E-waste management– Role of Schools

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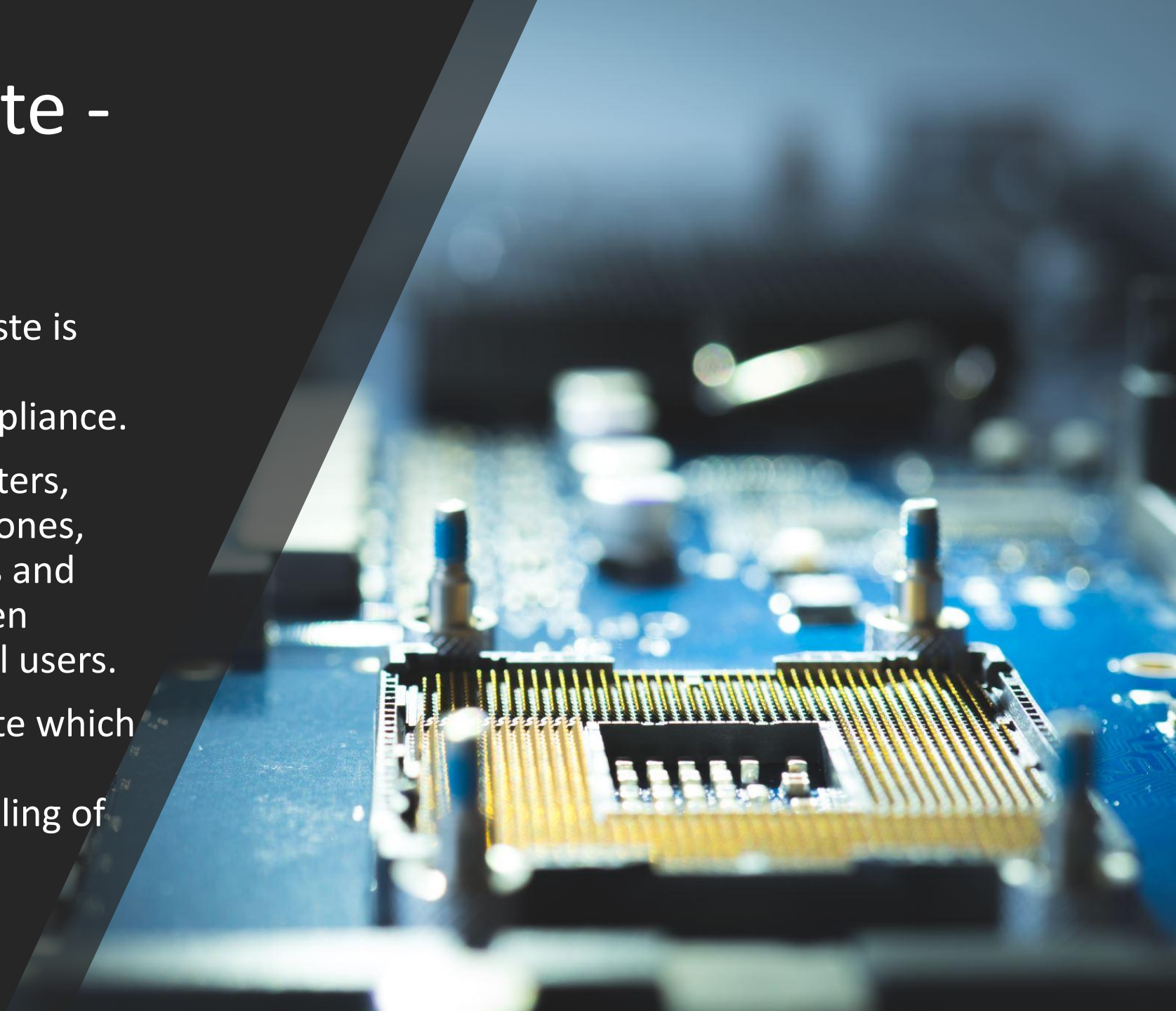
Section 1

