E-waste: Challenges, Solutions and Benefits

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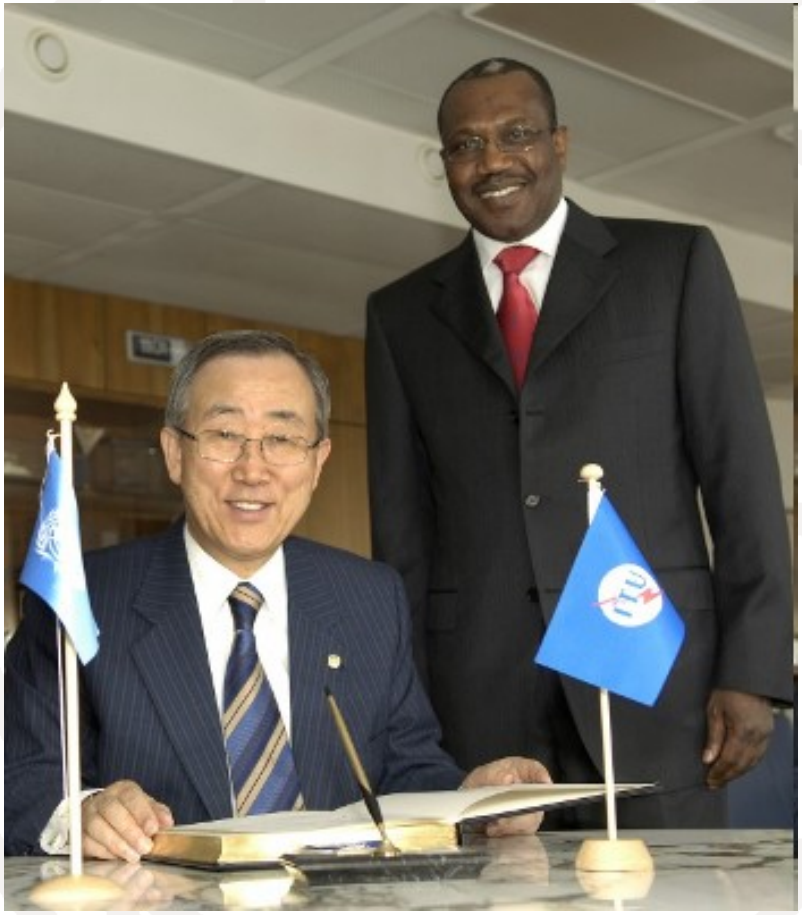
What is the problem?

What ITU is Doing to Tackle E-waste and Protect the Environment?

Unique Public/Private Partnership



- **UN agency** for ICTs
- **Members**:
  - **193 Member States** (Governments and regulatory bodies)
  - **Over 700 Private Sector** (Sector Members and Associates)
  - **Over 40 Academia**

Mr. Ban Ki-moon,
Secretary-General of the United Nations
and Dr. H. Touré, Secretary-General of ITU

ITU-T Study Group 5 "Environment & Climate Change"

ITU-T SG5's six work areas:

- Q 17/5 - Energy efficiency for ICT equipment and climate change standards harmonization
- Q 18/5 - Methodology of environmental impact assessment of ICT
- Q 19/5 - Power feeding systems
- **Q 21/5 - Environmental protection and recycling of ICT equipment/facilities**
- Q 22/5 - Setting up a low cost sustainable telecommunication infrastructure for rural communications in developing countries
- Q 23/5 - Using ICTs to enable countries to adapt to climate change

Highlights on Q21

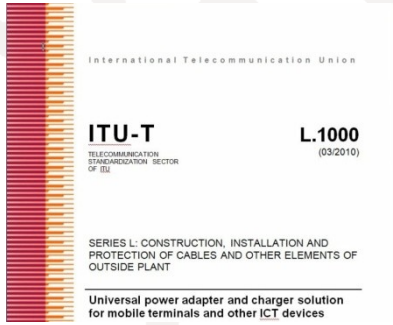
"Environmental Protection and Recycling of ICT Equipments/Facilities"

Some of the tasks include:

- Share national experiences and knowledge related to environmental and sustainability aspects of laws or directives
- Determine process to analyze the effect on the environment of products (materials, hazardous materials avoidance, manufacturing processes, operational procedures and disposal) and ways to minimize them.
- Assess environmental effects of recycling related to ICT facilities, equipments, etc.
- Analyze safe, low-cost social recirculation of ICT equipments through recycling and reuse.

Q21

Recommendation ITU-T L.1000 Universal Mobile Charger



Saves 82,000 tons of waste per year

Q21

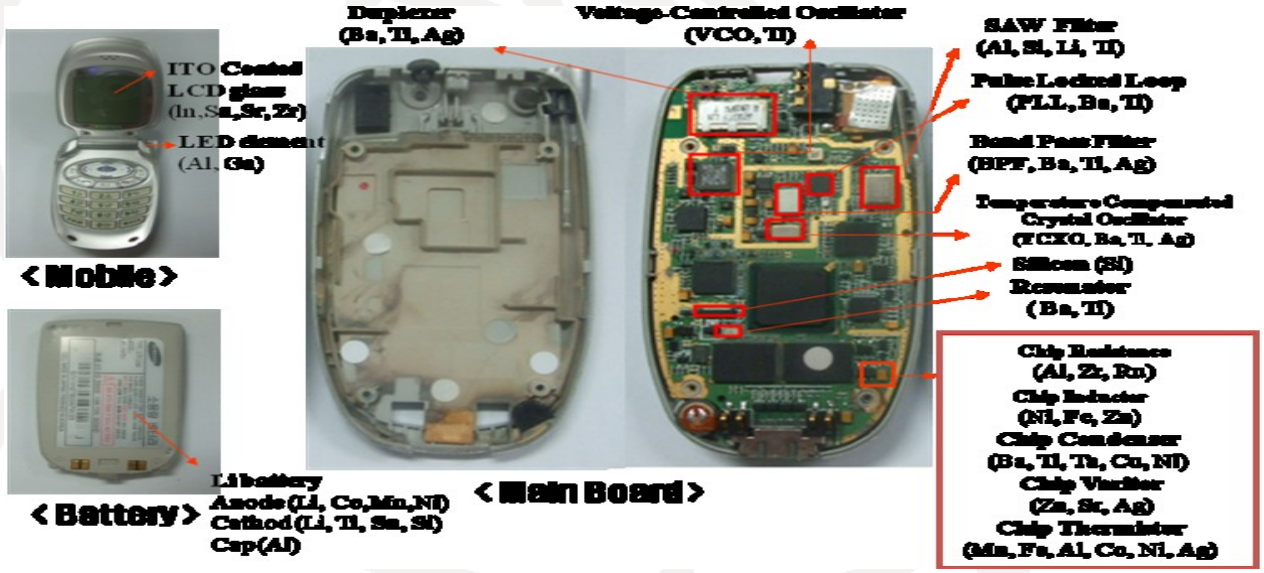
Recommendation ITU-T L.1100 Recycling Rare Metals in ICT Products

- Recommendation ITU–T L.1100 outlines key considerations in all phases of the recycling process, and provides guidelines as to how organizations may fairly and transparently report on rare metal recycling.

