Voluntary Certification Scheme for CRM Recycling
23 October 2019, Geneva, Switzerland

Chair: Mathias Schluep
World Resources Forum Association

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 820859
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<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
</tr>
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<tbody>
<tr>
<td>16:00</td>
<td>Opening and Welcome</td>
<td>Mathias Schluep (WRFA)</td>
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<tr>
<td>16:10</td>
<td>Introduction to the CEWASTE Project</td>
<td>Shahrzad Manoochehri (WRFA), Otmar Deubzer (UNU), Sonia Valdivia (WRFA), Yifaat Baron (Oeko Institute)</td>
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<tr>
<td>16:40</td>
<td>Stakeholder Perspective</td>
<td>Michael Gasser, Heinz Boeni (Empa), Julio Alejandro Giraldo (ICONTEC), Tatiana Terekhova (Basel Convention)</td>
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<td>17:00</td>
<td>Group discussions on key elements of the CEWASTE Certification Scheme following the value chain stages</td>
<td>Pascal Leroy (WEEE Forum)</td>
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<td>17:45</td>
<td>Wrap up of the Group Discussion</td>
<td>Pascal Leroy (WEEE Forum)</td>
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<tr>
<td>18:00</td>
<td>Next Steps and Closing</td>
<td>Mathias Schluep (WRFA)</td>
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</tbody>
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Introduction to the CEWASTE Project

Shahrzad Manoochehri
World Resources Forum Association

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

The project “Voluntary Certification Scheme for Waste Treatment” (CEWASTE) aims to **develop and validate** a **voluntary certification scheme** for collection, transport and treatment facilities of key types of waste containing significant amounts of **valuable and critical raw materials** (CRMs).
Response to which challenges?

• Need for sustainable access to valuable and critical raw materials (CRMs) for the EU economy,

• CRMs not circular in Europe

• Issue of illegal trade of waste

• Need for standardization activities in support of policy actions

• Need to support the development of environmentally and socially sound recycling systems globally.
Approach

- Understand existing recovery practices, standards and verification schemes related to valuable and critical raw materials.

- 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.

- Ensure long term sustainability of the scheme, resulting in a roadmap.

- Ensure a transparent stakeholder process that allows for broad acceptance and dissemination of the essentials of the scheme.
Project’s Resources

• A two-year project funded by the European Union's Horizon 2020 research and innovation programme

• Strong Consortium Partners, Linked Third Parties and 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)
- Regional Environmental Center (REC Turkey)
- Southern African e-Waste Alliance (SAEWA)
- Swiss Federal Institute for Materials Science and Technology (Empa)
- Umwelt Bundesamt (UBA)
- WEEELABEX
- Eurometaux
- Basel Convention
Expected Impact

• Increased recovery rates of valuable and critical raw materials from key types of waste in the EU,

• More environmentally and socially sound recycling systems for CRM recycling are developed globally,

• Framework conditions for the sustainable development of and investment in innovative solutions in the EU are improved,
Baseline and Gap Analysis

Otmar Deubzer
United Nations University

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 820859
Criteria for Identification of Key CRM Equipment