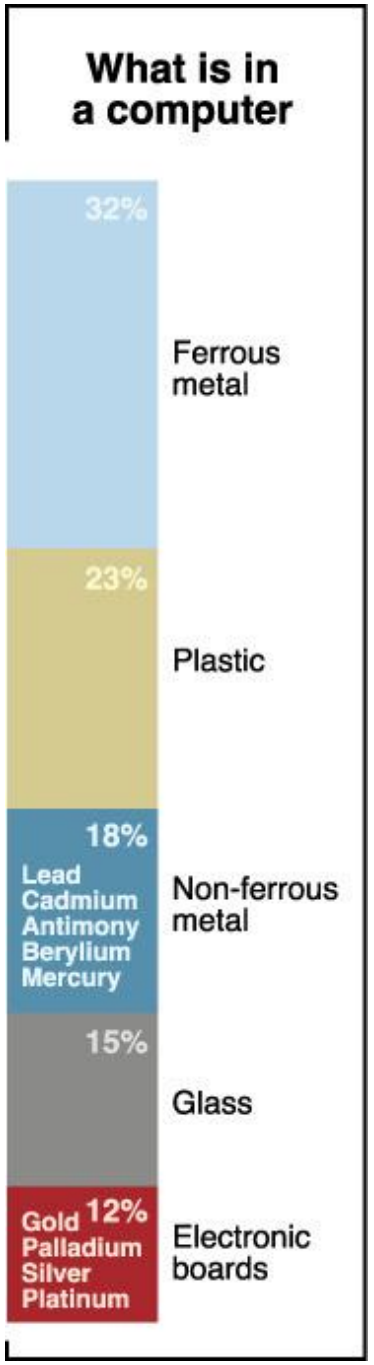
E-Waste

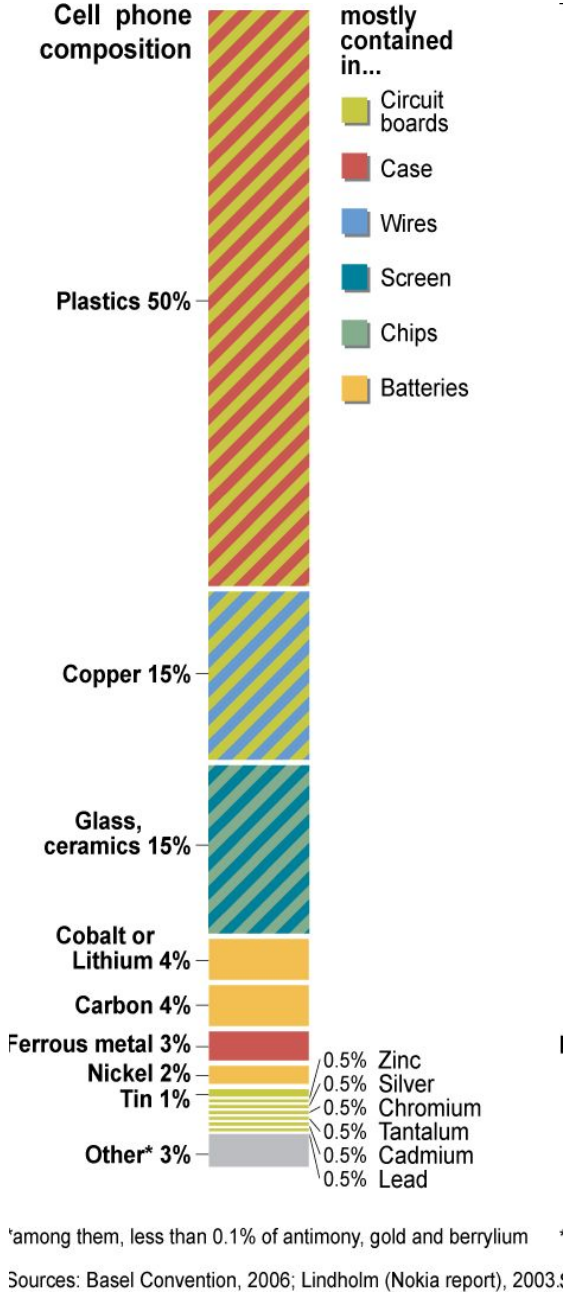
Electronic Waste - Definition

- Electronic waste or e -waste is any broken or unwanted electrical or electronic appliance.
- E - waste includes computers, consumer electronics, phones, medical equipments, toys and other items that have been discarded by their original users.
- E-Waste also include waste which is generated during manufacturing or assembling of such equipments