- Rare metals are essential to the high-end functionality of ICT products.
  - A mobile phone contains no less than 20 rare metals, and the need to recycle these metals is clear — a tonne of gold ore yields just 5 grammes of gold, whereas a tonne of used mobile phones yields a staggering 400 grammes.

Recommendation ITU-T L.1100 Recycling Rare Metals in ICT Products

Q21



- 20 Rare Metals in a mobile phone
- 1 ton gold ore → 5 grams
- 1 ton of used mobile phones → 400 grams

An ITU-GeSI Energy-aware Survey on ICT Device Power Supplies

- The study analyzes 300 commercially available EPSs, testing the correlation between chargers' weight, volume and supplied power.
- Finding a large variation in the weights of EPSs, the report, underlines a major opportunity to reduce the weight of chargers across a range of power-supply categories.
- Noting that roughly four billion EPSs are produced each year, weighing one million tonnes and resulting in 500 thousand tonnes of e-waste, **the report points to an urgent need for standards to correct glaring inefficiencies in the EPS production process.**

An ITU-GeSI Energy-aware Survey on ICT Device Power Supplies (cont'd)

- ITU-GeSI report reveals that standards for the manufacture of external power supplies (EPS) could decrease their average weight by up to 30 per cent.

- This could eliminate **300 thousand tonnes of e-waste annually the report estimates.** Putting this in context, this amount of waste, equivalent to sixty per cent of current annual EPS e-waste, would form a 300km truck-jam, every year.

- In addition the report highlights that standardizing efficiency characteristics could reduce the greenhouse gas emissions of chargers by between 25 and 50 per cent.

ITU-UNU-UNEP-StEP Initiative-CEDARE Joint Survey on E-Waste

ITU-T, UNEP and UNU, in collaboration with StEP Initiative, CEDARE, have launched a joint survey to collect detailed data on e-waste management, policies and standards.

Scope:

- construct an overview of the current e-waste landscape
- identify future challenges
- establish a base for exchange of e-waste information and best practices
- form a valuable tool in promoting collaborative work in the future

Get Involved:

- Fill in the survey! Information at:

http://www.itu.int/ITU-T/climatechange/e-waste/index.html

Building Capacity & Raising Awareness

- ITU Symposium in Canada

  (29-31 May 2012)

- 2nd ITU Green Standards Week

  (17-21 September 2012)

- ITU Green ICT Application Challenge (2011)
  - **App to tackle e-waste**

ITU GREEN ICT APPLICATION CHALLENGE

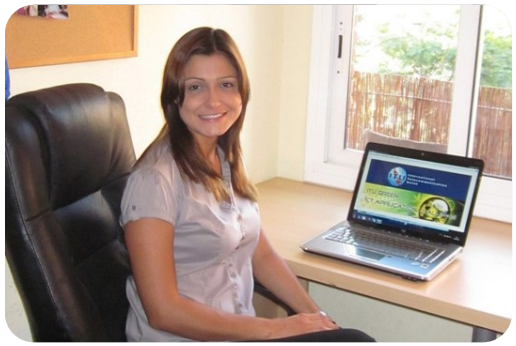
1st edition - 2011

Smart Recycling:

- Challenge
  - Local Waste Management: Process, Issues, Solutions
  - Smartphone Application: Smart Recycling
    - Citizens: geo-localization of recycling points
    - Recycling centers: recycling campaign
    - Government: improvement of the recycling system
- Results
  - Benefits for Countries and Local Communities:
    - Social inclusion through internet access
    - Protection of the environment and natural resources

The Winner: Lis Lugo Colls

Announced in Rome, on 6 September 2012 during the 1st ITU Green Standards Week



ITU GREEN ICT APPLICATION CHALLENGE

- Available as of February 2012
- Currently the data available is from Spain.

Website: www.MiReciclaje.com

Twitter: @MiReciclaje

Download it for free!

Available on the iPhone App Store

Establishment of an Enabling Environment

- Need of regulatory and legal environment for the deployment of effective use of ICTs to tackle environmental challenges, including e-waste.
- Key Actions:
  - Raise awareness on the dangers of e-waste;
  - Encourage the consideration of e-waste management in the design of ICT policy;
  - Adopt strategic policies, international standards and regulatory approaches that are sensitive to local context;
  - Encourage concerted cooperation in handling e-waste at the national, regional and international level.

Next Steps & Call to Action

- Publication of the ITU-UNU-StEP-CEDARE-UNEP Report including the analysis of the responses received by December 2012 – January 2013
- 2nd ITU Green Standards Week (17-21 September 2012)
  - Workshop on E-waste jointly organized by ITU, UNU and CEDARE on 19 September 2012
- Development of International Standards and Best Practices on E-waste for the ICT Sector
- Engagement to raise awareness of the issue of E-waste
- Share with us your success story!

E-Waste … the solution!

- Boosting developing country e-waste recycling policies can have the potential to generate decent employment, curb health problems, cut greenhouse gas emissions and recover a wide range of valuable metals including silver, gold, palladium, copper and indium – by turning an e-challenge into an e-opportunity.
- An integrated waste management approach is a crucial part of international and national sustainable development strategies.

Links & Additional Information

- ITU-T and Climate Change
  http://www.itu.int/ITU-T/climatechange
- ITU Symposia & Events on ICTs and Climate Change http://www.itu.int/ITU-T/worksem/climatechange
- ITU and Climate Change
  http://www.itu.int/climate

Best Practices for Environmental Sustainability for the ICT Sector

Purpose:

- The project will focus on development of a standardized checklist of sustainability requirements specific to the ICT sector that will become a contribution to ITU-T Study Group 5 with the goal of developing a global standard in this area.

