ?								Verify if there have been any improvement proposals	To ensure the continuity of conformance with applicab
the risk assessment cover the indentification of locations and activities that require the use of PPE rocedures to be followed?								During the on-site inspection, it shall be audited if how	The risk assessment and mitigation procedures shall
to questions for clause 4.9.1 for aspects related to etency development								Refer to explanatory text for clause 4.9.1 for aspects	Refer to explanatory text for clause 4.9.1 for aspects
the management system of the operator include a anism for monitoring and achieving continuous vement? to section Q4.0.1.0								Continuous improvement should be monitored by the	The management system of the operator shall include
re a documented 6-12 month plan established to ort continuous improvement the plan include short-term and mid-term actions ey performance indicators and targets anual or bi-anual management, monitoring and ation procedure carried out and documented in a ble manner for the activities in scope of the audit particular in relation to the efficiency of CRM								The auditor should check that the operator has a docu	The operator should show a documented 6-12 month p

The checklist-tool – assessment sheet of non-conformities

Summary of Non-conformities

Audit date:	0
Auditor	0
Last modified	date doc last modified
Last modified by	name

Type of NC	Number of NC	Number of requirements audited	%
HRNC	0		#DIV/0!
Other	0		#DIV/0!

Note about Non-conformities

During the audit please take note column F **"Type of requirement"** of the Requirement sheets and the differentiation between requirements categorised as having "high relevance" and as "other":
For the assessment of the audit, in cases where "high relevance" requirements are not fulfilled (even just one), this shall count as a **High relevance non-conformity (HRNC)** and will be visible in column O of the Requirement sheets, requiring the operator to comply with the requirement (all high relevance requirements) and to pass a revision audit as a condition to certification.
For the assessment of the audit, the number of "HRNC" and "other" requirements not complied with will be summarised in this sheet. If more than 30% of the "other" requirements are not complied with, this shall also be considered a major non-conformity, requiring the operator to comply with at least 50% of the "other" requirements initially not complied with and in any case with at least 70% of all "other" requirements in order to pass a revision audit. This condition to certification shall apply as well as conditions related to non-compliance with "high relevance" requirements.

The focus of the audit is on CRMs and their recovery, but should the auditor see activities or malfunctions that are adversely impacting the environment, even if it is beyond the scope of the facility being checked it should be commented in relation to management and considered as grounds for a High relevance

# NC	Type	CEWASTE requirement associated	Question ID	Description of NC	Deadline for closure	Open/closed
1	HRNC					Open
2	Other					Closed
3						
4						
5						
6						

The checklist-tool – background information

CEWASTE
Voluntary certification scheme for waste treatment

CEWASTE REQUIREMENTS FOR IMPROVING CRM RECYCLING FROM WEEE AND WASTE BATTERIES

This project has received funding from the European Union's horizon 2020 research and innovation programme under grant agreement N° 820009

Background inf

The overall objective of the CE additional valuable raw mater through traceable and sustain

While it is acknowledged that of this document considering

As such, CEWASTE addresses t objectives set by the EU actio and socially sound recycling sy

The CEWASTE standard has ta standards in the field of electr others, development of the CE Logistics and Treatment Requ Electrotechnical Standardizati

By identifying and assessing th proposed new requirements t materials. This includes a set requirements for waste collec apply to operators handling a

By following the CEWASTE sta recovery. Firstly, key CRM pro larger amounts of streams wit requirements that final treatn way, from both environmenta

Treatment facilities of printed their operations and compliar verification system in place. Ir collection, transport and treat compliance with the sustainal The traceability requirements (CoC) approach and experienc bio-based products/biofuels, include the definition of:
Management systems and responsibilities,

CoC policy and procedures in line with the most commonly used material accounting model of mass balance, product documentation and records incl. confirming eligible input (traceable origin of waste materials), compliant claims (on-product or off-product claims) and communication aspects.