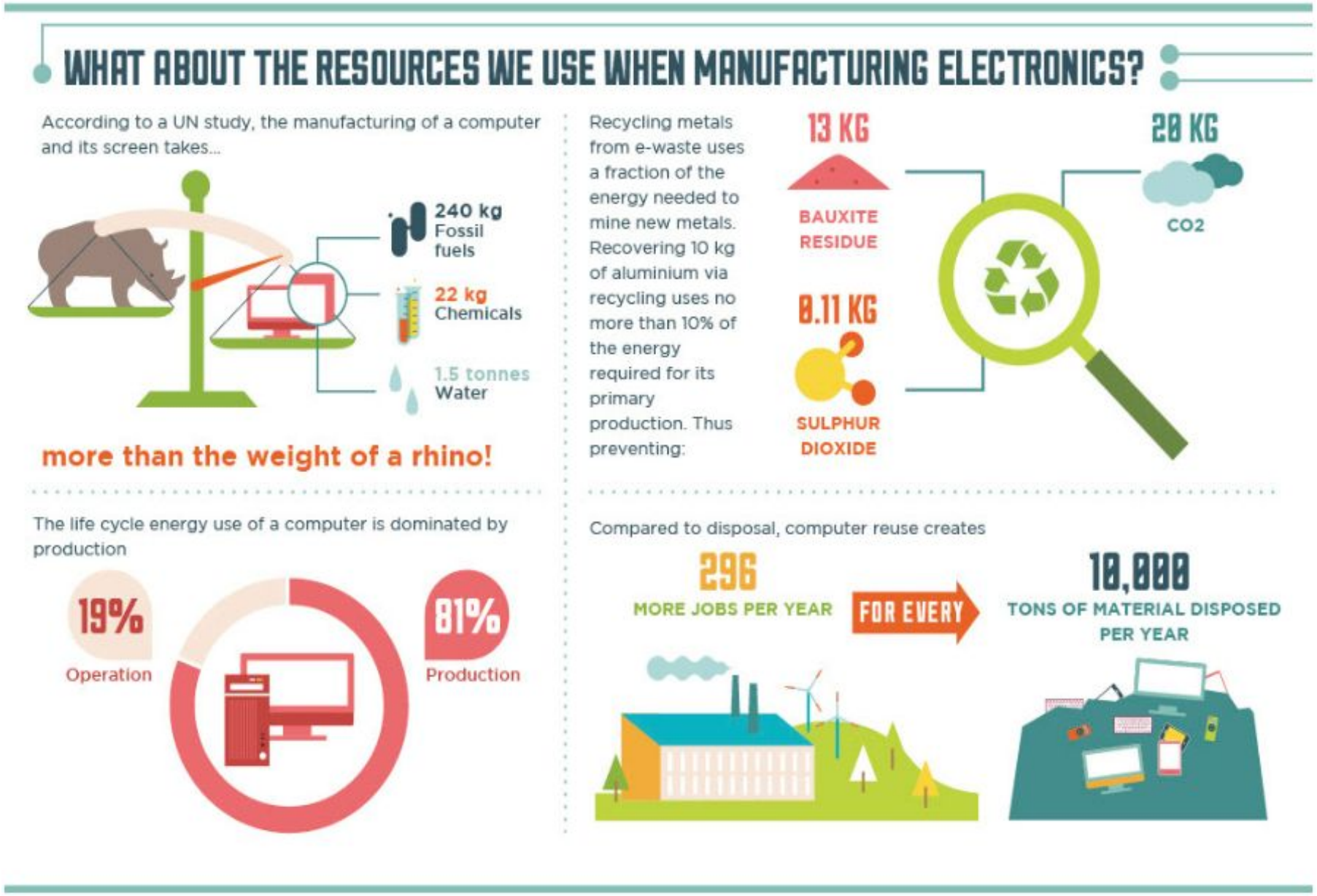


Composition of E-waste

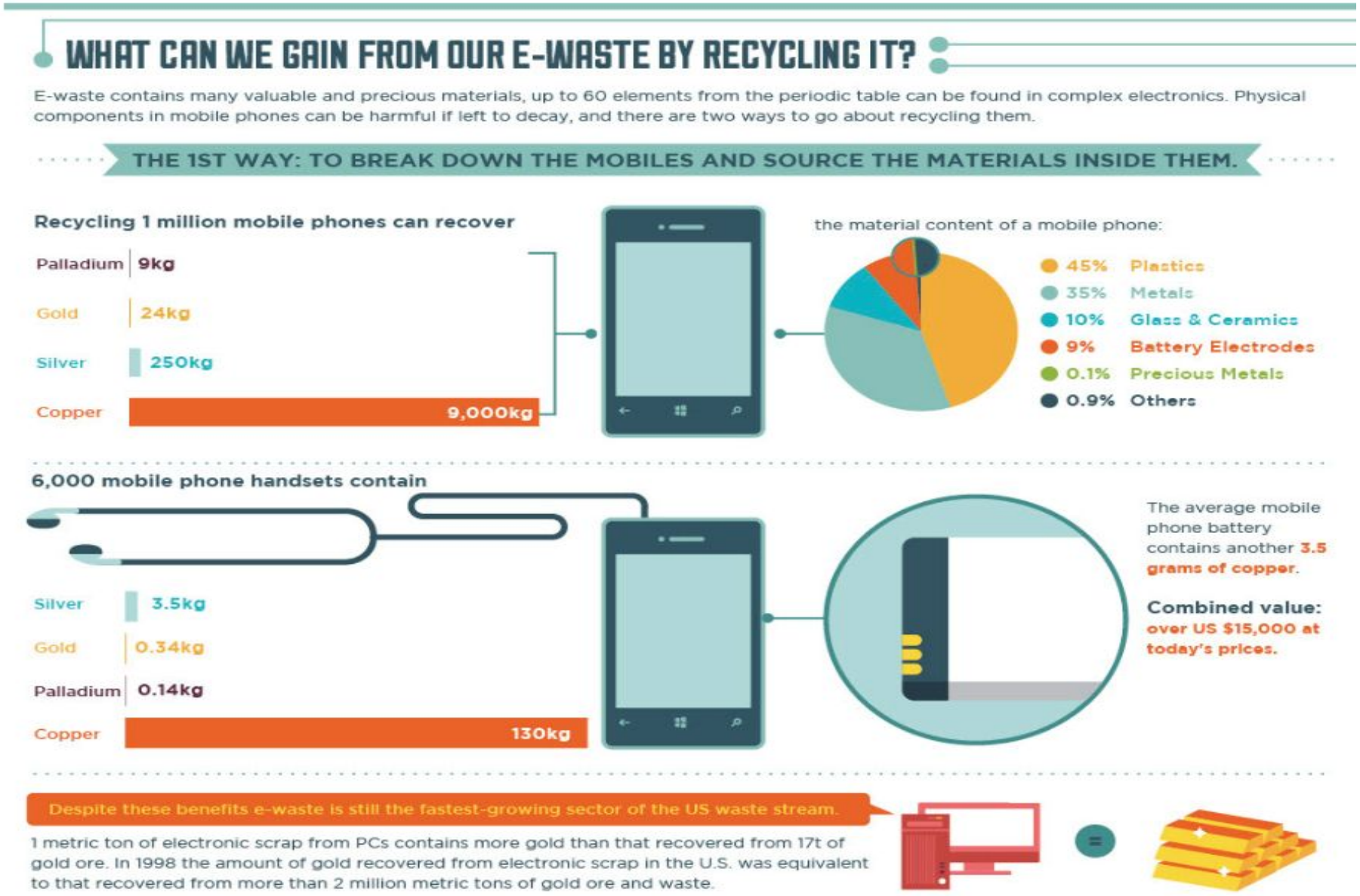




Source: UNEP



•Source: http://www.fastcoexist.com/1681368/visualizing-the-worlds-e-waste-probl



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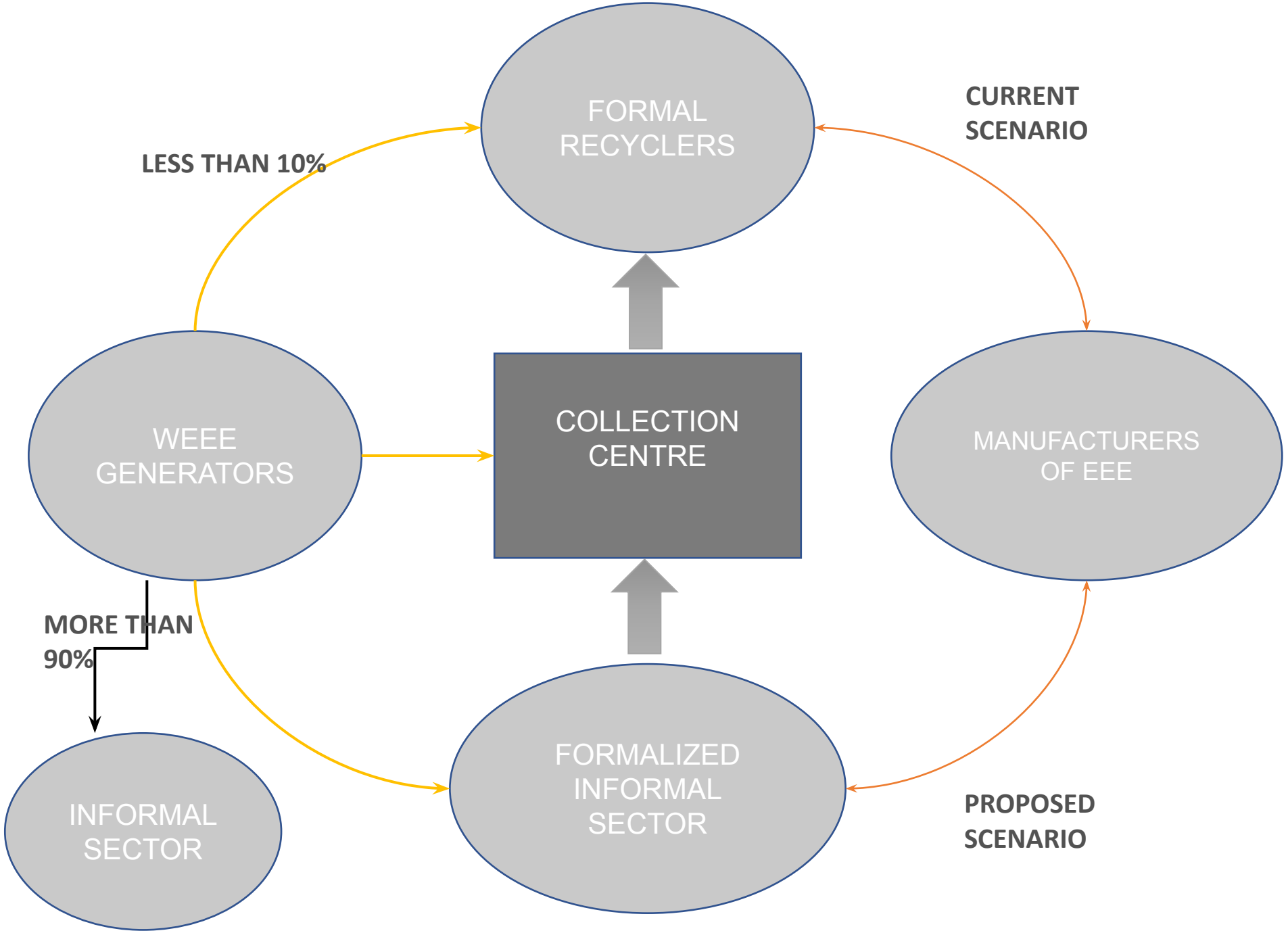

FORMAL RECYCLERS
CURRENT SCENARIO
LESS THAN 10%
WEEE GENERATORS
COLLECTION CENTRE
MANUFACTURERS OF EEE
MORE THAN 90%
INFORMAL SECTOR
FORMALIZED INFORMAL SECTOR
PROPOSED SCENARIO

E-waste Management Rules

- First E-Waste (Management and Handling) Rules, 2011
- Notified in May 2011 and became effective from May 2012
- RoHS provisions effective from May 2014
- Supersession of E-Waste (Management and Handling) Rules, 2011
- Notified on March 23, 2016 and became effective from October 1, 2016

E-waste Rules – Objectives & Highlights

- Minimize illegal recycling / recovery operations
- Environmentally Safe & Sound Recycling by channelizing E-waste to registered E-waste recyclers
- Extended Responsibilities to producers to manage a system of E-waste collection/take back and channelizing to a registered dismantler/recycler.
- Responsibilities to Urban Local Bodies for orphan products and for waste found mixed with MSW
- To Create an E-waste collection channelization system
- Reduce Hazardous substances in Electrical and Electronic components