Areas of Focus:

- Sustainable Buildings
  - How ICT companies operate their physical plant
- Sustainable ICT in Corporate Organizations
  - How ICT companies operate their ICT operations
- Sustainable Products
  - How ICT companies design, manufacture and manage end of life for products
- Sustainable Services
  - How ICT companies design and deliver services
- **End of Life Management**
  - How to secure an environmentally sustainable solution for ICT equipment's EOL
- General Specifications and KPIs
  - How ICT companies select KPIs for environmental management
- Assessment Framework for Environmental Impacts of ICT
  - An assessment framework for energy/greenhouse gas intensity and environmental impacts of the ICT sector

Best Practices for Environmental Sustainability for the ICT Sector

Partners:

- ITU
- UNEP
- RIM
- Climate Associates
- Alcatel Lucent
- Huawei
- Microsoft
- UNEP Basel convention
- CEDARE
- Step Initiative
- BBC
- European Broadcasting Union (EBU)
- Verizon
- Telefónica
- Telecom Italia
- France Telecom
- United Nations University (UNU)
- BIO Intelligence Service
- Datec Technology
- Ernst & Young
- Vodafone Ghana
- 3p Institute for Sustainable Management
- Dell
- MicroPro Computers
- PE INTERNATIONAL AG
- ETNO
- Thomson Reuters
- Infosys
- BT
- Imperial College
- Scuola Superiore Sant'Anna (Pisa)
- Mandat International
- University of Genova
- National Inter-University Consortium for Telecommunications
- Electronics and Telecommunications Research Institute (ETRI)
- ClimateCHECK
- GHG Management Institute (GHGMI)
- University of Zagreb
- ETSI
- Nokia Siemens Networks
- Fronesys
- MJRD Assessment Inc.
- HP
- Green Grid Initiative

7th ITU Symposium on ICTs, the Environment and Climate Change

29-31 May 2012 – Montreal, Canada

- Jointly organized with the government of Canada and hosted by Prompt

Main purpose:

- to move the agenda forward on using ICTs to monitor climate change, mitigate and adapt to its effects and, in this light, identify future requirements for ITU's related work – including standardization of ICT equipment and networks as well as development activities

2nd ITU Green Standards Week

17-21 September 2012 – Paris, France

- Jointly organized with Microsoft and TechAmerica

Microsoft

ITU International Telecommunication Union

TechAmerica WHERE THE FUTURE BEGINS

Main Purpose:

- to raise awareness of the importance and opportunities of using ICT standards to build a green economy and to improve sustainable energy management.

DRAFT PROGRAMME

	9.30:13.00	14.30:17.30
17 Sept.	High Level Segment: Greening the Economy through ICT Standards (ITU, TechAmerica Europe, Microsoft)	
	ITU Green ICT Application Challenge Award Ceremony (ITU, Telefónica) from 12.30 to 13.00 h	
18 Sept.	Forum on Smart Grid and Renewable Energy (ITU)	Forum on Green Cloud: Cost versus Benefits (ITU)
	Technology Focused Sessions	
19 Sept.	Mapping E-Waste to Address Future Challenges (ITU, UNU, CEDARE)	Greening ICT Supply Chain (ITU, UNU, CEDARE)
	Technology Focused Sessions	
20 Sept.	Greener Smarter Better Cities (ITU, European Commission)	
	Information and Training Session on ITU Methodologies for Environmental Impact Assessment of ICT (ITU, GeSI)	Meeting of the ITU/WMO/UNESCO IOC Joint Task Force
21 Sept.	Submarine Communications Networks For Climate Monitoring and Disaster Warning (ITU, UNESCO-IOC, WMO)	

Global Repository on ICTs, Environment & Climate Change

ITU-T website provides references to external resources: background papers, reports, case studies and statistics on ICTs and the environment including information on climate change, conflict minerals, e-waste and other sustainability issues.

- Topic 1 – Methodologies of Environmental Impact Assessment of the ICT Sector
- Topic 2 – ICTs for Monitoring Climate Change
- Topic 3 – ICTs for Adapting to the Effects of Climate Change and Environmental Degradation
- Topic 4 – ICTs for Mitigating the Effects of Climate Change
- Topic 5 – Energy Efficiency and Low Carbon Economy
- Topic 6 – Smart Grids and Smart Meters
- Topic 7 – Data Centers
- Topic 8 – Cloud Computing
- Topic 9 – Smart Cities and Smart Buildings
- Topic 10 – Smart Logistics and E-Procurement
- Topic 11 – Electric Vehicles and Mobility
- **Topic 12 – E-Waste**
- Topic 13 – Enhancing Sustainability in Conflict Minerals Supply Chains
- Topic 14 – International Organizations involved in ICTs and Environment
- Topic 15 – Cases Studies

Scope of the Joint Survey

- This survey aims to collect detailed data on e-waste management, policies and standards; constructing a comprehensive overview of the current e-waste landscape and identifying future challenges in this realm.

- Such a mapping of the e-waste issue will establish a base upon which the exchange of e-waste information and best practices can occur, and will form a valuable tool in promoting collaborative work in the future.

UNITED NATIONS UNIVERSITY
UNU-ISP
Institute for Sustainability and Peace

StEP
SOLVING THE E-WASTE PROBLEM

BASEL CONVENTION

CEDARE

Questions

1. Which E-waste project (past, ongoing, future) did/will you implement? (Please provide project reports if available since 2009)
2. Are there any policies and/or regulations for end of life ICT equipment (electronic and electrical waste) in your country?
3. Are there policies and/or regulations for used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) in your country ?
4. How much ICT equipment is annually sold in your country?
5. How much end of life ICT equipment (electronic and electrical waste) is annually generated in your country?
6. How much end of life ICT equipment (electronic and electrical waste) is annually imported into your country?
7. How much end of life ICT equipment (electronic and electrical waste) is annually exported from your country?
8. Are there policies and/or regulations for end of life ICT equipment (electronic and electrical waste) set by the government in the countries that you operate and/or countries where your products are sold, if applicable?

