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The report in full, including national e-waste data, is available for media preview here: <http://bit.ly/2AEOhRz>. B-roll is available.

Advance interviews are available. Authors will also take part in a media teleconference Wednesday Dec. 13 at 10 am US Eastern Time. To join, dial +1-408-740-7256, conference ID 4168788712, or click <https://bluejeans.com/4168788712/browser>

E-waste Rises 8% by Weight in 2 Years, as Incomes Rise, Prices Fall

Just 20% of e-waste is recycled;

Contained \$55 billion worth of gold, silver, copper, other high value materials;

Biggest e-waste categories: Small and large appliances, heating / cooling equipment

A new report on global e-waste — discarded products with a battery or plug — shows a staggering 44.7 million metric tonnes (Mt) generated in 2016 — up 3.3 Mt or 8% from 2014.

In 2016 the world generated e-waste — everything from end-of-life refrigerators and television sets to solar panels, mobile phones and computers — equal in weight to almost nine Great Pyramids of Giza, 4,500 Eiffel Towers, or 1.23 million fully loaded 18-wheel 40-ton trucks, enough to form a line 28,160 km long, the distance from New York to Bangkok and back.

Experts foresee a further 17% increase — to 52.2 million metric tonnes of e-waste by 2021, — the fastest growing part of the world's domestic waste stream.

The *Global E-waste Monitor 2017*, launched today, is a collaborative effort of the United Nations University (UNU), represented through its Sustainable Cycles (SCYCLE) Programme

hosted by UNU's Vice-Rectorate in Europe, the International Telecommunication Union (ITU), and the International Solid Waste Association (ISWA).

Only 20% of 2016's e-waste is documented to have been collected and recycled despite rich deposits of gold, silver, copper, platinum, palladium and other high value recoverable materials. The conservatively estimated value of recoverable materials in last year's e-waste was US \$55 billion, which is more than the 2016 Gross Domestic Product of most countries in the world.

About 4% of 2016's e-waste is known to have been thrown into landfills; 76% or 34.1 Mt likely ended up incinerated, in landfills, recycled in informal (backyard) operations or remain stored in our households.

On a per capita basis, the report shows a rising trend as well.

Falling prices now make electronic and electrical devices affordable for most people worldwide while encouraging early equipment replacement or new acquisitions in wealthier countries.

As a result, the average worldwide per capita e-waste generated was 6.1 kilograms, up 5% from 5.8 kg in 2014.

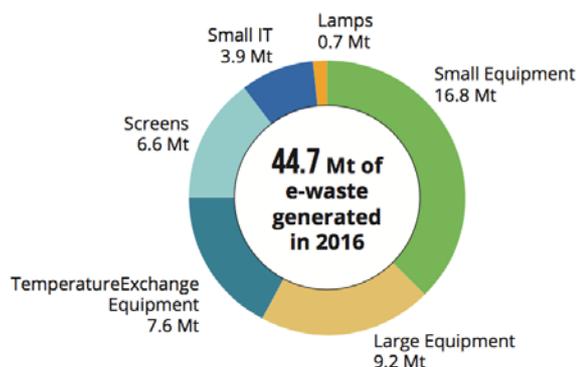
The highest per capita e-waste generators (at 17.3 kilograms per inhabitant) were Australia, New Zealand and the other the nations of Oceania, with only 6% formally collected and recycled.

Europe (including Russia) is the second largest generator of e-waste per inhabitant with an average of 16.6 kg per inhabitant. However, Europe has the highest collection rate (35%).

The Americas generates 11.6 kg per inhabitant and collects only 17%, comparable to the collection rate in Asia (15%). However, at 4.2 kg per inhabitant, Asia generates only about one third of America's e-waste per capita.

Africa, meanwhile, generates 1.9 kg per inhabitant, with little information available on its collection rate.