- Material focus: Raw materials on the COM’s Critical-Raw-Materials (CRM)-list
- Product focus: WEEE, batteries from WEEE and ELV
- Final processing technically feasible (but possibly not practiced)
- Pre-processing can provide input required for end-processing
- Economic feasibility under current economic framework not necessary
- CRM concentration within “reasonable limits” (exclusion of hopeless cases)
  - Share of use in product negligible compared to global use/consumption
  - Concentration/content below technical limits even after separation of components
  - Economic viability highly questionable even under optimum economic conditions
- Exclusion of CRMs if recycling conflicting with PM/PGM recycling
<table>
<thead>
<tr>
<th>Source Component</th>
<th>KCE</th>
<th>Waste Type</th>
<th>CRMs</th>
<th>Required/Viable Input for End-processing</th>
<th>Current Economic Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorescent powders</td>
<td>Fluorescent lamps</td>
<td>WEEE</td>
<td>Eu, Tb, Y, Ce,</td>
<td>Fluorescent powder</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>CRT monitors and TVs</td>
<td></td>
<td>Y, Tb, Eu, Gd, La, Ce</td>
<td></td>
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</tr>
<tr>
<td>Nd-magnets</td>
<td>Temperature exchange equipment (engine, compressor)</td>
<td>WEEE</td>
<td>Nd, Pr, Dy, Gd, Tb</td>
<td>Magnets</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Household appliances other than temperature exchange equipment (motors/drives)</td>
<td>WEEE</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Laptops (HDD)</td>
<td></td>
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<tr>
<td></td>
<td>Desktop Computers, prof. IT (HDD)</td>
<td>WEEE</td>
<td></td>
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<tr>
<td></td>
<td>BEV, (P)HEV (electro engine)</td>
<td>ELV</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PCBs</td>
<td>Desktop computers, prof. IT</td>
<td>WEEE</td>
<td>Au, Ag, Bi, Pd, Sb</td>
<td>Entire devices w/o battery (mobile phones), PCBs (shredded, unshredded), CuPM granulate</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Laptops</td>
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<td></td>
<td>Mobile phones</td>
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<td></td>
<td>Tablets</td>
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<tr>
<td></td>
<td>External CDDs, ODDs, devices with internal CDDs/ODDs</td>
<td>WEEE</td>
<td></td>
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<tr>
<td>Li-ion batteries</td>
<td>Laptops</td>
<td>WEEE</td>
<td>Co</td>
<td>Batteries</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Mobile phones</td>
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<td>Tablets</td>
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<td></td>
<td>Li-ion batteries in other WEEE</td>
<td>WEEE</td>
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<tr>
<td></td>
<td>BEV, (P)HEV</td>
<td>ELV</td>
<td></td>
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<tr>
<td>NiMH battery</td>
<td>NiMH batteries in WEEE</td>
<td>WEEE</td>
<td>Co, Ce, La, Nd, Pr</td>
<td>Batteries</td>
<td>No (REEs)</td>
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<tr>
<td></td>
<td>HEV</td>
<td>ELV</td>
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<tr>
<td>Lead acid batteries</td>
<td>Lead-acid batteries</td>
<td>WEEE</td>
<td>Sb</td>
<td>Batteries</td>
<td>Yes</td>
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<td></td>
<td>ELV</td>
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Recycling Processes for KCE

• Well established for PCBs (recycling of precious and other metals)

• (Formerly) practiced for recycling of REEs from fluorescent powders (Rhodia, La Rochelle), Relight has technical capabilities available

• Nd-magnets
  • Exclusion of SmCo-magnets (~ 3 % market share only)
  • Presence in household equipment depending on models → Database?
  • REE-recycling (and pre-treatment) processes available
  • No practical experiences with recycling of REEs from Nd-magnets
  • Processes could be established in case of sound financing and stable supply
Separation of Nd-magnets from Hard Disc Drives

Source: SCRREEN Deliverable D4.2
Recycling of CRMs from Nd-magnets

- Hitachi Metals pyrometallurgical process with molten Mg as extraction medium to recycle Nd and Dy
- Santoku Corporation process started in 2012 recycles Nd and Dy from Nd-magnets of air conditioner motors and magnet production scrap
- Momentum’s hydrometallurgical MSX technology recycles more than 99% of REE content from HDDs dissolved in acid
- Ames Laboratory acid-free dissolution recycling technology recycles Nd from shredded HDD samples without pre-concentration of magnet contents
- Urban Mine magnet-to-magnet process for Nd-magnet production
- In EU only one major producer of Nd-magnets as potential downstream buyer for REE oxides
- Several EU-projects, e.g. the REE4EU (pilot scale plant) or REEcover
Normative Requirements

• Analysis of more than 60 normative requirements with relevance to KCEs

• Generally relevant non-technical requirements identified (EHS, tracking, documentation, …)

• Very few CRM-specific non-technical requirements

• Very few technical requirements for KCE (removal of PCBs, batteries, …)

• Hardly any technical requirements specifically for CRM recycling
General Approach

• CEN 50625-series adopted as general reference

• References to other standards if 50625 not sufficient

• Development of new requirements if no appropriate references available

• Most CRM-specific technical requirements to be developed by CEWASTE consortium (in WP2)
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 820859

CEWASTE Normative Requirements

Sonia Valdivia
World Resources Forum Association
Main Outcome

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

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

• Recommendations on traceability and on few other specific issues are also included
General Approach

Based on the results of the baseline analysis:

• EN 50625-series was adopted as general reference. Starting point

• If 50625 were not sufficient, references to other standards or international references (EC, OSHA, ISO, etc.)