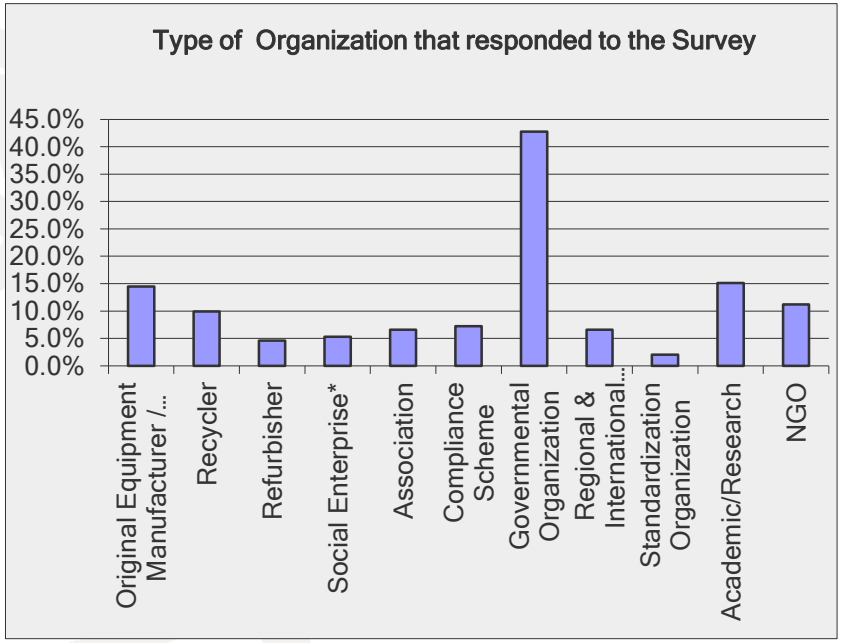
Questions

9. Are there policies and/or regulations for used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) in the countries that you operate and/or countries where your products are sold, if applicable?
10. Are there standards and/or guidelines for end of life equipment (electronic and electrical waste) and used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) you use or must comply to?
11. How much ICT equipment is annually sold in the following sample country' markets?
12. Do you use any guidelines/standards to analyse the effect on the environment of products you use and/or manufacture or sell (materials, hazardous materials avoidance, manufacturing processes, operational procedures and disposal)?
13. With regards to new technologies, compounds/materials and operational process to use, please identify any potential market or government requirements that may be implemented in the following sample countries (e.g. is a compound being requested to be removed from your product? are minimum recyclability rates being contemplated?)
14. Do you assess the environmental effects of future recycling requirements related to ICT facilities and equipment?

PRELIMINARY RESULTS

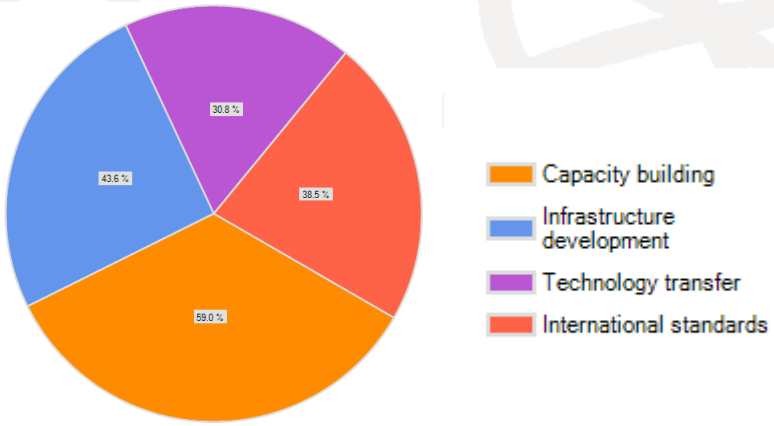
Overview

	Response Percent	Response Count
Original Equipment Manufacturer / Original Brand Manufacturer /Original Design Manufacturer	14.5%	22
Recycler	9.9%	15
Refurbisher	4.6%	7
Social Enterprise*	5.3%	8
Association	6.6%	10
Compliance Scheme	7.2%	11
Governmental Organization	42.8%	65
Regional & International Organization	6.6%	10
Standardization Organization	2.0%	3
Academic/Research	15.1%	23
NGO	11.2%	17
Other (please specify)		13
answered question		152
question not answered		79