Schedule I – Items Covered in e-Waste Rules

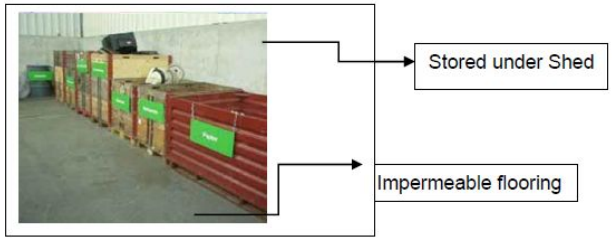
Categories of electrical and electronic equipment
Information technology and telecommunication equipment :
Centralised data processing: Mainframes, Minicomputers
Personal Computing: Personal Computers (Central Processing Unit with input and output devices)
Personal Computing: Laptop Computers(Central Processing Unit with input and output devices)
Personal Computing: Notebook Computers
Personal Computing: Notepad Computers
Printers including cartridges
Copying equipment
Electrical and electronic typewriters
User terminals and systems
Facsimile
Telex
Telephones
Pay telephones
Cordless telephones
Cellular telephones
Answering systems
Consumer electrical and electronics:
Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology)
Refrigerator
Washing Machine
Air-conditioners excluding centralised air conditioning plants
Fluorescent and other Mercury containing lamps

E-waste Rules - Stakeholders

- Every producer, consumer or bulk consumer, involved in the manufacture, sale, and purchase and processing of electrical and electronic equipment or components as specified in schedule I
- Refurbishers, Collectors, Dismantlers & Recyclers of E-waste
- Bulk Consumer/Consumer
  - *Bulk users of electrical and electronic equipment such as central government or state government departments, public sector undertakings, banks, educational institutions, multinational organizations, international agencies and private companies that are registered under the Factories Act, 1948 and Companies Act, 1956*
- MoEF/CPCB/SPCBs/PCCs. ULBs

Compliance – Bulk Consumers

- Channelization of E-Waste generated to authorized collection centers or registered dismantlers or recyclers or is returned to pick-up or take back services provided by the producers
- Maintaining records in Form – 2 for inspection by SPCBs/PCCs
- File annual returns in Form-3, to the concerned State Pollution Control Board



Collection Center - Compliance

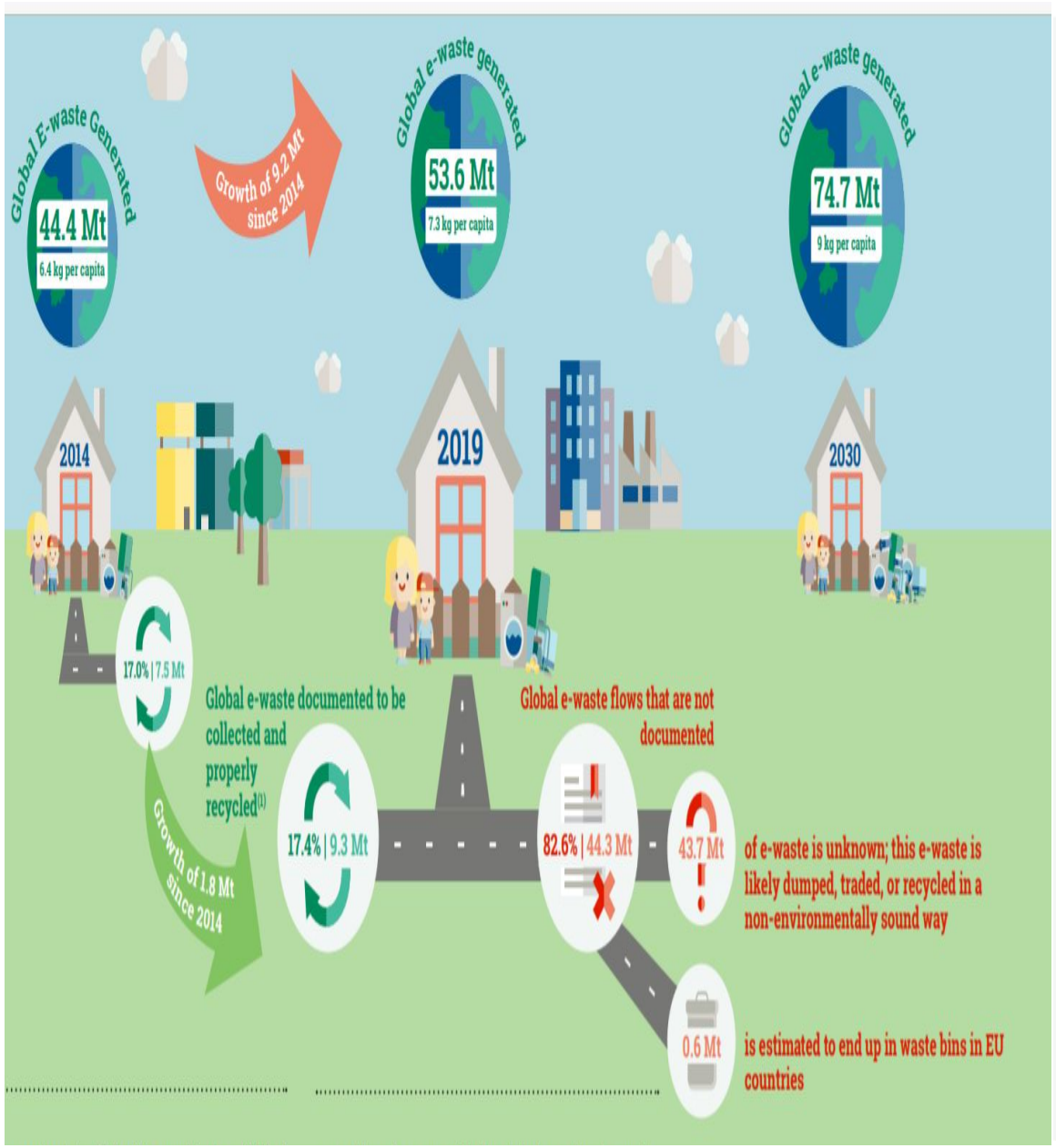
Managing E-Waste – Setting Up a Collection Center