• Development of new texts if no appropriate references were available

• **CRM-specific technical requirements are developed by the CEWASTE consortium**
Risk Management

Identifying, monitoring and managing potential risks of handling WEEE and waste batteries in order to minimize negative impacts. Risks relate to health and safety, materials quality, CRM losses and environmental damage.

Material Quality Factors:

- CRM metals contained
- Levels of purity of CRM metals
- Existing alloys that may hinder the recovery
- Presence of hazardous substances
- Feasibility of subsequent steps and level of effort required
- Minimum amounts to be processed (typically, larger amounts of identical WEEE and waste batteries increase the recycling yield)
Structure

Notes to the reader
Introduction
1. Scope
2. Normative references
3. Definitions
4. Management requirements
5. Technical requirements
6. De-pollution Monitoring
Annexes

4.1 Management Principles
4.2 Compliance with national and local regulations
4.3 Management system
4.4 Risk management
4.5 Continuous improvement
4.6 Monitoring
4.7 Documentation
4.8 Communication and awareness raising
4.9 Personnel Management
4.10 Sustainability requirements

Traceability. Voluntary
Upstream, CoC
Employees & stakeholders
Environment & Local community
Sustainability.
Traceability & Compliance Claims - Recommended

CEWASTE encourages ensuring the accuracy and verifiability of various aspects throughout the value chain e.g. records of material inputs and outputs

- Due diligence and chain-of-custody procedures (documentation and records)
- Material accounting model of mass balance
- Documented agreement regarding the implementation of the CEWASTE standard throughout the supply chain.
### Structure

#### Notes to the reader

#### Introduction

1. Scope
2. Normative references
3. Definitions
4. Management requirements
5. Technical requirements
6. De-pollution Monitoring

#### Annexes

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| 5.2 Technical and infrastructural pre-conditions |
| 5.3 Handling |
| 5.4 Receiving |
| 5.5 Storage at collection and treatment facilities |
| 5.6 Shipping |
| 5.7 Acceptance by collection and logistics operators– General |
| 5.8 Preparing for re-use at collection facilities |
| 5.9 Sorting |
| 5.10 De-pollution at treatment facilities |
| 5.11 Treatment of non-depolluted WEEE and fractions |
| 5.12 Final treatment for recovering CRM fractions and disposal of waste fractions |
Collection, Logistics & Sorting

WEEE suitable for (preparation for) reuse are also separated, not destined for recycling.

Sorting is crucial in collection points or collection facilities in separate waste streams.
Batteries Treatment & Recycling Methods

- Lithium-ion (LIB) batteries
  - Transport Portable LIB
  - Pyrometallurgical
    - Co, Ni, Cu alloy
    - Slag
    - Li compound recovery
  - Mechanical
    - "Black mass"
  - Fe / Al / Cu
  - Hydro
    - Co, Ni, Li compounds
  - Pyro
    - Co, Ni alloy, recovery of Li compounds from slag

- Lead-acid
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WP 3 Objective and scope

Develop a voluntary certification scheme for actors of the EEE and battery waste management industry who comply with the CEWASTE sustainability and traceability requirements, thereby promoting sound CRM recovery from WEEE.