Annex I – Critical raw materials (CRM), products and components targeted

	Information on the Waste
Key CRM Component (KCC)	**Key CRM Equipment (KCE)**
Fluorescent powders	Fluorescent lamps
	CRT monitors and TVs
Nd-magnets	Temperature exchange equipment (TEE) (engine, compressor)
	Household appliances other than TEE (motors/drives)
	Laptops (HDD)
	Desktop Computers, prof. IT (HDD)
	BEV, (P)HEV (electro engine)
Printed circuit boards (PCB)	Desktop computers, prof. IT
	Laptops
	Mobile phones
	Tablets
	External CDDs, ODDs, devices with interna
	CDDs/ODDs
Li-ion batteries	Laptops
	Mobile phones
	Tablets
	Li-ion batteries from other WEEE
	BEV, (P)HEV
Lead acid batteries	Lead-acid batteries

CEWASTE
Voluntary certification scheme for waste treatment

Instructions for the auditor
Refer to the figures in this sheet to select the requirements and questions applicable for the pilot audit and filter by Operator (column S-X) and Type of Waste (Column B) in the Technical Requirements sheet

Figure 1. Flow of CRM equipment, components and materials and requirements

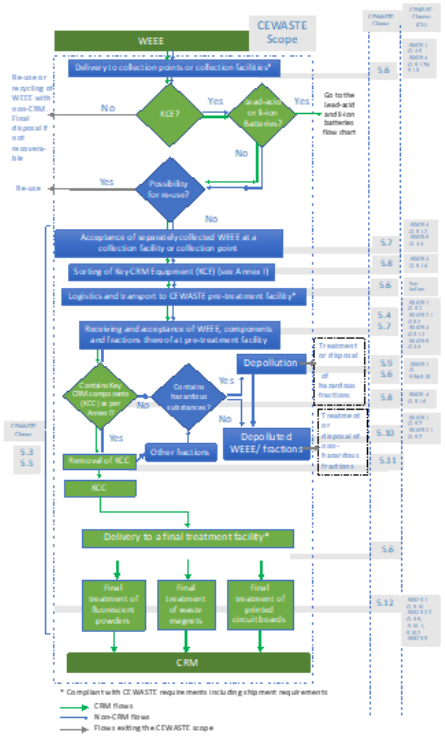
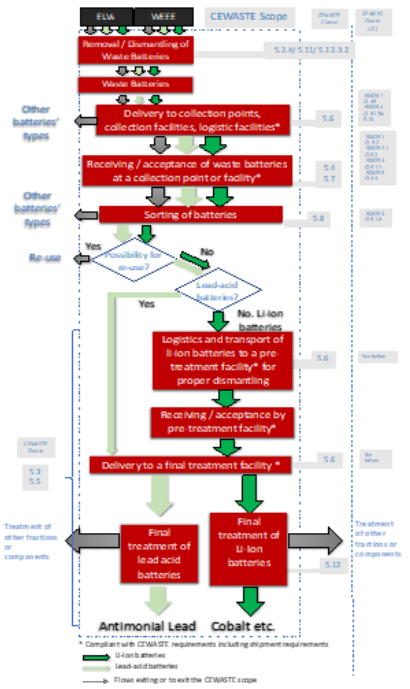
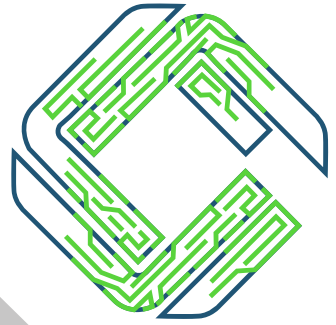


Figure 2. Flow of waste batteries, components and materials as well as requirements



Status

- The suitability of the CEWASTE requirements and the tools and templates was tested in a set of **pilot audits**, performed in several countries.
- **Consultation** with stakeholders on the CEWASTE requirements also allowed refinement of these scheme, particularly in relation to the CEWASTE requirements and their auditing tools (checklist).
- Both the assurance system and the verification system have thus undergone a final **revision** after these stages, in alignment with revisions to made in the CEWASTE requirements.