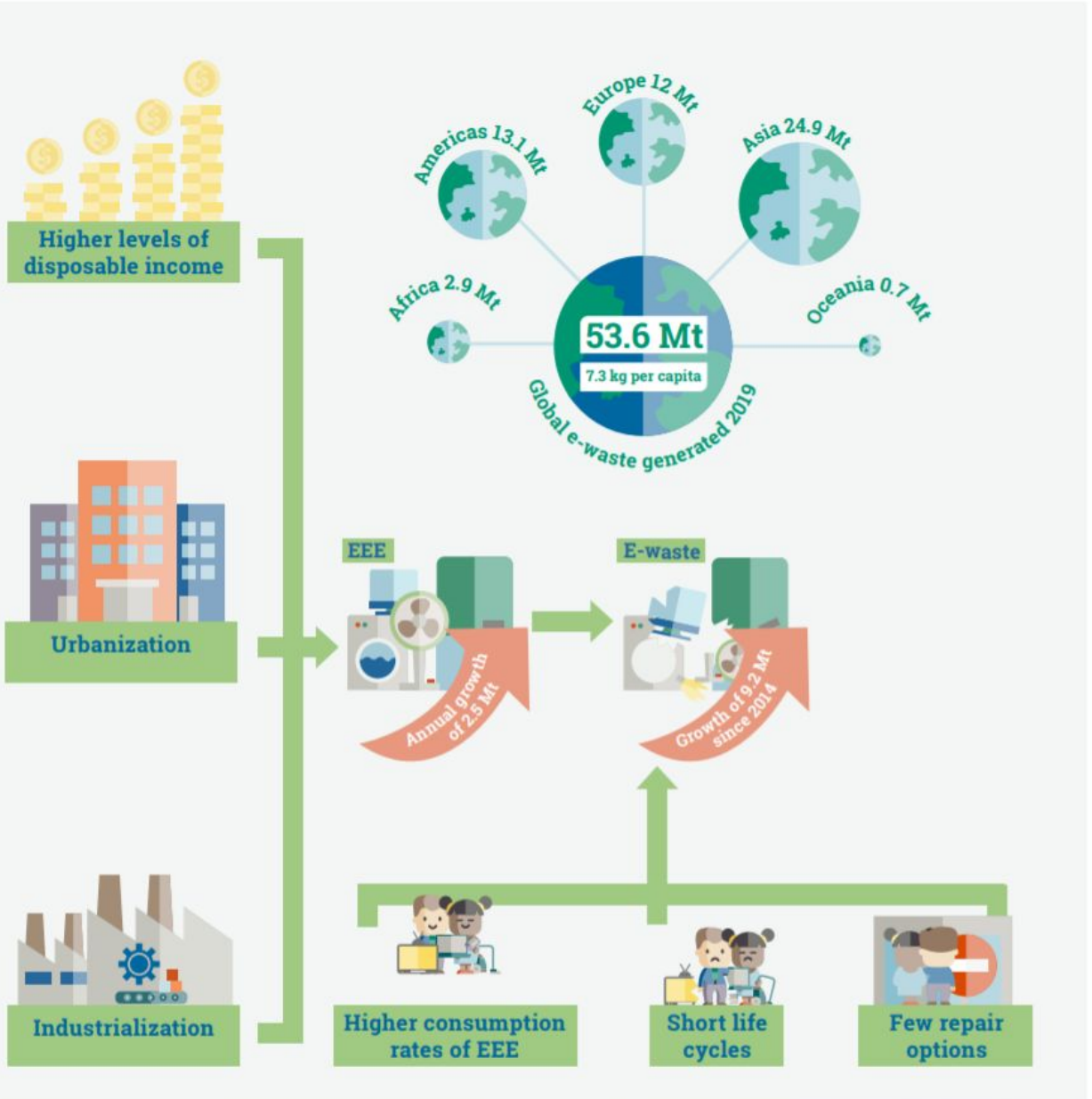
- Bulk Consumers can set-up collection centers in their premises to better manage e-waste
- Should tie-up with an authorized producer/dismantler/recycler
- Ensure provision for safe storage of e-waste
- Ensure safe transportation to stakeholders authorized under the rules
- Maintain annual reports in Form-2
- File returns in Form-3

E-waste Generation and challenges

- Global E-waste generation: 53.6 million tones
- Only 17.4 percent was recycled
- China, United States, and India are the biggest contributors of e-waste
- China- 10.1 million tonnes
- United States- 6.9 million tonnes
- India-3.2 million tonnes

- Uncertain Financial Mechanism
- Import of second-hand equipment
- Capacity Building of regulatory authorities
- Setting-up of Collection Systems
- Inventorization of E-waste
- Promotion for development of infrastructure for recycling
- Monitoring Mechanisms for EPR and RoHS





Source: Global E-waste Monitor, 2020

Is E-waste hazardous?

- It contains many toxic and hazardous ingredients. The hazardous constituents such as heavy metals like lead, cadmium and mercury, Poly-Chlorinated-Bi-phenyl(PCB), Brominated Flame Retardants (BFRs) etc, that have the potential to cause environmental pollution and pose health hazards when processed, recycled or disposed off.

- Hence E-waste is considered hazardous in nature.

Toxics in E-waste

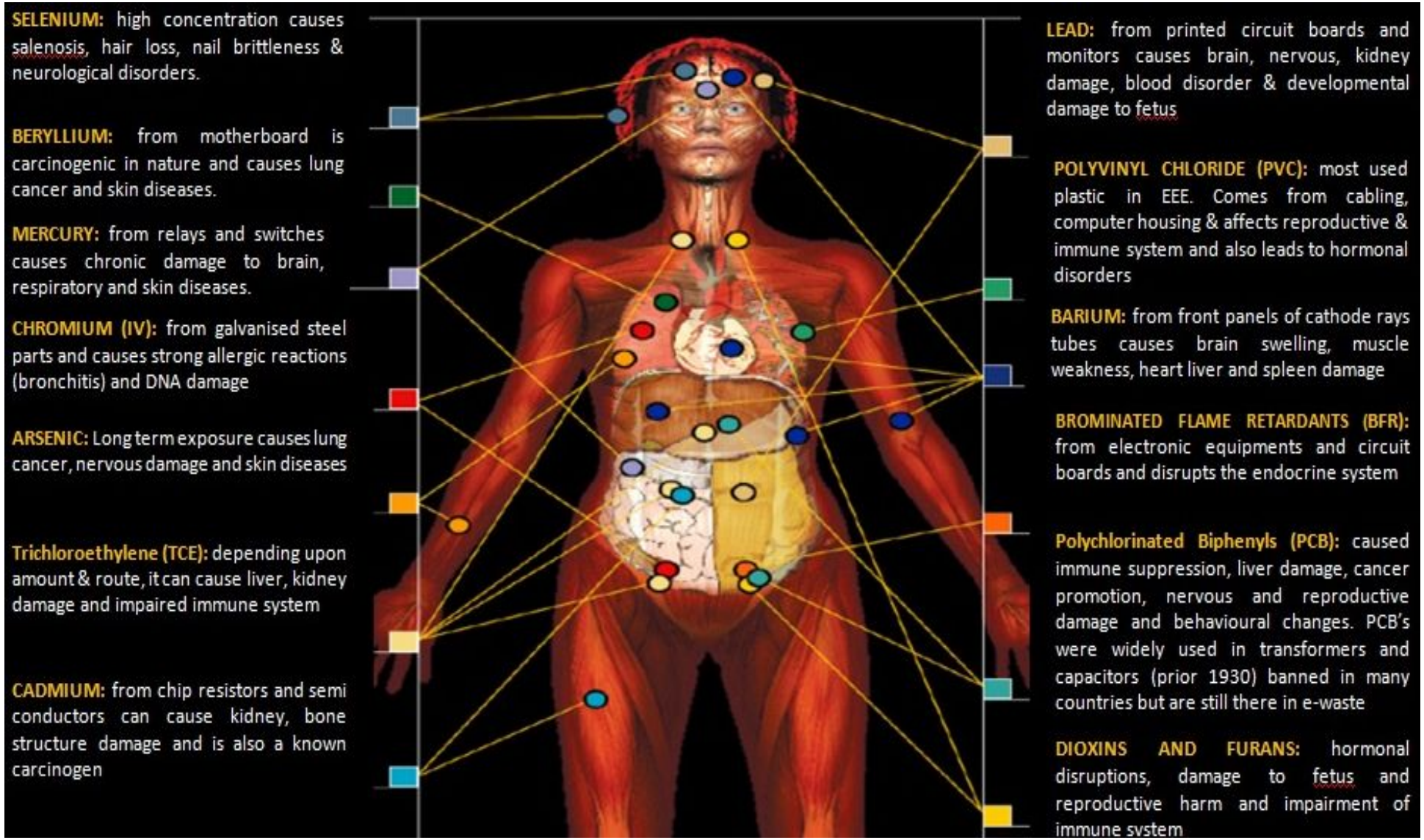
Over 1000 materials, many toxic

- Lead and cadmium in circuit boards;
- Lead oxide & cadmium in monitor cathode ray tubes (CRTs);
- Mercury in switches and flat screen monitors
- Cadmium in computer batteries;
- Polychlorinated biphenyls (PCBs) in older capacitors and transformers;
- Brominated Flame Retardants (BFR)on printed circuit boards, plastic casings, cables
- Polyvinyl chloride (PVC) cable insulation - release highly toxic dioxins and furans when burned