→ CEWASTE certification may be issued by CEWASTE Certification Bodies for operators of collection, transport or treatment facilities who comply with the sustainability and traceability requirements defined in Work Package 2 of this project.
Included tasks and planning

WP 3 includes three tasks:

- Task 3.1: Develop an effective assurance system.
  - First version is being drafted

- Task 3.2: Specify verification procedures
  - First version is being drafted

- Task 3.3: Develop assurance and verification manuals
  - Shall commence with the completion of a first version of the first two tasks
CEWASTE Scheme rules (assurance system)

- The organisation of the CEWASTE scheme – structure, how decisions are made and by whom
- Requirements for registered Certification Bodies – criteria for acceptance, process to apply and maintain CEWASTE registered CB status, resource requirements (incl. auditors qualification) etc.
- The certification process
  - Application, tender, application review, agreement
  - Conformity assessment (incl. audit) - rules, templates and guidance’s have been established covering the audit planning and execution both for certification applicants and maintenance of certification
  - review process - rules, templates and guidance’s have been established covering the review of audit results and the certification decisions.
- Registry of certificates
CEWASTE Scheme tools (verification procedures)

• Here various tools are being developed to support the verification system, i.e. the auditing and assessment of operators applying for the CEWASTE certification. For the actual ordering and performing of audits, this includes:

• **CEWASTE Application template**: for the operator who requests an audit in order to be certified

• **CEWASTE Audit Plan template**: for the conformity assessors to plan and coordinate the audit with all participants (auditors, operator).

• **Auditing checklist**: for the conformity assessors to assist in the assessment of the operators compliance with the CEWASTE requirements (to harmonize interpretations of the requirements by auditors)

• **CEWASTE audit report template**: for the conformity assessors to document the audit and its assessment

• **CEWASTE CB Assessment guidance**: to harmonize how audit results are assessed

• **(CEWASTE auditor training material)**: to train and test auditors for eligibility
THE CEWASTE assurance and verification manuals

• The assurance manual is to provide clear guidance on what protocols, procedures, documents, etc. would be considered as acceptable for the verification procedures established in the certification scheme. It aims to assist operators in complying with the CEWASTE standard and preparing for the certification (audit).

• The verification manual is to assist the auditors by providing more detail for the verification procedures and thus also helping to ensure a more harmonised application of the CEWASTE scheme and of the results of the various activities.
Questions?
Plenary Discussion

Moderator: Pascal Leroy
WEEE Forum

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Sustainability

Key Remarks

• Training (handling)
• Training (auditors)
• Enforcement
• Quit CRM practices if conflicting with PM recycling
Traceability

Key Remarks

• Clear transfer records
• Cash transactions
• Digital marking of products
• Proper book keeping
• Customs codes
• Training of custom officials
• Why do WEEE go to wrong streams?
Advancing CRM Recovery

Key Remarks

• Collection infrastructure
• Awareness
• Economic viability
• Import taxation
• Third country state of art operations
• EPR fees
• Societal challenge
Wrap up and closing
World Resources Forum – CE-Waste Workshop
Challenges in Conformity Assessment of CRM recovery

Heinz Böni & Michael Gasser
Critical Materials and Resource Efficiency Group (CARE)

Geneva, October 23, 2019
Name, affiliation, role in the organization, area of expertise

**Heinz Böni**, Eng. MSc ETH
Head Critical Materials and Resource Efficiency Group (CARE) (since 2001)
Head and Lead auditor Swico Conformity Assessment Body SN EN 50625 (since 2009)

- Specialization in WEEE recycling, conformity assessment and standard development
- 18 years in research, services and technology cooperation at Empa
- 10 years as engineer & consultant in Waste and Resource Management
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**Michael Gasser**, MSc. Environmental Sciences ETH
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4 main challenges in the Conformity Assessment of CRM recovery

- Limits to recycling of CRM in wastes
- Pathways to a Conformity Assessment
- Data requirements for assessing sound practices
- Business case for CRM recycling
Limits to recycling of CRM in wastes

Challenges in the Conformity Assessment of CRM

- CRM usually appear in products not in a pure form but mixed with other elements.
- CRM pass through a wide range of process steps together with other (eventually more prioritized) elements.
- This creates a multidimensional system which needs a multidimensional recycling optimization (what to optimize for? revenues!)