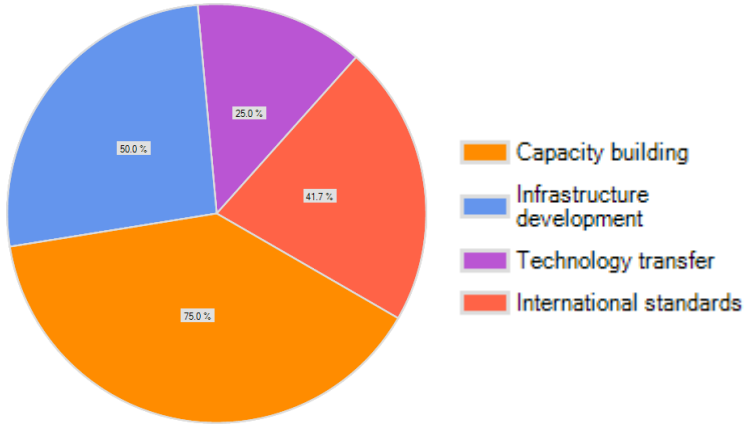


- Type of organisation/company

Implementation of E-waste Projects



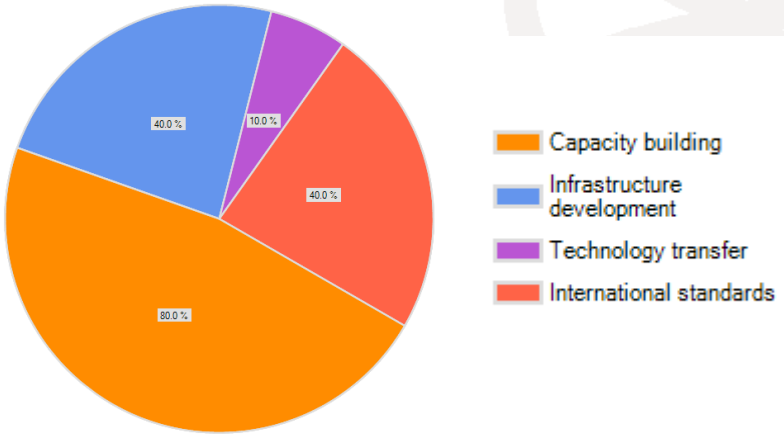
Q1 a



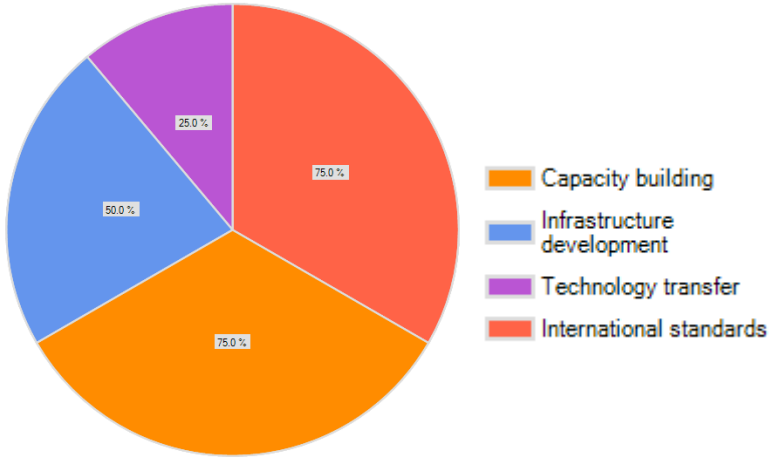
Q1 b2

- Q.1 Which E-waste project (past, ongoing, future) did/will you implement? (Please provide project reports if available since 2009)

Implementation of E-waste Projects



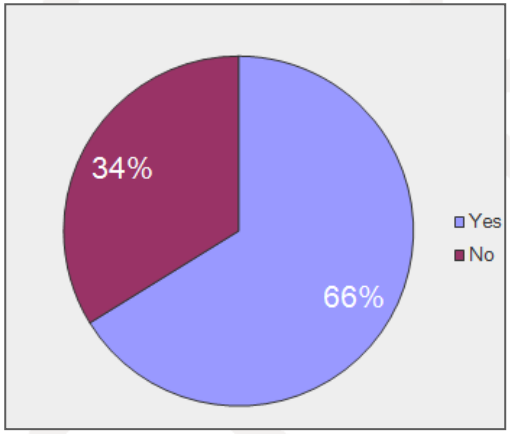
Q1 b3

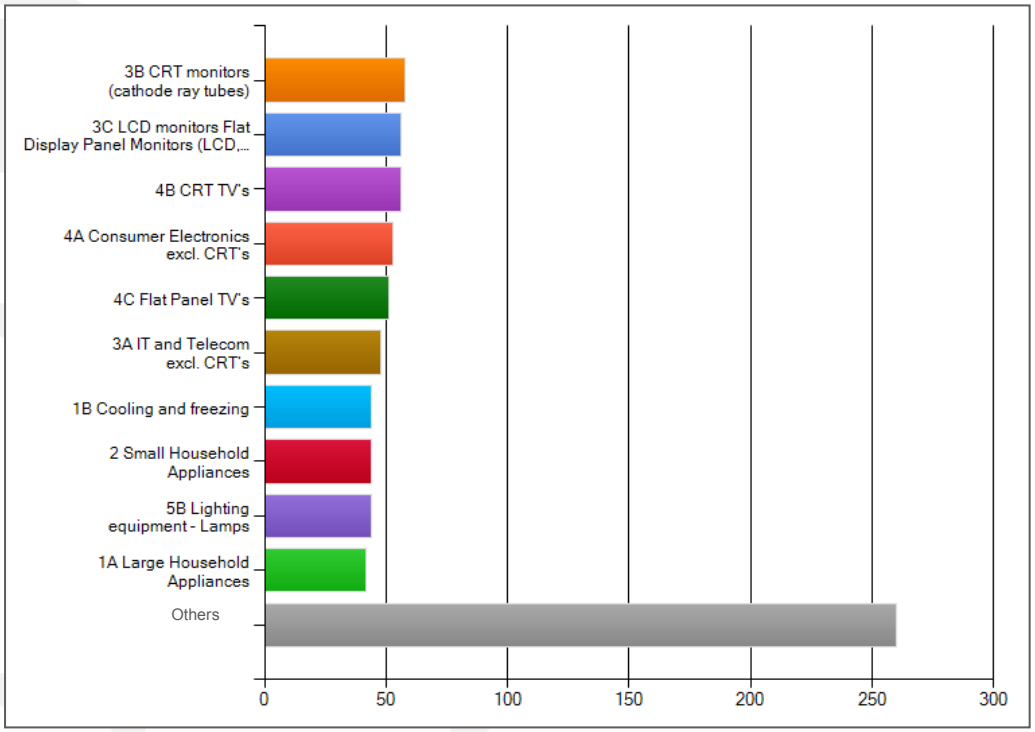


Q1 b4

- Q.1 Which E-waste project (past, ongoing, future) did/will you implement? (Please provide project reports if available since 2009)

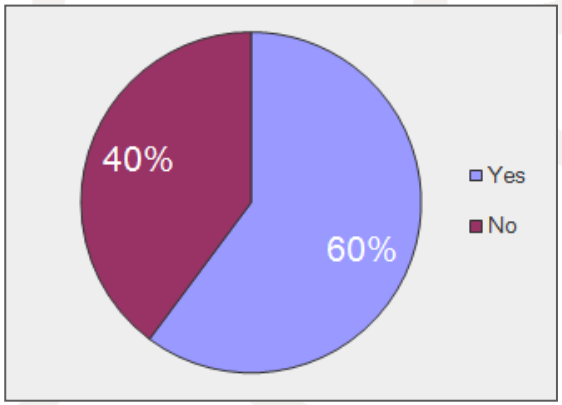
E-waste Policies or Regulations in a Country