Thank you for your attention!

Yifaat Baron

Oeko-Institut

Q&A

BREAK TIME

Next session: 10:55

WELCOME BACK

CEWASTE

LIFE AFTER CEWASTE

Ideas for the sustainability of the certification scheme

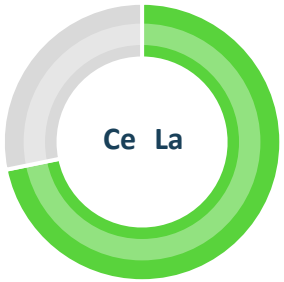
Federico Magalini

Sofies

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 820859

The Beauty & the beast: leveraging on key products

	WASTE TYPE	Valuable and Critical Raw Materials	Required/Viable Input for End-processing	Current Business Practice
PCBs Desktop computers, professional IT Laptops Mobile phones Tablets External CDDs/ODDs, devices with internal CDDs/ODDs	WEEE	Au, Ag, Bi, Pd, Sb	PCBs (shredded and unshredded), CuPM granulates, mobile phones w/o. batteries	✓
Li-ion BATTERIES Laptops Mobile phones Tablets Li-ion batteries in other WEEE (battery packs from e-bikes, tools, ...)	WEEE	Co, Li	Batteries	✓*
BEV, (P)HEV	ELV			
LEAD-ACID BATTERIES Uninterruptable Power Supplies Other WEEE (e-scooters without seats, ride-on toys,...)	WEEE	Sb**	Batteries	✓
Cars containing LABs, other vehicles (e-scooters with seats, ...)	ELV			
FLUORESCENT POWDERS Fluorescent lamps CRT monitors and TVs	WEEE	Eu, Tb, Y, Ce, La Y, Tb, Eu, Gd, La, Ce	Fluorescent Powder	✗
Nd-MAGNETS Laptops (HDD) Desktop computers, professional IT (HDD) E-bikes	WEEE	Nd + Dy, Gd, Pr, Tb	Magnets	✗
BEV, (P)HEV (electro engine)	ELV			



Share of various precious and critical materials in Key products compared to total CRMs in EEE

Status Quo & Main Issues on CRM Recovery

Current WEEE & Battery Directive do not provide any:

- legal basis (mass-based recycling targets)
- economic reward (producers minimize collection & recycling costs, outsourcing operations; minimal – if any – recovery of components rich in CRMs by individual producers)

for the recovery of any CRM

Various technical/technological/organizational limitations in recovery processes, including dissipative effects due to sub-standard treatment processes or export also preventing economies of scale and threshold quantities (list CRMs),

Limitations linked to current regulations (e.g. shipments of waste outside EU where CRMs might not be recovered); list of CRM reflects political priorities of EU and less global geological scarcity,

Market factors price fluctuation of commodities and changes in interest of end-users (use as oxide vs salt in the case of REE),

Knowledge gap and lack of awareness for example of where CRMs are concentrated for the recovery of CRMs

The case of RE recovery from Lamps

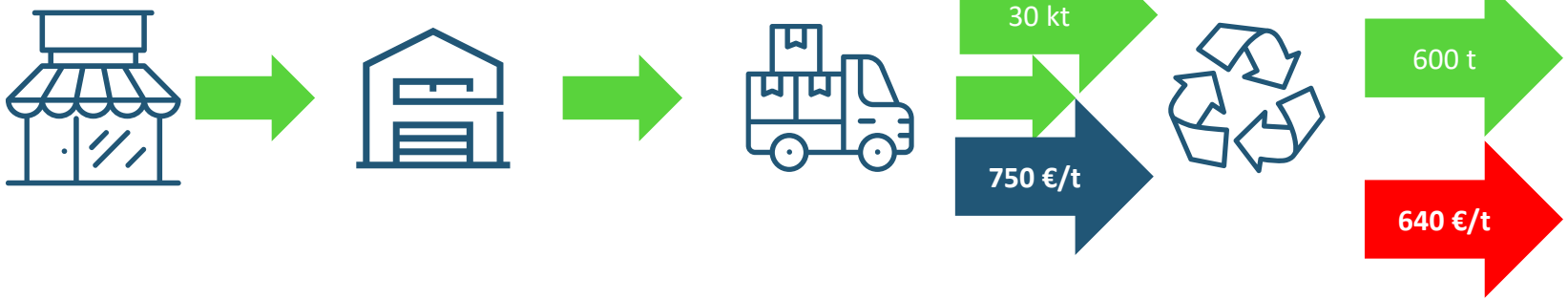
- **Price volatility**
- **Downstream acceptor depreciation**