---

ICT, Microelectronics

- Ce, Eu, In, Sn, Y
- As, Ga, Ge, Te

Optoelectronics

- Co, Dy, Nd, Pr, Pt, Ru
- As, Ce, Eu, Ga, Gd, In, Y
- Ag, Nb, Pd, Te
- Er, Ho, Nd, Tm, Y, Yb

Energy supply and storage

- Ag, Cd, Ga, Ge, In, Sn, Te
- Dy, Nd, Pr
- Co, Li, V
A reverse supply of mixed WEEE results in a wide range of potentially CRM containing fractions (up to 50).

A conformity assessment of CRM needs a detailed material flow assessment of CRM pathways and composition of different fractions in different companies.

A conformity assessment can therefore not be based on yes/no assessment but needs an individual case-by-case judgement.
Challenges in the Conformity Assessment of CRM

Data requirements for assessing sound practices

- Different recovery technologies can have different environmental impacts
- To determine sound practices for CRM recovery, process and composition data are needed from up- and downstream processes
- Data might reveal that a deeper manual dismantling is environmentally favorable but economically disadvantageous compared to shredding and separation
The choice of the recovery process is an economics- and physics-based technological optimization puzzle driven by the changing market incentives.

- If there is an economic incentive, recovery will happen but we can not leave recovery decisions to the economy!

- Who is responsible for not being able to recover CRM? Has the EPR principle to be re-designed?
How is Switzerland addressing CRM recovery in legislation?

**Draft 2015 (not yet put into force)**

Verordnung über die Rückgabe, die Rücknahme und die Entsorgung elektrischer und elektronischer Geräte
(VREG)


Art. 6  Anforderungen an die Entsorgung

Wer Geräte entsorgt, muss sicherstellen, dass die Entsorgung umweltverträglich, insbesondere nach dem Stand der Technik, erfolgt; namentlich müssen:

a. besonders schadstoffhaltige Bestandteile wie Nickel-Cadmium-Akumulatoren, Quecksilberhaltige Schalter, PCB-haltige Kondensatoren und FCKW-haltige Wärmeisolierungen getrennt entsorgt werden;

b. Bildschirme sowie metallhaltige Bestandteile wie Leiterplatten, Metallgehäuse, Kabel mit hohen Metallanteilen und vorwiegend aus Metallen bestrahende Steckverbindungen verwertet werden, soweit dies wirtschaftlich tragbar ist;

c. nicht verwertete organisch-chemische Bestandteile wie Kunststoffgehäuse, Kabelisolationen oder Kunstharzplatten in geeigneten Anlagen verbrannt werden.

Verordnung über die Rückgabe, die Rücknahme und die Entsorgung elektrischer und elektronischer Geräte
(VREG)

vom

Art. 9  Anforderungen an die Entsorgung

1 Wer Geräte und Bestandteile entsorgt, muss sicherstellen, dass die Entsorgung umweltverträglich und nach dem Stand der Technik erfolgt; namentlich müssen:

a. besonders schadstoffhaltige Bestandteile wie Quecksilberhaltige Schalter und Hintergrundbeleuchtungen von Bildschirmen, PCB-haltige Kondensatoren und FCKW-haltige Wärmeisolierungen getrennt entsorgt werden;

b. verwertbare Anteile, insbesondere Kunststoffe, Bildschirme, metallhaltige Bestandteile wie Batterien, Leiterplatten und Metallgehäuse sowie seltene technische Metalle wie Gold, Palladium, Indium, Gallium, Germanium, Neodym und Tantal, soweit möglich verwertet werden;

c. nicht verwertete organisch-chemische Bestandteile wie Kunststoffgehäuse, Kabelisolationen und Kunstharzplatten in geeigneten Anlagen verbrannt werden.

2 Soweit es für die Einhaltung der Anforderungen nach Absatz 1 notwendig ist, sorgen die Entsorgungspflichtigen dafür, dass einzelne Gerätearten getrennt von anderen gesammelt und zusammengelagert werden.