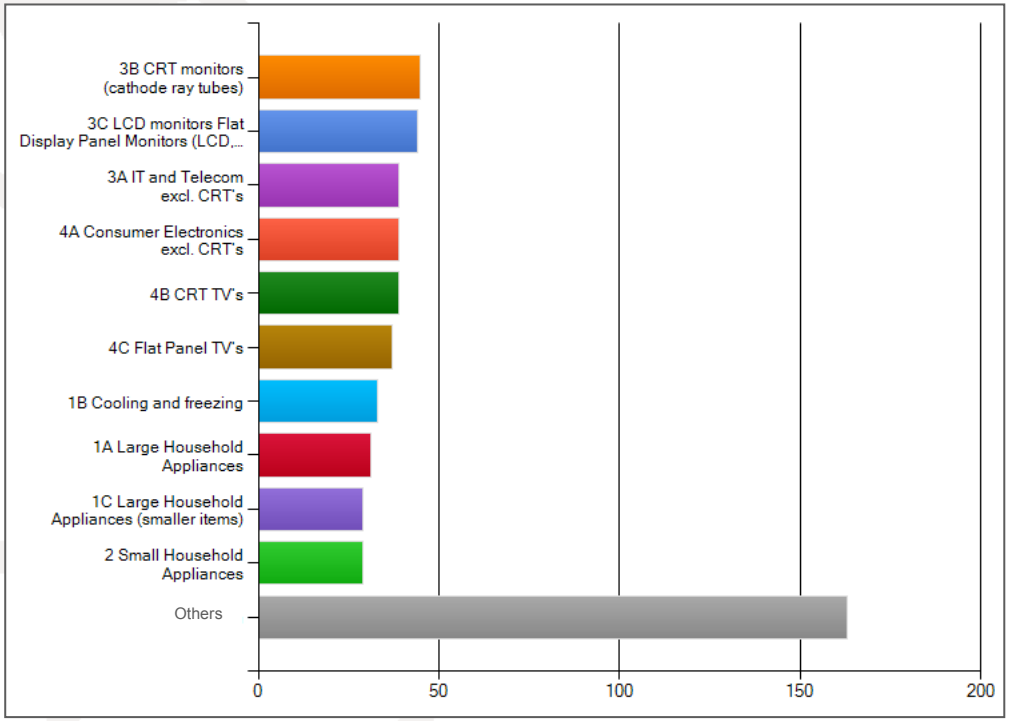




- Q.2 Are there any policies and/or regulations for end of life ICT equipment (electronic and electrical waste) in your country?
- Q.2a What category does it cover?

Policies and Regulations on Used ICT Equipment in a Country

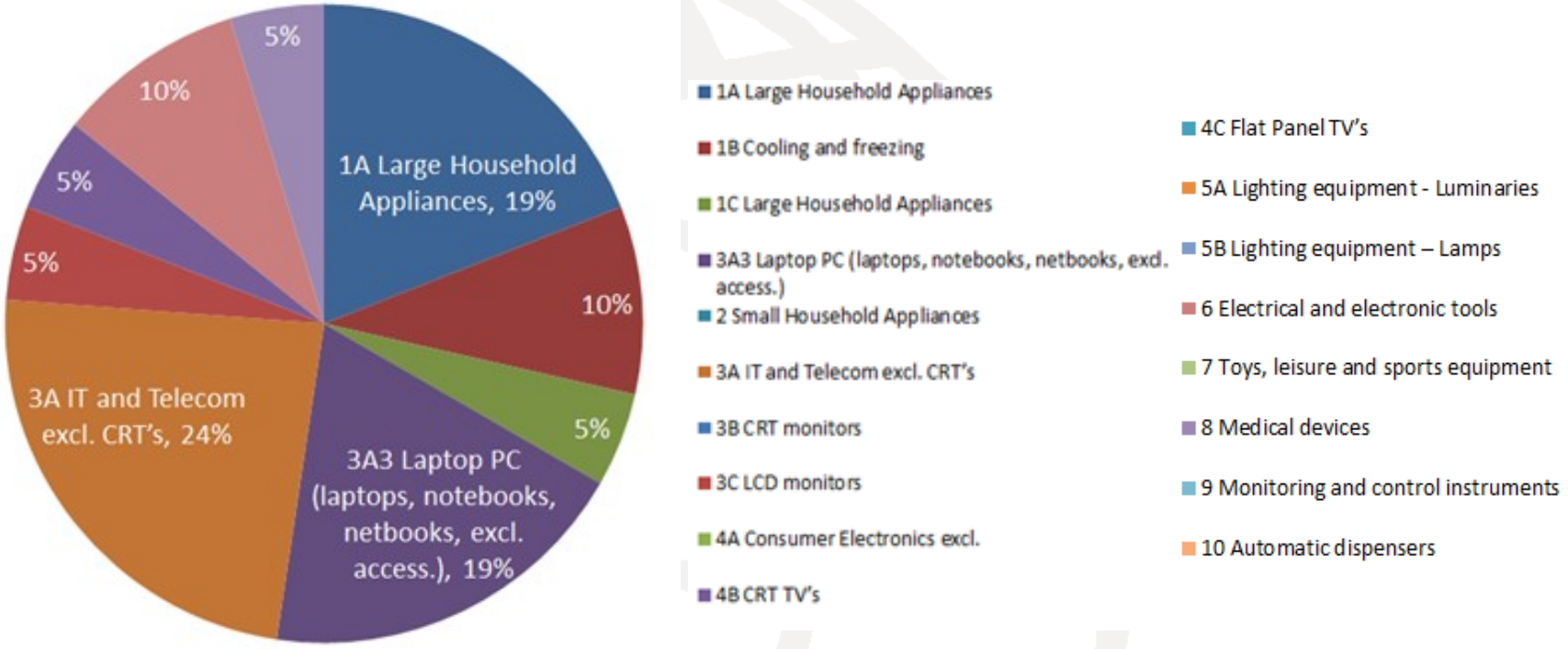




- Q.3 Are there policies and/or regulations for used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) in your country ?

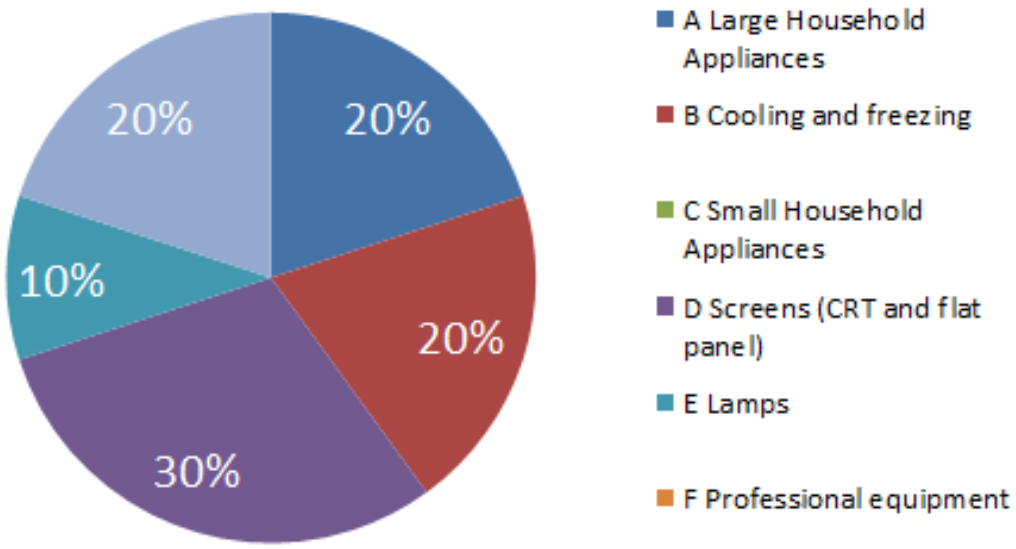
- Q.3a What category does it cover?

