Executive Summary

Increasing levels of electronic waste, and its improper and unsafe treatment and disposal through open burning or in dumpsites, pose significant risks to the environment and human health. They also present several challenges to sustainable development, and to the achievement of the Sustainable Development Goals (SDGs). A better understanding and better data on e-waste will contribute towards the achievement of several goals of the 2030 Agenda for Sustainable Development. In particular, it will help address the SDGs related to environmental protection (Goals 6, 11, 12, and 14) and health (Goal 3). It will also address Goal 8 that focuses on employment and economic growth, since the sound management of e-waste can create new areas of employment and drive entrepreneurship.

ICT Uptake and Shorter Replacement Cycles Are Contributing to the Growth of E-waste

The growing amount of e-waste is the result of several trends. The global information society is growing at great speed. It is characterized by an increasing number of users and rapid technological advances that are driving innovation, efficiency, and social and economic development. By 2017, close to half the world's population uses the internet and most people in the world have access to mobile networks and services. Many people own more than one information and communication technology (ICT) device, and replacement cycles for mobile phones and computers, and also for other devices and equipment, are becoming shorter. At the same time, disposable incomes in many developing countries are increasing and a growing global middle-class is able to spend more on electrical and electronic equipment, consequently generating more e-waste. Current trends suggest that the amount of e-waste generated will increase substantially over the next decades, and that better data to track these developments are needed.

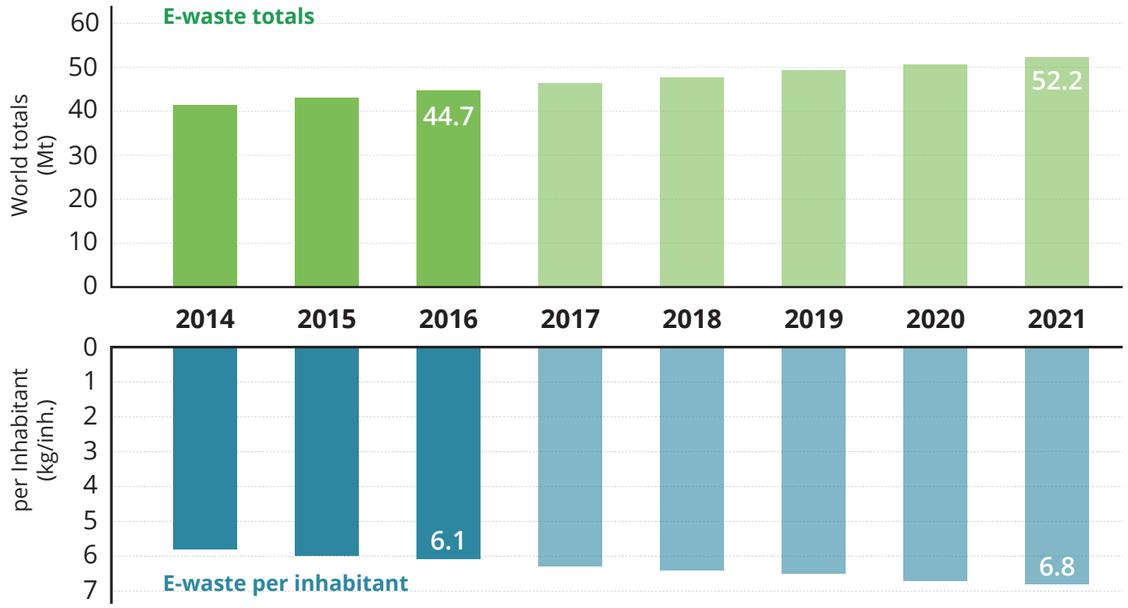
Generation of E-waste Has Grown to 44.7 Million Metric Tonnes Annually – Equivalent to Almost 4,500 Eiffel Towers

This report provides the most comprehensive overview of global e-waste statistics following the guidelines that were developed by the Partnership on Measuring ICT for Development[1]. All the countries in the world combined generated a staggering 44.7 million metric tonnes (Mt), or an equivalent of 6.1 kilogram per inhabitant (kg/inh), of e-waste annually in 2016, compared to the 5.8 kg/inh generated in 2014. This is close to 4,500 Eiffel Towers each year. The amount of e-waste is expected to increase to 52.2 million metric tonnes, or 6.8 kg/inh, by 2021.