3 Das BAFU erlässt Richtlinien über die Verfahren, die als umweltverträglich und dem Stand der Technik entsprechenden Entsorgung gelten. Es arbeitet dafür mit den Kantonen und den betroffenen Organisationen der Wirtschaft zusammen und berücksichtigt entsprechende internationale Regulierungen, Branchenvereinbarungen und Labels.
Recommendations for CE Waste

1. Give the project a clear framework of technical requirements for optimized CRM recovery

2. Define assessment procedures for CRM recovery

3. Be aware of data needs for assessing sound practices

4. Look into successful business incentives and rethink EPR
Thank you for your attention!

heinz.boeni@empa.ch  michael.gasser@empa.ch
Willkommen
Welcome
Bienvenue

World Resources Forum – CE-Waste Workshop
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Thank you for your attention!
CRMs and hazardous wastes CRM under the Basel Convention

Tatiana Terekhova, Secretariat of the Basel, Rotterdam and Stockholm Conventions

CEWASTE Workshop, World Resources Forum 2019, 23 October 2019, Geneva
Control of Transboundary Movements
Prior informed consent (PIC) procedure

Wastes that require PIC procedure
- Hazardous wastes (Annex I, III, VIII)
- Other wastes (Annex II)

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Some statistics
The global generation of hazardous waste increased between 2007-2015. Increases in lower middle and higher middle income countries.

### Table 3: Generation of hazardous wastes (in million MT) as reported to the Secretariat for the years 2007 to 2015.

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<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous waste generated (Million MT)</td>
<td>284</td>
<td>119</td>
<td>668</td>
<td>771</td>
<td>115</td>
<td>116</td>
<td>105</td>
<td>5.328</td>
<td>268</td>
</tr>
<tr>
<td>Number of Parties reporting</td>
<td>56</td>
<td>52</td>
<td>52</td>
<td>48</td>
<td>38</td>
<td>50</td>
<td>50</td>
<td>57</td>
<td>50</td>
</tr>
</tbody>
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### Table 9: Total amount of household waste (Y46) in millions of MT as reported to the Secretariat and the coverage of these data.

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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total amount of household waste</td>
<td>122</td>
<td>280</td>
<td>192</td>
<td>100</td>
<td>88</td>
<td>159</td>
<td>187</td>
<td>438</td>
<td>367</td>
</tr>
<tr>
<td>Number of Parties reporting</td>
<td>42</td>
<td>43</td>
<td>46</td>
<td>38</td>
<td>38</td>
<td>42</td>
<td>45</td>
<td>47</td>
<td>44</td>
</tr>
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Increase in transboundary movements between 2007 and 2015 mainly caused by the household waste.
**Table 15** Average amounts (in tonnes) of hazardous wastes imported between 2007 – 2015 by the top 10 countries of import

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<td>1,626.119</td>
<td>18%</td>
</tr>
<tr>
<td>Total</td>
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<td>100%</td>
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</table>

**Table 16** Average amounts (in MT) of hazardous wastes exported 2007 – 2015 by the top 10 countries of export

<table>
<thead>
<tr>
<th>Country</th>
<th>Average export between 2007 and 2015 (in MT)</th>
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</tr>
</thead>
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<tr>
<td>Italy</td>
<td>1,150.781</td>
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<td>26%</td>
</tr>
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Around 95% of transboundary movements remain in the same region.
Around 1 mln MT of used lead-acid batteries transported each year for recycling

<table>
<thead>
<tr>
<th>Destination / origin</th>
<th>Africa</th>
<th>Asia OECD</th>
<th>Asia other</th>
<th>America OECD</th>
<th>America other</th>
<th>Europe EU/OECD</th>
<th>Europe other</th>
<th>Pacific OECD</th>
<th>Pacific other</th>
<th>Total amount imported (2007 - 2015) in 1000 MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>9%</td>
<td>44%</td>
<td>25</td>
</tr>
<tr>
<td>Belgium</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>18%</td>
<td>0%</td>
<td>0%</td>
<td>559</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>21%</td>
<td>0%</td>
<td>92</td>
</tr>
<tr>
<td>Canada</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>16%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Germany</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>16%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>Spain</td>
<td>26%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>13%</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>France</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>22%</td>
<td>98%</td>
<td>77%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>71%</td>
<td>50%</td>
<td>1,655</td>
</tr>
<tr>
<td>Mexico</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>72%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Philippines</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>61</td>
</tr>
<tr>
<td>Sweden</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>35%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>USA</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>South Africa</td>
<td>44%</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>153</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
<td>0%</td>
<td>11%</td>
<td>1%</td>
<td>19%</td>
<td>21%</td>
<td>42%</td>
<td>15%</td>
<td>6%</td>
<td>953</td>
</tr>
<tr>
<td>Total amount exported (2007 &amp; 2015 in 1000 MT)</td>
<td>346</td>
<td>474</td>
<td>478</td>
<td>5,088</td>
<td>605</td>
<td>2,866</td>
<td>155</td>
<td>214</td>
<td>3</td>
<td>10,229</td>
</tr>
</tbody>
</table>
Technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention.