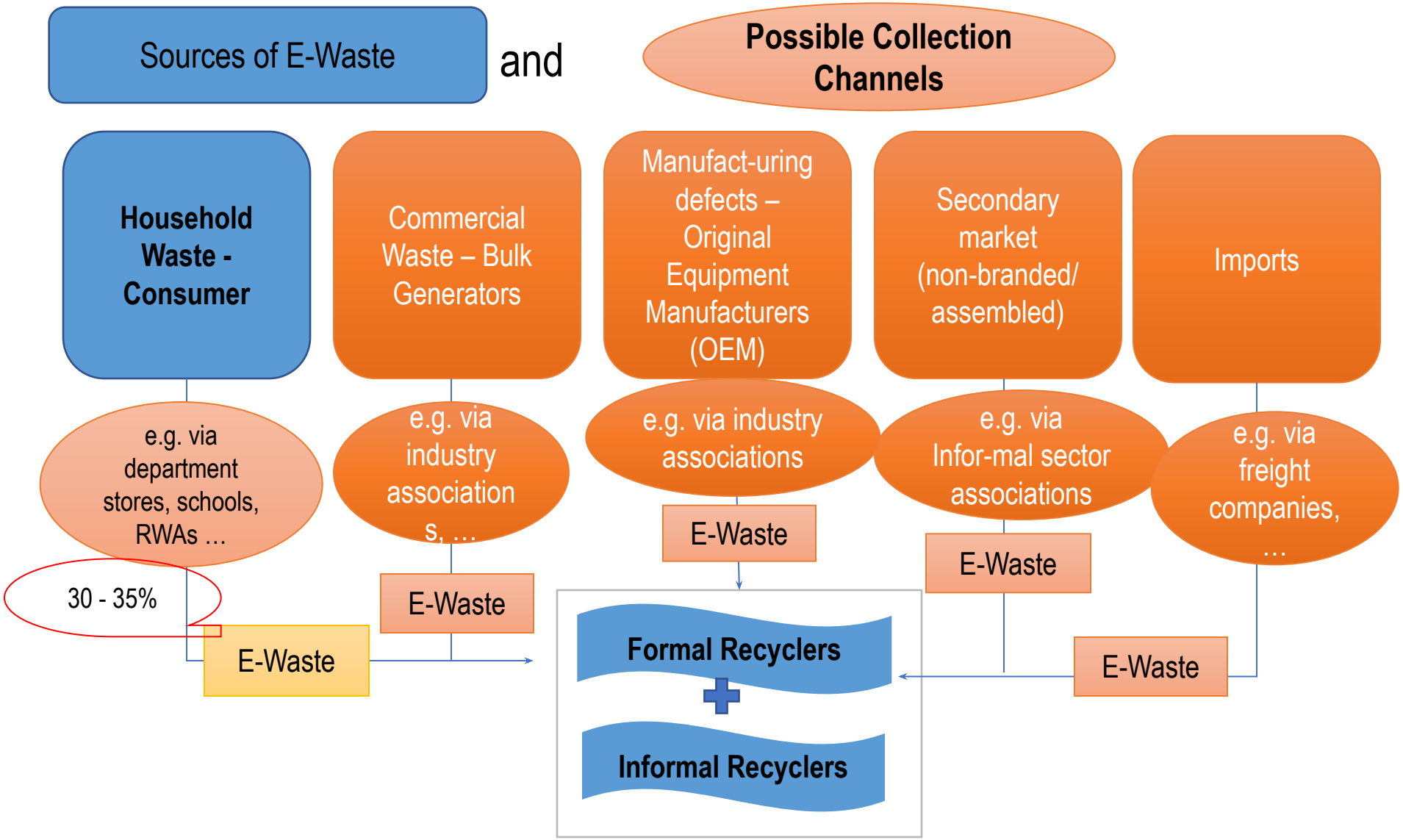
Environment Impacts

- Emissions of dioxins/ heavy metals – lead, cadmium, mercury
- Other contaminants like BFRs
- Spent fluids/chemicals in soil
- Groundwater contamination
- Non-recyclables- Landfilling and leachate
- Beyond workplace street dusts showed traces of PCBs