In 2016, 44.7 million metric tonnes of e-waste were generated.

This is an equivalent of almost 4,500 Eiffel towers.

Global e-waste generated

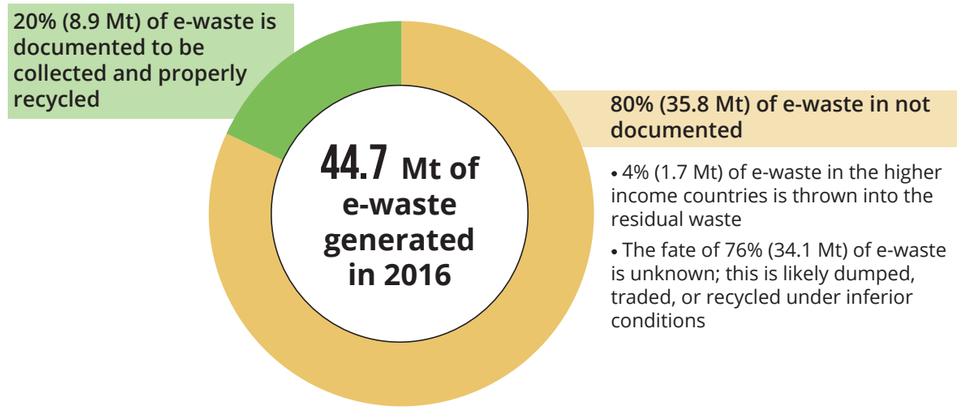


Note: 2017-2021 are estimates

Only 20% of E-waste Generated Is Documented To Be Collected and Recycled

Of those 44.7 Mt, approximately 1.7 Mt are thrown into the residual waste in higher-income countries, and are likely to be incinerated or land-filled. Globally, only 8.9 Mt of e-waste are documented to be collected and recycled, which corresponds to 20% of all the e-waste generated.

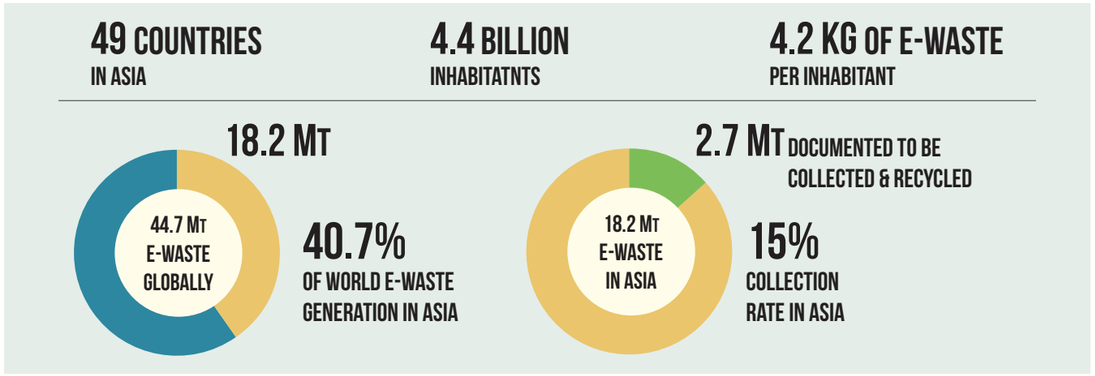
Collection methods of e-waste in 2016



Asia Generates the Greatest Amounts of E-waste; Africa the Least, Both in Total and Per Inhabitant

In 2016, Asia was the region that generated by far the largest amount of e-waste (18.2 Mt), followed by Europe (12.3 Mt), the Americas (11.3 Mt), Africa (2.2 Mt), and Oceania (0.7 Mt). While the smallest in terms of total e-waste generated, Oceania was the highest generator of e-waste per inhabitant (17.3 kg/inh), with only 6% of e-waste documented to be collected and recycled. Europe is the second largest generator of e-waste per inhabitant with an average of 16.6 kg/inh; however, Europe has the highest collection rate (35%). The Americas generate 11.6 kg/inh and collect only 17% of the e-waste generated in the countries, which is comparable to the collection rate in Asia (15%). However, Asia generates less e-waste per inhabitant (4,2 kg/inh). Africa generates only 1.9 kg/inh and little information is available on its collection rate. The report provides regional breakdowns for Africa, Americas, Asia, Europe, and Oceania.