62* kt (2018)
POM

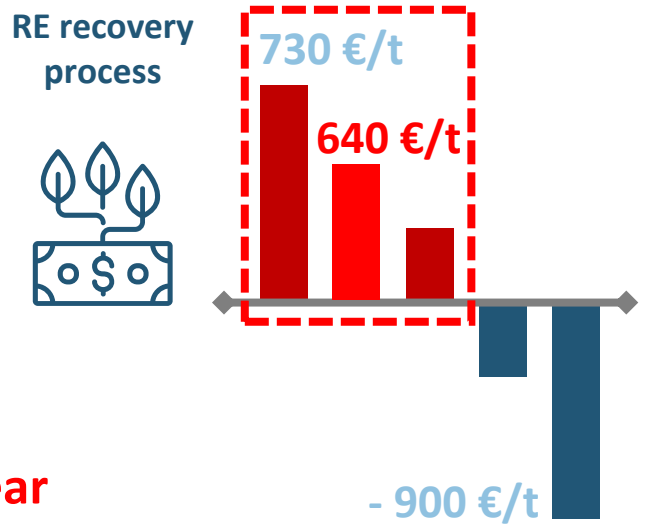
91 kt (2018)
WEEE Generated

35* kt (2018)
WEEE Collected

Pre-processing



RE recovery process



+1.1 €/ 1000 Lamps

+13 €/t

380 k€/year

In most of the cases, even where the CRM recovery process is financially expensive, the burden can be spread over a high number of products (CRMs usually represent a very small fraction of the product)

