

E-Waste

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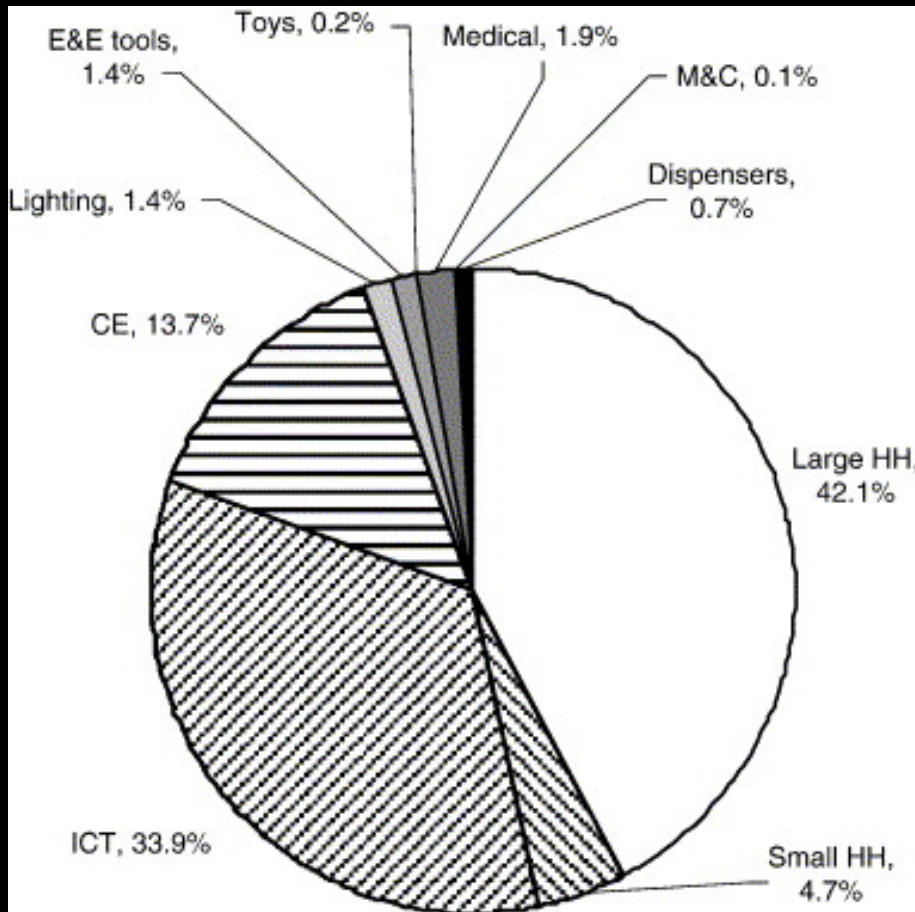
Definitions in USA vary based on at what point are appliances considered waste?

Reference	Definition
<u>EU WEEE Directive (EU, 2002a)</u>	“any Electrical or electronic equipment substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force.”
Basel Action Network (<u>Puckett and Smith, 2002</u>)	“E-waste encompasses a broad and growing range of electronic devices ranging from large household devices and consumer electronics which have been discarded by their users. ”
<u>OECD (2001)</u>	“Any appliance using an electric power supply that has reached its end-of-life. ”
<u>SINHA (2004)</u>	“An electrically powered appliance that no longer satisfies the current owner for its original purpose. ”
<u>StEP (2005)</u>	“...the reverse supply chain which collects products no longer desired by a given consumer and refurbishes for other consumers, recycles, or otherwise processes wastes.”

How Much waste?

- Estimated 50M tons produced per year.
- Estimation of possible global quantities of WEEE
 - ‘consumption and use method’- average electrical and electronic of a typical household.
 - ‘market supply method’- which uses data about **production and sales figures** in a given geographical region. Each new appliance bought, an old one reaches its end-of-life.