E-waste snapshot: Asia



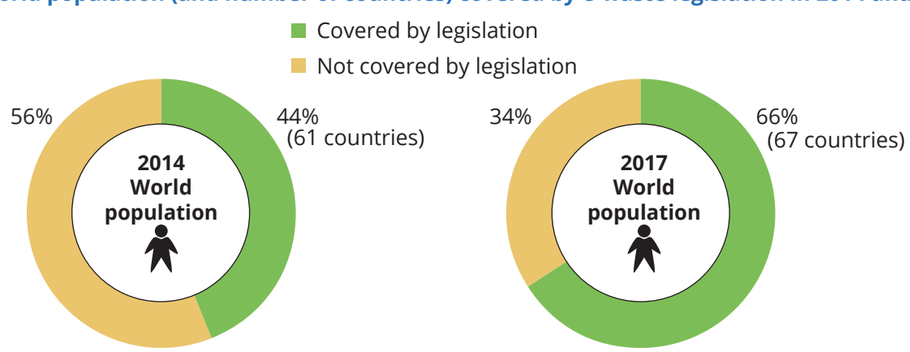
Only 41 Countries Have Official E-waste Statistics

The low collection rate compared to the total amount of e-waste generated is partly explained by the fact that only 41 countries have official e-waste statistics. For 16 other countries, e-waste quantities were gathered from research and estimated. The fate of a large majority of the e-waste (34.1 Mt) is simply unknown. In countries where there is no national e-waste legislation in place, e-waste is likely treated as other or general waste. This is either land-filled or recycled, along with other metal or plastic wastes. There is the high risk that the pollutants are not taken care of properly, or they are taken care of by an informal sector and recycled without properly protecting the workers, while emitting the toxins contained in e-waste.

More Countries Adopt E-waste Legislation

Although the e-waste challenge is on the rise, a growing number of countries are adopting e-waste legislation. Currently, 66% of the world population is covered by national e-waste management laws, an increase from 44% that were covered in 2014.

World population (and number of countries) covered by e-waste legislation in 2014 and 2017



The large increase was mainly attributed to India, where legislation was adopted in 2016. The most populous countries in Asia currently have e-waste rules, whereas only a handful of countries in Africa have enacted e-waste-specific policies and legislations. However, it must also be noted that countries with national e-waste management laws do not always enforce the law. Many countries lack measureable collection and recycling targets that are essential for effective policies.

Currently available statistics are not able to track the amount of e-waste or used electronics shipped from richer to poor sub-regions in the world. One case study on Nigeria showed that in 2015/2016, EU member states were the origin of around 77% of Used Electric and Electronic Equipment (UEEE) imported into Nigeria. Sometimes, used equipment is actually broken upon arrival and should be considered e-waste. Even if parts may be repairable or directly usable as a second-hand goods, they are likely to become e-waste as well. Since low-income countries generally have less e-waste management infrastructure than higher income economies, these are alarming trends that need to be addressed.

The type of e-waste covered by legislation differs considerably throughout countries, causing difficulties in coordinating collected and recycled e-waste amounts. Without better statistics on e-waste, and closing the main data gaps of current e-waste statistics, it is impossible to measure the effectiveness of existing and new legislation to show any potential improvements in the future. It is also difficult to provide data that guides business developments.

Huge Amounts of Raw Materials Are Wasted

E-waste statistics are not only relevant in terms of the environmental impact; there is also an important economic component to the debate. The total value of all raw materials present in e-waste is estimated at approximately 55 Billion Euros in 2016, which is more than the 2016 Gross Domestic Product of most countries in the world. The value of secondary raw materials after waste management is just a fraction of the value of its components or the price of used appliances. Circular economy models need to be adopted to encourage closing the loop of materials through better design of components, recycling, reusing, etc., while mitigating the environmental pollution. Therefore, the circular economy concept offers huge economic and employment opportunities for e-waste management; the presented 55 Billion Euros of secondary materials is an underestimate of those economic opportunities. This calls for the development of proper legislation to manage e-waste that's supported by data to show both the environmental and economic benefits the the better management of e-waste.

Potential value of raw materials in e-waste in 2016