Revised version adopted on the interim basis at COP-14 (May 2019)  
Document UNEP/CHW.14/7/Add.6/Rev.1  
Thank you

Tatiana Terekhova
Programme Management Officer
Secretariat of the Basel, Rotterdam and Stockholm conventions
11-13 chemin des Anémones
CH 1219 Châtelaine, Geneva
Email: Tatiana.Terekhova@brsmeas.org
CRMs and hazardous wastes CRM under the Basel Convention

Tatiana Terekhova, Secretariat of the Basel, Rotterdam and Stockholm Conventions

CEWASTE Workshop, World Resources Forum 2019, 23 October 2019, Geneva
Control of Transboundary Movements
Prior informed consent (PIC) procedure

Wastes that require PIC procedure
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Conformity Assessment for waste and E-waste

Eng. MSc. Julio Alejandro Giraldo
Chief of Validation and Verification

Areas of expertise: waste management, climate change, CRS and Conformity Assessment
ICONTEC – Who we are?

Instituto Colombiano de Normas Técnicas y Certificación

Private non-profit organization

Created in 1963

National standards body
Our presence in Colombia

- Guajira
- Magdalena
- Cesar
- Sucre
- Córdoba
- Bolívar
- Atlántico
- San Andrés

Caribe

- Norte de Santander
- Santander
- Arauca
- Casanare

Oriente

- Cundinamarca
- Boyacá
- Tolima
- Huila
- Meta
- Caquetá
- Vaupés
- Vichada
- Guainia
- Amazonas

Centro y Sur Oriente

- Antioquia
- Chocó
- Caldas
- Quindío
- Risaralda

Antioquia, Chocó y Eje Cafetero

Sur Occidente

- Valle de Cauca
- Cauca
- Nariño
- Putumayo
Our presence in America
Our portfolio of products and services

**Standardization (Colombia)**
- Preparation of Standards (NTCs), Guides (GTCs) and Normative Specifications
- Government Advisor
- Standards (data sheets) for Companies

**Conformity Assessment**
- System Certification
  - Product Certification
  - Inspection
- Sustainable Development
- Accreditation in Health

**Education**
- Face-to-Face and Online
- Master degrees and Specializations in agreement with Universities
- Corporate and Open Courses

**Laboratories (Colombia)**
- Dimensions:
  - Pressure
  - Temperature
  - Weight Scales
  - Volumetric
  - Biomedical
Question 1.

What is the position of Colombia in implementing or adapting to standards with a focus on E-waste?

National Policy and National Law on WEEE:

1. To prevent and minimize generation of WEEE.
2. Promote secure, integral and environmentally safe waste management.
3. To encourage the use of environmentally safe recycled WEEE.
4. Promote integration with life cycle stakeholders and develop plans for WEEE.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batteries</td>
<td>13%</td>
</tr>
<tr>
<td>Mobile phones</td>
<td>13%</td>
</tr>
<tr>
<td>Computers</td>
<td>13%</td>
</tr>
<tr>
<td>Washing Machines</td>
<td>13%</td>
</tr>
<tr>
<td>Fridge</td>
<td>13%</td>
</tr>
<tr>
<td>TVs</td>
<td>13%</td>
</tr>
<tr>
<td>Audio Equipment</td>
<td>6%</td>
</tr>
<tr>
<td>Fridges</td>
<td>5%</td>
</tr>
<tr>
<td>Video Equipment</td>
<td>4%</td>
</tr>
<tr>
<td>Light bulbs</td>
<td>1%</td>
</tr>
</tbody>
</table>