Annually ICT Equipment Sold in a Country



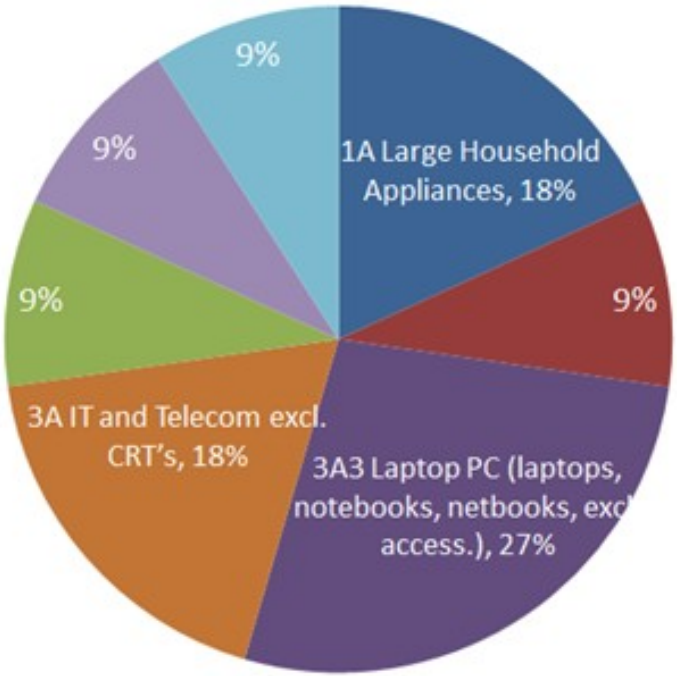
- Q.4 How much ICT equipment is annually sold in your country?

Annually E-waste Generated in a Country



- Q.5 How much end of life ICT equipment (electronic and electrical waste) is annually generated in your country?

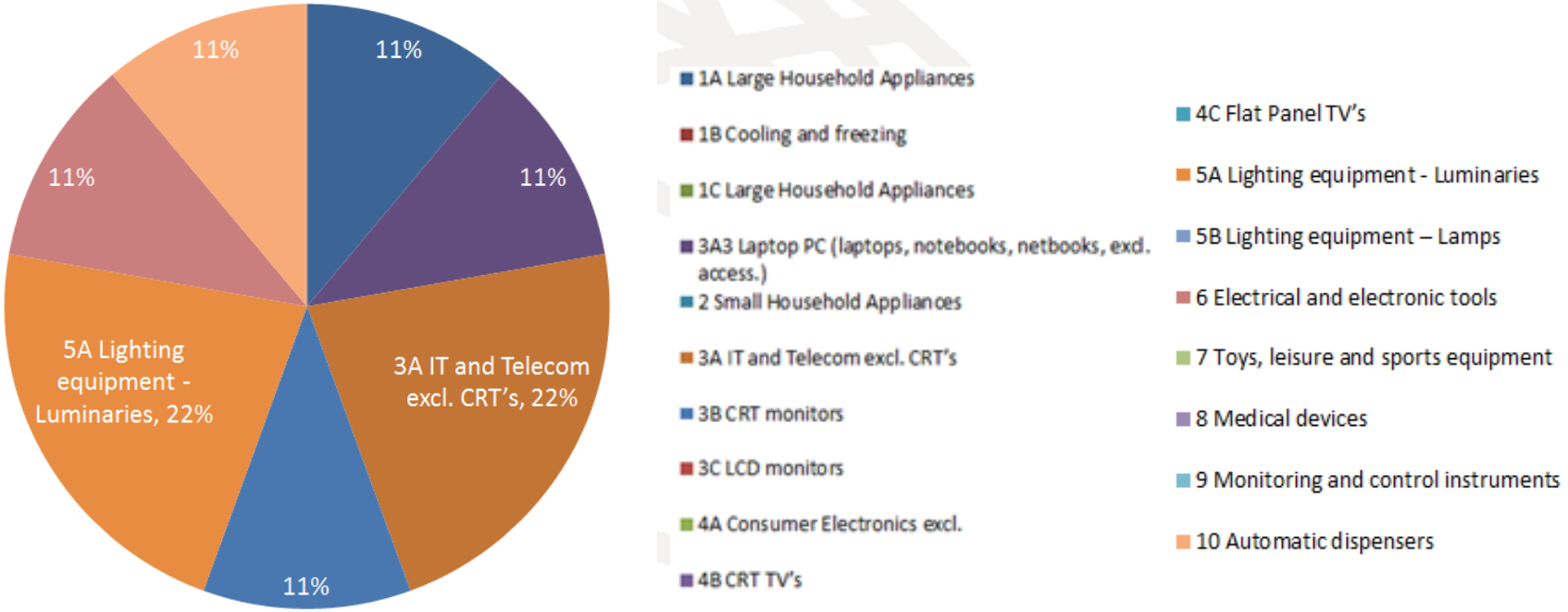
Annually E-waste Imported to a Country



- 1A Large Household Appliances
- 1B Cooling and freezing
- 1C Large Household Appliances
- 3A3 Laptop PC (laptops, notebooks, netbooks, excl. access.)
- 2 Small Household Appliances
- 3A IT and Telecom excl. CRT's
- 3B CRT monitors
- 3C LCD monitors
- 4A Consumer Electronics excl.
- 4B CRT TV's
- 4C Flat Panel TV's
- 5A Lighting equipment - Luminaries
- 5B Lighting equipment – Lamps
- 6 Electrical and electronic tools
- 7 Toys, leisure and sports equipment
- 8 Medical devices
- 9 Monitoring and control instruments
- 10 Automatic dispensers