Health Impacts

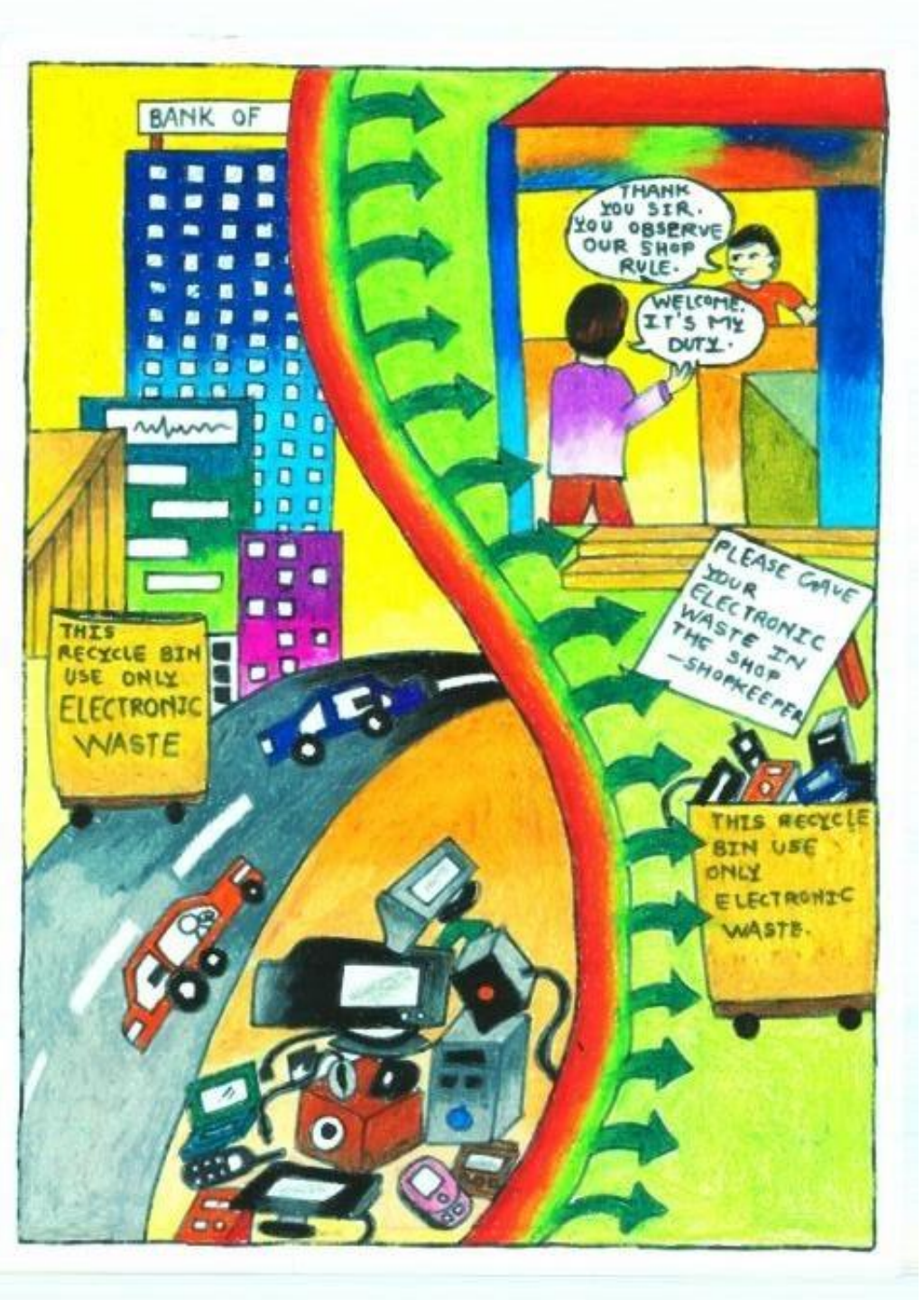


Role of Schools in e-waste management



Role of Schools in establishing a Collection Channel

- Enhance Awareness in Children through Course curriculum
- Enhance community participation through involvement of RWAs
- Establish Linkages between schools & Manufacturers/ producers/PROs
- Recreate products from waste & conduct model making competitions



Enhance Awareness – Major Activities

- Awareness programme for school teachers & children on safe disposal of e-waste
- Awareness package including E-waste films, AV guides, posters and pamphlets disseminated
- Information session under E-waste management programmes by producers/manufacturers
- Develop Course curriculum for schools
- Visit to nearby e-waste recycling facility

E-waste Awareness Programme-MeitY

www.greene.gov.in

Community Participation – Major Activities

- Increase awareness of neighborhood communities on safe e-waste disposal
- Set up linkages with Resident Welfare Association (RWAs)
- Organize collection drives for schools and neighboring communities

Activities in Schools in various States

Campaign for Responsible E-waste Disposal and Management

Imphal: Under the aegis of the Ministry of Electronics and Information Technology (MeitY) initiative, 'Awareness on Environmental Hazards of Electronic Waste', RLG has partnered with Manufacturers' Association for Information Technology (MAIT) to drive the 'Clean to Green' campaign in India. The campaign seeks to further MeitY's objective of creating outreach and advocacy on responsible disposal of electronic waste. The 'Clean to Green' campaign will encompass 30 cities across 26 states and 4 union territories.

The primary focus of the Awareness Programme on Environmental Hazards of Elec- stakeholders (including schools, colleges, RWAs, bulk consumers, dealers, refurbishers, informal sector and manufacturers) in order to reduce the adverse impact on environment and health due to improper disposal of e-waste. This programme under the Digital India and Swacch Bharat missions aims to enhance proper disposal and recycling of e-waste such that environmental and health hazards are mitigated.

Anwar Shirpurwala, CEO, MAIT, stated, "Through this programme, MAIT seeks to build awareness amongst various stake- holders by reaching out to 20

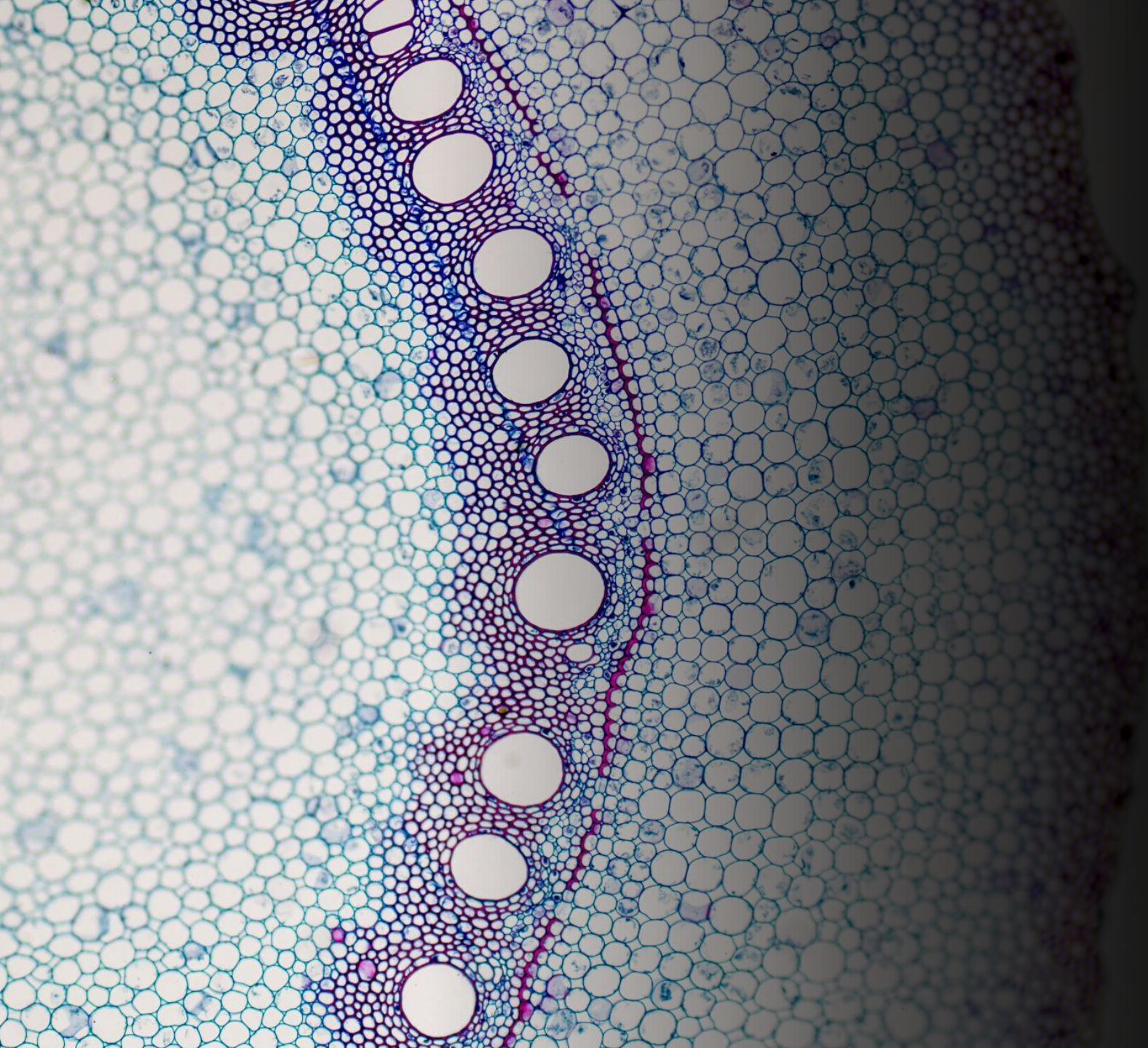
Eco cycling to set up E-Waste collection centers in the State