192.480 tonnes of WEEE between 2014 and 2018

5. Development of Colombian National Standards under the “Colombian Environmental Seal”
Question 1.

What is the position of Colombia in implementing or adapting to standards with a focus on E-waste?
What is the importance of CRM (Critical Raw Materials) recycling for Colombia?

100% of recycled materials are exported. 50% to China

The collection schemes for WEEE are in cities

Formal operators are competing with informal operators

There is a need to create económica value from the WEEE recycling in the country ensuring at least:

1. New industries and new jobs, specially in repairing, recycling and recovering of WEEE.

2. Environmental Integrity – Chain of Custody

3. Local Legislation based on importers of EEE and exporters of CRM and WEEE.

4. It is forbidden the disposal of WEEE in landfills.

5. Increase coverage in collection strategies.
From a Latin American perspective, which regional aspects should CEWASTE consider for developing a globally accepted certification scheme for CRM recycling?

<table>
<thead>
<tr>
<th>State of the Art</th>
<th>Regulation</th>
<th>Chain of Custody</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technology</td>
<td>1. Regulation on WEEE</td>
<td>1. Importers of EEE</td>
</tr>
<tr>
<td>2. WEEE generation and use patterns</td>
<td>2. Regulation on waste transportation</td>
<td>2. Exporters of EEE</td>
</tr>
<tr>
<td>3. Informal recycling of WEEE and recyclers</td>
<td>3. Regulation on hazardous waste</td>
<td>3. Prices of recycled CRM with a higher value – Chain of Custody</td>
</tr>
<tr>
<td></td>
<td>4. Regulation on labor</td>
<td>4. Claims in products that the customer cares and understand</td>
</tr>
<tr>
<td></td>
<td>5. Circular Economy Strategy</td>
<td></td>
</tr>
</tbody>
</table>

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Gracias por su atención
Thanks for your attention
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Our presence in Colombia
Our presence in America
Our portfolio of products and services

Standardization (Colombia)
- Preparation of Standards (NTCs), Guides (GTCs) and Normative Specifications
- Government Advisor
- Standards (data sheets) for Companies

Conformity Assessment
- System Certification
- Product Certification
- Inspection
- Sustainable Development
- Accreditation in Health

Education
- Face-to-Face and Online
- Master degrees and Specializations in agreement with Universities
- Corporate and Open Courses

Laboratories (Colombia)
- Dimensions:
  - Pressure
  - Temperature
  - Weight Scales
  - Volumetric
  - Biomedical
National Policy and National Law on WEEE:

1. To prevent and minimize generation of WEEE.
2. Promote secure, integral and environmentally safe waste management
3. To encourage the use of environmentally safe recycled WEEE.
4. Promote integration with life cycle stakeholders and develop plans for WEEE.

5. Development of Colombian National Standards under the “Colombian Environmental Seal”

192,480 tonnes of WEEE between 2014 and 2018
Question 1.

What is the position of Colombia in implementing or adapting to standards with a focus on E-waste?
Question 2.

What is the importance of CRM (Critical Raw Materials) recycling for Colombia?

100% of recicled materials are exported. 50% to China

The collection schemes for WEEE are in cities

Formal operators are competing with informal operators

There is a need to create económica value from the WEEE recycling in the country ensuring at least:

1. New industries and new jobs, specially in repairing, recycling and recovering of WEEE.

2. Environmental Integrity – Chain of Custody

3. Local Legislation based on importers of EEE and exporters of CRM and WEEE.

4. It is forbiddent the disposal of WEEE in landfills.

5. Increase coverage in collection strategies.
**Question 3.**

From a Latin American perspective, which regional aspects should CEWASTE consider for developing a globally accepted certification scheme for CRM recycling?

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Gracias por su atención

Thanks for your attention

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