Components



Category	Label
Large household appliances	Large HH
Small household appliances	Small HH
IT and telecommunications equipment	ICT
Consumer equipment	CE
Lighting equipment	Lighting
Electrical and electronic tools (with the exception of large-scale stationary industrial tools)	E & E tools
Toys, leisure and sports equipment	Toys
Medical devices (with the exception of all implanted and infected products)	Medical equipment
Monitoring and control instruments	M & C
Automatic dispensers	Dispensers

Fig. 1 Composition of WEEE for Western Europe (Source: Association of Plastics Manufacturer in Europe (APME):

Where does the waste go?

- Land Fill
- Incineration
- Reuse
- Recycle
- **Exportation**



E-waste being disposed off by [incineration-photo](#) by EMPA

Exporting Arguments

- “the countries with the lowest wages would lose the least productivity from “increased morbidity and mortality” since the **cost to be recouped would be minimal.**”
- “the least developed countries, specifically those in Africa, were seriously under-polluted and thus could stand to benefit from pollution trading schemes as they have **air and water to spare.**”
- “environmental protection for “health and aesthetic reasons” is essentially a luxury of the rich, as mortality is such a great problem in these developing countries that the relatively **minimal effects of increased pollution would pale in comparison to the problems these areas already face.**”

~Larry Summers, December 12, 1991, then the chief economist for the World Bank.

Who gets the trash?

Sources: Basel Action Network, Silicon Valley Toxics Coalition, Toxics Link India, SCOPE (Pakistan), Greenpeace China, 2002.
NB: the arrows' thicknesses are not proportional to the traffic.



The Basel Ban decision effectively banned as of 1 January 1998, all forms of hazardous waste exports from the 29 wealthiest most industrialized countries of the Organization of Economic Cooperation and Development (OECD) to all non-OECD countries.

Guiyu, China

- Economic Incentives:
 - Resale of salvageable parts
 - Raw material recovery
 - Access to technologies
 - Job creation



E-waste is mined for the lead, gold, copper and other metals that are found in the circuit boards, wiring, chips and other parts of electronic devices.

- Environmental Hazards and Health Risks:



Waste being discarded by incineration, a worker sorting out WEEE, and toxic black tea made from polluted local water .

Addressing e-waste in China

<http://www.fordschool.umich.edu/sites/china-policy/files/2012/09/China-E-waste-FINAL.pdf>

What I hope to gain more insight on while in China?

Strategies and Recommendations concerning E-waste and its importation????

- Government of China???
 - Ministry of Environmental Protection
 - National Development and reform commission
- Role of Civil Society(NGO's)???
 - Basel Action Network
 - Greenpeace
- Role of Media???



Turn back
the toxic tide
of **e-waste**

A child in Ghana carrying electronic cables away from a landfill. Pic courtesy of Greenpeace.org

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E-waste management Process in China

- Scientific definition is the same as USA, regulation (**government**) definition **varies** with country concerning what is considered as the **components of e-waste**.
 - Research areas in dealing with e-waste:
 - Recycling and disposal technology
 - Policy and management
 - Treatment engineering and environmental risk assessment
-

Collection and recycling of E-waste in China

- Government policy
 - Old for new policy
 - Registration of companies
 - Company qualification permit
 - Financial support for best practice and technologies
- Informal sector
 - Repair shops
 - Individual collectors(tri-cycles)

Informal sector currently has the best facilities for collection and recycling!



Integrated circuit boards on the back of a tri-cycle. [Alex Hofford Photography](#)

Challenges and recommendations

- Management
 - Weak policies and regulations
 - Weak pollution control
 - Poor skill and awareness
 - Revising definition to include more components
- Collection
 - Lack of formality
 - Poor intercity network
 - Increase citizen consciousness
- Dismantling
 - Improve skills and material recovery rate
- Recycling
 - Poor capacity
 - Lack of facilities



Of more than 100
recycling companies
only 64 are listed for
funding!!