ઈકો રિસાયકલીંગ રાજ્યમાં ઈ-વેસ્ટ કલેક્શન સેન્ટર્સ ઉભાં કરશે

અમદાવાદ| મહારાષ્ટ્રમાં ઇવેસ્ટ રિસાયક્લિંગ યુનિટ્સ ધરાવતી કંપની ઈકો રિસાયકલીંગ લિમિટેડ ગુજરાતમાં 12.5 કરોડના ખર્ચે પાંચ ડિસમેન્ટલિંગ સેન્ટર્સ તેમજ મોટાભાગના શહેરોમાં ઘરઆંગણેથી જ ઈ-વેસ્ટ મટિરિયલ કલેકશન માટેની વ્યવસ્થા સ્થાપી રહી છે. પ્રતિ વર્ષ 10000 એમટી જેટલી ઓવરઓલ કેપેસિટી સાથે સ્થાપશે. ઈકોરેકોની ટોપલાઈનમાં 50 કરોડની વધુ આવકનો ઉમેરો થવાની ધારણા છે. કલેકશન સેન્ટર્સે બનવા ટેક બેક પોઈન્ટ્સ માટે પણ કામ કરી રહી છે.

ఇ-వ్యర్థాల నిర్వహణపై ప్రచారం

(एमएआइटी) ने साझदारी कर भारत में एमइआइटी वाई के इलेक्ट्रानिक वेस्ट के पर्यावरणीय खतरों पर जागरूकता अभियान को बढ़ावा देने के लिए क्लीन टू ग्रीन कैम्पेन चलाया है। यह कैम्पेन इलेक्ट्रॉनिक वेस्ट का ज़िम्मेदारी से डिस्पोसल और मैनेजमेंट के जरिए एमईआईटी वाई के उद्देश्य को आगे बढ़ाने का प्रयास करता है। क्लीन टू ग्रीन कैम्पेन में 26 राज्यों और 4 केंद्र शासित प्रदेशों में 30 शहरों को शामिल किया जाएगा।इलेक्ट्रॉनिक वेस्ट के पर्यावरणीय खतरों पर जागरूकता कार्यक्रम का प्राथमिक ध्यान पर्यावरण पर प्रतिकूल प्रभाव को कम करने के लिए विभिन्न स्टेक्होल्डर (स्कूल, कॉलेज, आरडब्ल्यूए, थोक उपभोक्ता, डीलर, रिफर्बिशर, अनौपचारिक क्षेत्र और निर्माताओं सहित) के बीच जागरूकता पैदा करना है, जिससे ई-वेस्ट के अनुचित डिस्पोसल के कारण स्वास्थ्य एवं पर्यावरण पर पड़ रहे खराब प्रभाव को कम किया जा सके। डिजिटल इंडिया और स्वच्छ भारत मिशन के तहत यह कार्यक्रम ई-वेस्ट का ठीक तरह से डिस्पोसल और रीसाइक्लिंग को बढ़ाने का लक्ष्य रखता है जिससे पर्यावरणीय और स्वास्थ्य संबंधी खतरों को कम किया जा सके। एमएआईटी के सीईओ अनवर शिरपुरवाला ने कहा- +भारत में ई-वेस्ट मैनेजमेंट एक बेहद असंगठित क्षेत्र है। इस कार्यक्रम के माध्यम से, एमएआईटी देश के 17 राज्यों और 3 केंद्र शासित प्रदेशों में 20 शहरों तक पहुंचने और स्थायित्व सुनिश्चित करने के लिए कार्यक्रम के प्रारंभिक चरण में शामिल 10 शहरों को शामिल करके विभिन्न स्टेक्होल्डर के बीच जागरूकता पैदा करना चाहता है। कार्यक्रम में उनकी भागीदारी पर टिप्पणी करते हुए सुश्री



Section 2

Diksha Platform

Diksha platform

The content is online non-credit courses for 7-9 standards school students and training of teachers in self learning mode

Objectives

- To provide the content for School students and teachers
- To enhance the knowledge of teachers on e-waste management
- To build a platform which can support schools to provide sufficient knowledge towards e-waste management
- To develop a self support system for schools

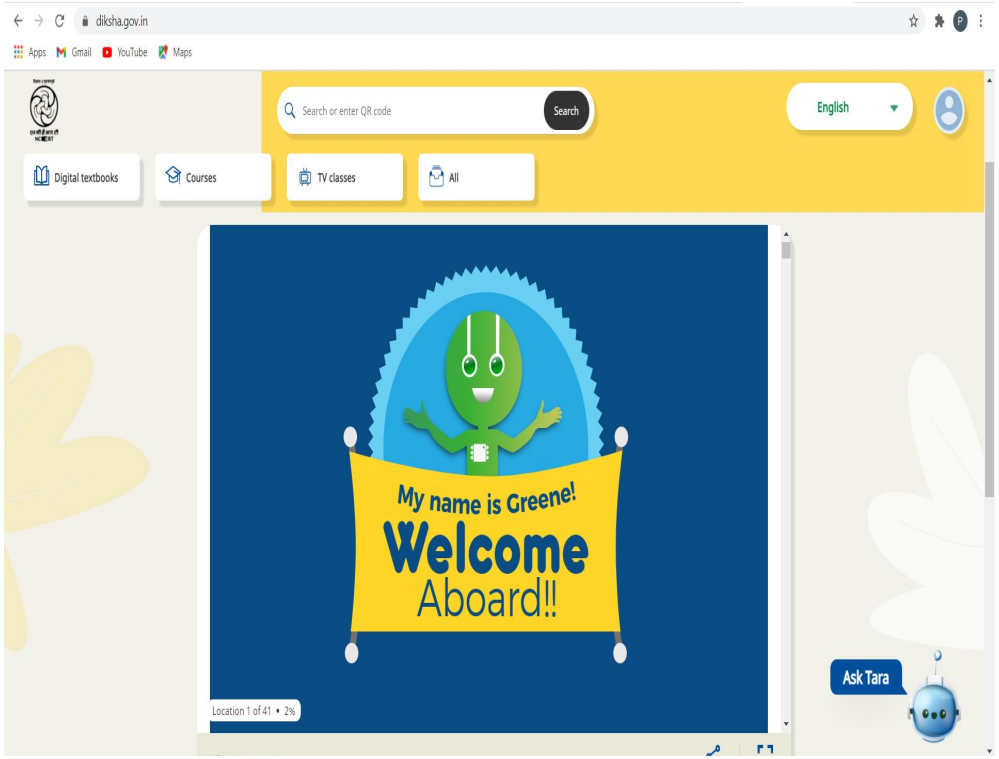
Content:

Handbooks

Videos

Assessment

Discussion Forum



E-waste Management in Schools

Next Step – Your Action Plan

- List of the actions you want to do under e-waste management
- For each of action, formulate targets you want to / have to achieve
- For each target, specify indicators which you can use to measure whether the target has been achieved
- For each target, provide one / several measure(s) on how to achieve it
- For each measure, specify who will be responsible within the school for implementation and which other stakeholders need to be involved
- Also specify for each measure, which resources will be required
- Finally, think about a timeline for implementing the action plan. Prioritize the measures, think about dependencies between them and be realistic.

Questions

THANK
YOU