E-waste statistics and Copper

International Copper Study Group
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Key projects/ activities:

1. Policy advice
   - 2007 Review of the EU WEEE Directive
   - 2014 Study on Collection rates of WEEE

2. E-waste quantification studies
   - Global E-waste Monitor (2014)
   - CWIT (Countering WEEE Illegal Trade, EU 2013-2015)
   - ProSUM (Prospecting the Urban Mine, 2015-2017)

3. Capacity building and training
   - E-waste Academies (Global, 2009-now)

4. Facilitating International Dialogue
   - Hosting StEP Secretariat: Solving the e-waste problem, see: www.step-initiative.org
The Global E-waste Monitor 2014

41.8 million tonnes of e-waste was generated in 2014

and only 4 Billion people are covered by national legislation

That's approximately 4 out of every 7 people

See:
http://unu.edu/research/e-waste-quantification.html#outline
for the Global E-waste Monitor Data Summary Report and the E-waste Statistics Guidelines
STATISTICAL CORRECTION

Outlier detection

International Comparison

Extrapolation of time series to 1980

ADJUSTED SALES DATA

IMPORT - EXPORT = SALES

LINK TO 54 CATEGORIES

COMTRADE DATABASE
Trade of commodities per country and year

260 Trade in H8 codes per country extracted (1995-2002 of 176 countries)

SALES is determined

PRODUCT LIFESPAN

DATASETS
Amount of e-waste generated per: country, year, & product
Domestic E-waste Generated 2014 (total)

Global WEEE Generated ≈ 42 million tonnes
EU WEEE Generated ≈ 9.5 million tonnes
There is ≈ 123 million tonnes in the ‘Urban Mine’!
(EU28+2)
EU 1995-2020 WEEE Generation

1. Temperature Exchange
2. Screens
3. Lamps
4. Large Equipment
5. Small Equipment
6. Small IT
2012 EU WEEE flows

- 9.45 million tons is the total amount of WEEE generated by EU-28 plus Norway and Switzerland but only...
- 3.3 million tons are officially reported as collected and recycled.
- 2.2 million tons of mainly steel dominated consumer appliances is collected and processed under non-compliant conditions with other metal scrap.
- 1.7 million tons is estimated to be processed within the EU.
- 1.5 million tons is estimated to be exported from the EU.
- 3.2 million tons remains undocumented.

Additional non-compliant processing:
- 750,000 tons scavenged and stolen parts.
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3.3 million tons are officially reported as collected and recycled.

2.2 million tons of mainly steel dominated consumer appliances are collected and processed under non-compliant conditions with other metal scrap.

750,000 tons are estimated to end up in the waste bin.

3.2 million tons remains undocumented?

3.2 million tons is estimated to be processed within the EU.

1.7 million tons is estimated to be exported from the EU.

1.5 million tons is estimated to be exported from the EU.

950,000 tons

Additional non-compliant processing

750,000 tons

Scavenged and stolen parts

900,000 tons

Documented exported of used equipment

200,000 tons

Undocumented exported of used equipment

70% is functioning

400,000 tons

Undocumented export of waste

30% is waste
The ProSUM Project

“I am useful”

Prospecting Secondary raw materials in the Urban mine and Mining wastes

19th January 2016
International Electronics Recycling Congress
Sarah Downes, Lucia Herreras, (WEEE Forum), Jaco Huisman (UNU)

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 641999.
Aim: To CONSTRUCT EU Knowledge Base

ProSUM will become part of the EU Geological Data Infrastructure

- User friendly portal + single inventory
- Aligned with other primary and secondary raw material portals in the EU
Approach

**Product Characterisation**
Factors and trends in composition that affect the CRM content for products and components. Protocols for assessing CRM parameters in products for EEE, vehicles and batteries.

**Stocks and flows**
Past sales, current stocks and future waste stocks and their flows around the EU. Protocols to identify future stocks and flows.

**Waste Characterisation**
The CRM content of treated wastes and mining wastes. Protocols for assessing CRM parameters in wastes.

**Join the Information Network!**
A dynamic platform for the entire stakeholder community. Join the community of professionals working to improve data availability and the knowledge base on CRMs.

[http://www.prosumproject.eu](http://www.prosumproject.eu)
Example: Display products change rapidly!

Typical circuit board weight:
- 2.5 kg
- 1.5 kg
- 0.5 kg
Example: Display products change rapidly!
EU28+2 CRT vs LCD market input and output
2014 EU estimate for e-waste generated:
Copper and precious metals per WEEE category*

EU28+2 total Cu from electronics:  \( \approx 420 \) ktons
Global amount of Cu from electronics:  \( \approx 1,900 \) ktons

* Volumes being discarded by households and business, but: NOT everything is collected and recycled!!!
Conclusions and Outlook

- Strengthen UNSD, OECD, and UNECE on data collection on E-waste statistics, both for waste generation as collection volumes.

- Possibilities for cooperation with ICSG on Cu in ProSUM:
  - ICSG invited to join the ProSUM Information Network.
  - Developing data structure and harmonization for secondary raw materials.
  - Assistance in mapping market input, stocks and waste generation, (trends in) components and materials, official and complementary flows.

- Compare UNU totals of copper in e-waste (from inputs, stocks, point of waste generation) with the ICGS totals (from fabricators and smelters) and percentage/development of the electronics recycling part.

- Complement, compare and expand the EU assessment to other continents (for e-waste) and other scrap types (vehicles and batteries) and the development over time.
THANK YOU FOR YOUR ATTENTION

ProSUM:  
http://www.prosumproject.eu

Global e-waste data:  
http://ias.unu.edu/en/research/e-waste-quantification.html#outputs

Policy advice:  
Countering WEEE Illegal Trade:  
www.cwit-project.eu

Study on Collection Rates:  

Individual data requests:  
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