* Adjusted Eurostat figures

An integrated set of options

Legislation

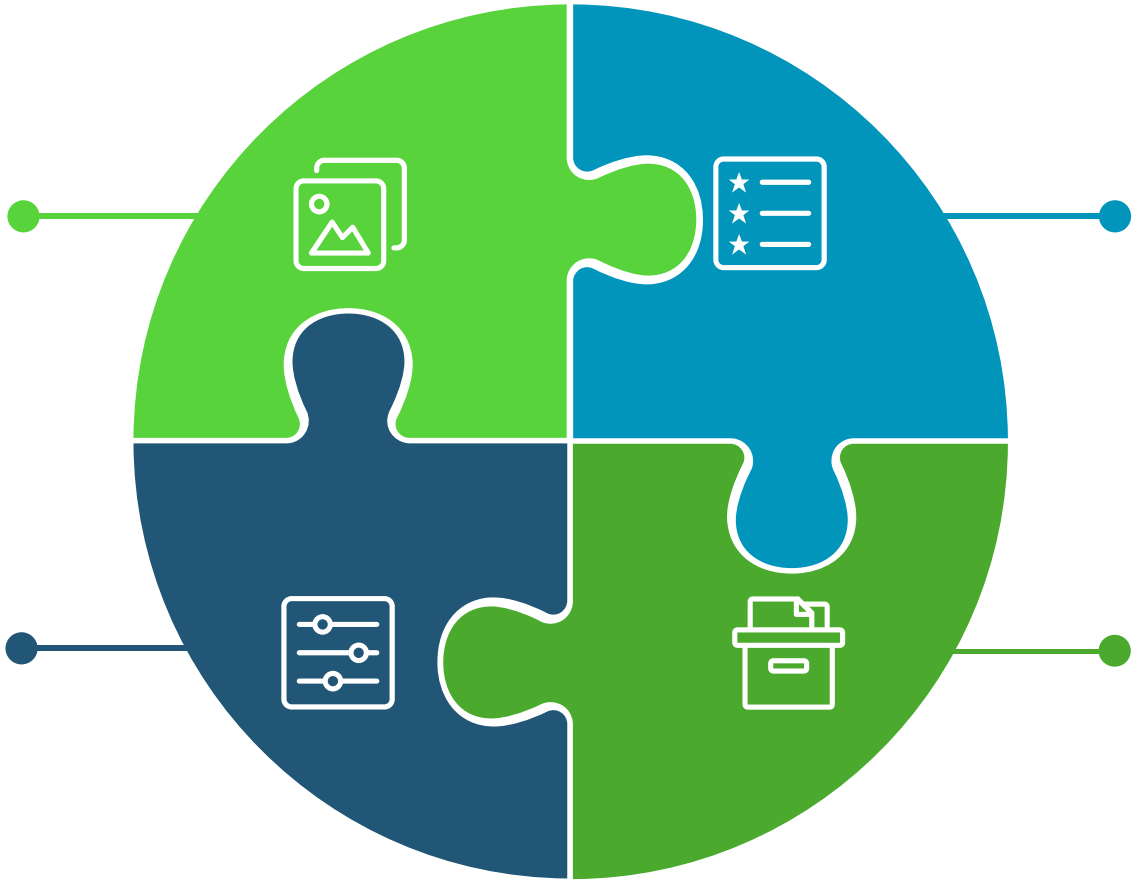
Legal obligation to recover CRM

Mandatory recycled content for CRM, such as batteries

Economic incentives

Enforcement

Enforcement of European rules to counter illegal waste export of KCE from the EU



Implementation

Creation of a market for CRMs

Improve critical infrastructure for recycling of specific CRMs and products

New collection models/grouping of CRM-rich products

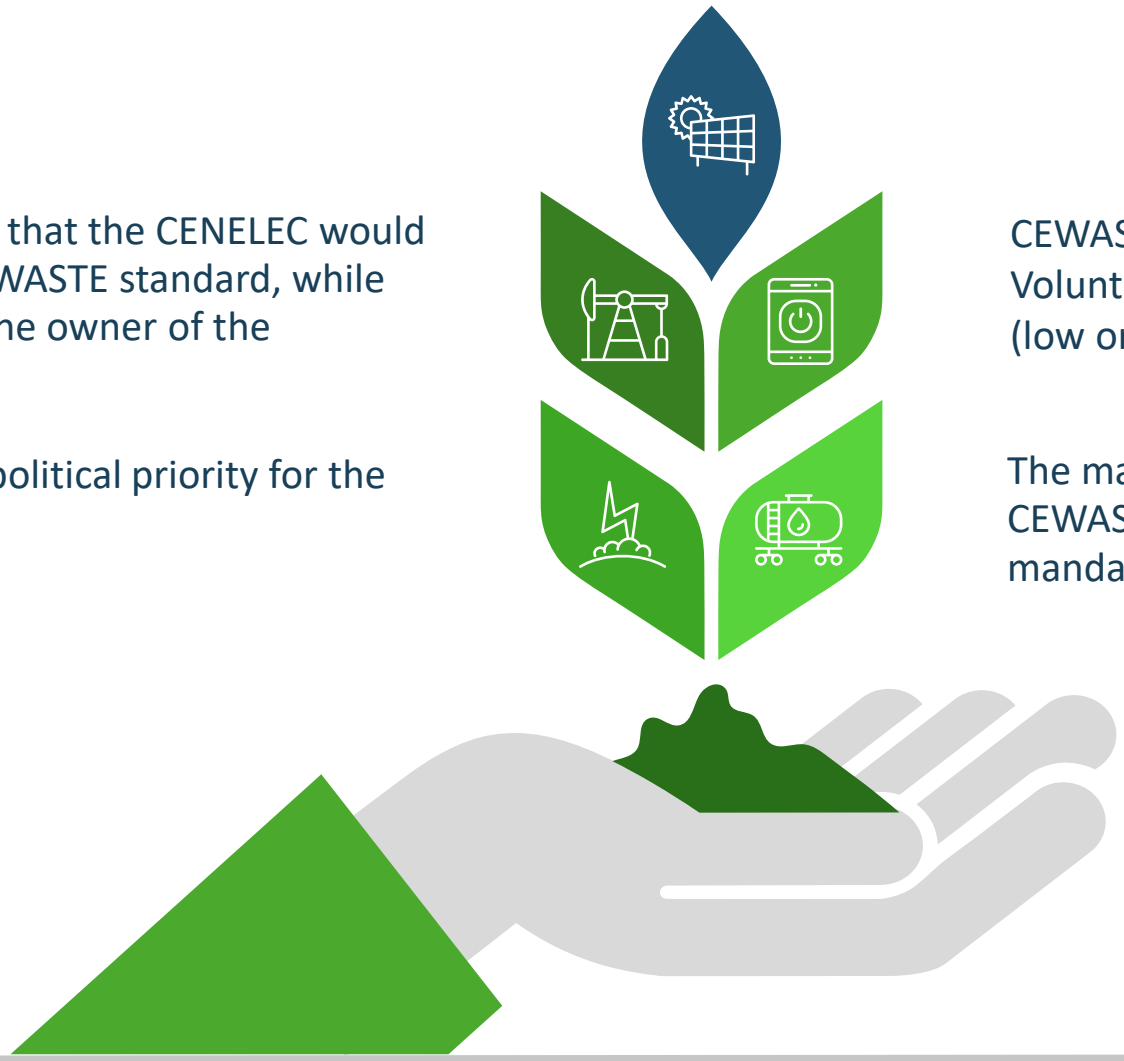
Monitoring & Reporting

Inclusion of information in Digital Product Passport

Key Points for Adoption

The recommendation is that the CENELEC would be the owner of the CEWASTE standard, while WEEELABEX would be the owner of the certification.

Recovery of CRMs is a political priority for the EU



CEWASTE standard should be made mandatory Voluntary standards could only have a minor impact (low or no recovery of CRMs)

The main pre-requisite for the adoption of the CEWASTE is to make the EN 50625 standards legally mandatory standards.

Roadmap

- Make CENELEC Standard Mandatory
- Make CEWASTE Standard Mandatory (as part of CENELEC)
- Call to action for Member States to increase collection of CRM-rich materials
- Create market pull (e.g. minimum amount recycled material) to promote use of recovered metals
- Facilitate creation of demand for recycled components/ material
- Push for more policies and investment to ensure economic viability of the processes, including for recyclers
- Push for research and development of technologies for better and more efficient processes

Thank you for your attention!

Federico Magalini

Sofies

Panel Discussion:

CEWASTE - Paper exercise, for coalitions of the willing or future state of the art?

Panel discussion

CEWASTE - Paper exercise, for coalitions of the willing or future state of the art?

Moderator:

Pascal Leroy
Director General
WEEE Forum

Panel discussion

CEWASTE - Paper exercise, for coalitions of the willing or future state of the art?

Panellists:

Christian Hagelueken
Director Government Affairs
Umicore

Fanny Rateau
Programme Manager, ECOS

Mattia Pellegrini
Head of Unit
DG Environment, European Commission

Norbert Zonneveld
Consultant
European Electronics Recyclers Association

Christian Dworak
Chairman TC111x Environment
CENELEC

Wrap up

Mathias Schluep, World Resources Forum

Laura Petrov, European Commission

CEWASTE
Voluntary certification
scheme for waste treatment

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CEWASTE Horizon 2020 project

Thank you for attending!

JOIN THE NETWORK!

https://cewaste.eu/get-involved/