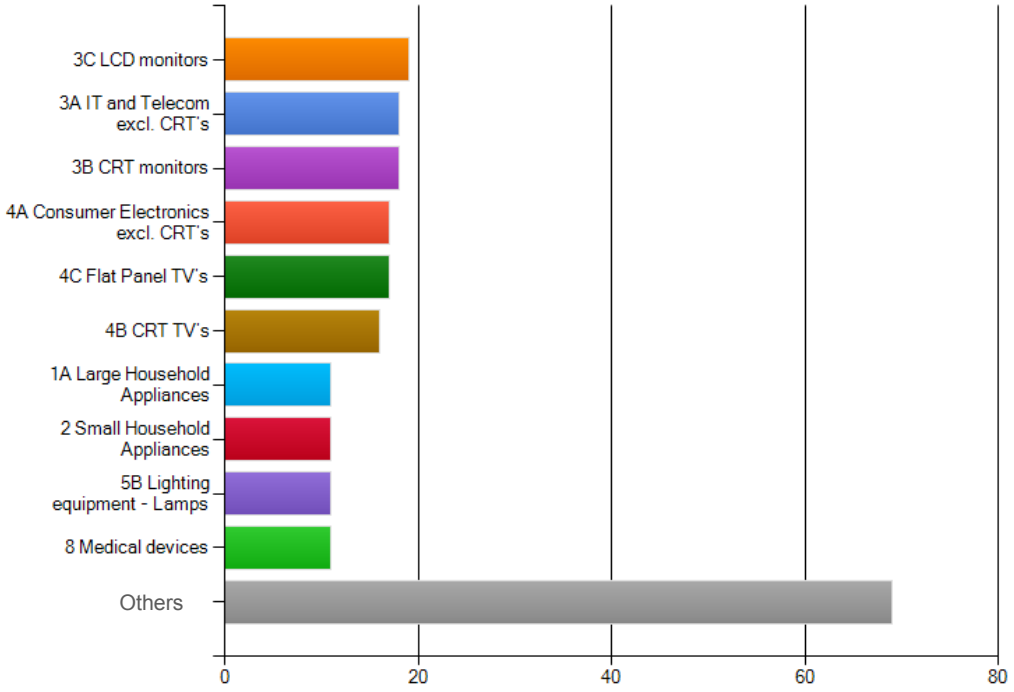
- Q.6 How much end of life ICT equipment (electronic and electrical waste) is annually imported into your country?

Annually E-waste Exported from a Country



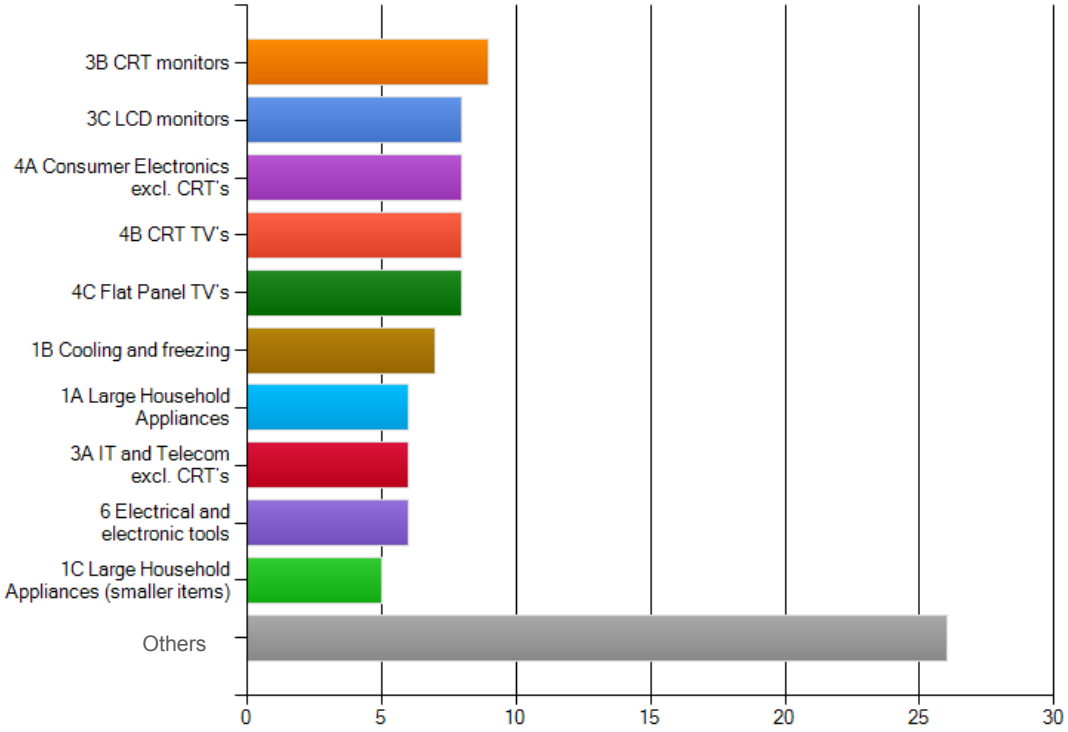
- Q.7 How much end of life ICT equipment (electronic and electrical waste) is annually exported from your country?

Policies or Regulations Set by Countries



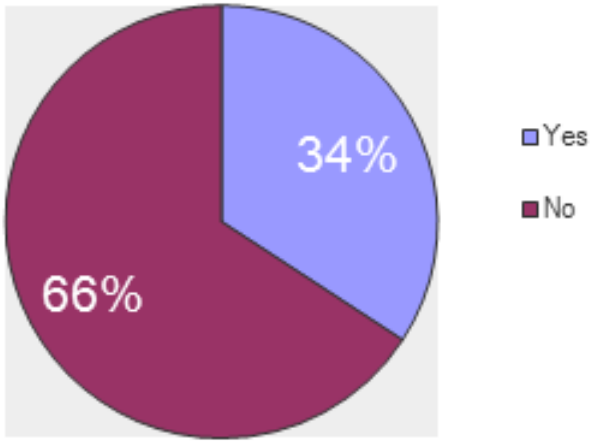
- Q.8 Are there policies and/or regulations for end of life ICT equipment (electronic and electrical waste) set by the government in the countries that you operate and/or countries where your products are sold, if applicable?

Policies or Regulations that Apply to ICT Companies



- Q.9 Are there policies and/or regulations for used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) in the countries that you operate and/or countries where your products are sold, if applicable?

Existence of Standards and/or Guidelines to Tackle E-waste



- Q.10 Are there standards and/or guidelines for end of life equipment (electronic and electrical waste) and used ICT equipment (ICT equipment that would be resold, donated, redeployed, etc) you use or must comply to?