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The 3 EEE categories that contribute the most to e-waste are also growing fastest

It is expected that the following three EEE categories, which already constitute 75% of global e-waste by weight (33.6 Mt of 44.7 Mt), will also see the fastest growth:

Small equipment (ie. vacuum cleaners, microwaves, ventilation equipment, toasters, electric kettles, electric shavers, scales, calculators, radio sets, video cameras, electrical and electronic toys, small electrical and electronic tools, small medical devices, small monitoring and control instruments). In 2016: 16.8 Mt generated, with an annual growth rate of 4 % per year to 2020

Large equipment (ie. washing machines, clothes dryers, dish-washing machines, electric stoves, large printing machines, copying equipment, photovoltaic panels). In 2016: 9.2 Mt generated, with an annual growth of 4 % per year to 2020

Temperature Exchange Equipment (ie. refrigerators, freezers, air conditioners, heat pumps). In 2016: 7.6 Mt generated, with an annual growth of 6 % per year to 2020

Expected to grow less quickly by weight due to miniaturization:

Small IT and telecommunication equipment (ie mobile phones, Global Positioning Systems (GPS), pocket calculators, routers, personal computers, printers, telephones). In 2016: 3.9 Mt generated, with an annual growth of 2 % per year to 2020

Little growth expected:

Lamps (ie. fluorescent lamps, high intensity discharge lamps, LED lamps). In 2016: 0.7 Mt generated, with an annual growth rate of 1 % per year to 2020

Expected to decline by weight in years to come:

Screens (ie. televisions, monitors, laptops, notebooks, tablets), with heavy CRT screens being replaced with flat panel displays. In 2016: 6.6 Mt generated, with an annual decline of 3 % per year to 2020

Each product within the six e-waste categories has a different lifetime profile, which means that each category has different waste quantities, economic values, and potential environmental and health impacts if recycled inappropriately. Consequently, the collection and logistical processes and recycling technology differ for each category. European studies show consumers' attitudes when disposing of types of electrical and electronic equipment also vary.

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Fastest growth of EEE sales in developing countries

Higher disposable incomes in many developing countries is evidenced in sales of electronic and electrical equipment. EEE sales in general showed rapid growth from 2000 to 2016, with the fastest growth recorded in emerging economies with low Purchasing Power Parity (PPP).

Countries with **the highest** Purchasing Power Parity (PPP) averaged 1.6% annual EEE growth

Countries with **high** PPP averaged 5.2% annual growth

Countries with **mid** PPP averaged 13% annual growth

Countries with **low** PPP averaged 23% annual growth

Countries with **the lowest** PPP averaged 15% annual growth

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More mobile-cellular subscriptions than people on Earth

The report notes several trends and factors fuelling the global growth of information-related electrical and electronic equipment, most notably the increasing number of applications and services in such areas as health, education, government, entertainment, and commerce, delivered at increasingly high speeds attracting more users to a growing number of networks.

The report notes that:

- * With a population of 7.4 billion, the world now has 7.7 billion mobile-cellular subscriptions. More than 8 in 10 people on Earth are covered by a mobile broadband signal
- * Some 3.6 billion people - close to half the world's population (45.9%) now use the Internet, up from 20.5% in 2007. Roughly half of humanity has a computer and Internet access at home. Some 48% of households have a computer (up from 30.2% in 2007) and 54% have Internet access (up from 23% in 2007)
- * In addition to basic prepaid mobile cellular services and handsets becoming more affordable worldwide, prices are falling for many other types of equipment such as computers, peripheral equipment, TVs, laptops and printers
- * With the recent conversion from analogue to digital broadcasting, many TV sets were unnecessarily trashed. While analogue televisions can receive digital signals simply by using a digital box, many consumers chose to upgrade, leaving the world with mountains of discarded Carbon-Ray-Tube TVs
- * By 2016 in the United States, most people owned a phone; every second person owned a desktop computer; close to 25% also owned an e-book reader. Between 2012 and 2015, the proportion of adult Americans who owned a smartphone, a computer, and a tablet doubled to 36%
- * Between 2013 and 2015, smartphone users started to delay their phone upgrades but the average smartphone lifecycle in the USA, China, and major EU economies does not typically exceed one and a half to two years (*include table 3.1*)

* The weight of all the chargers for mobile phones, laptops et cetera, now produced each year is estimated at 1 million tons, highlighting the need to make power adapters compatible with more devices, following universal standards developed and promoted by the ITU.

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Needed: More recycling and global harmonized e-waste measurement and standards

The report calls for stepped up global efforts to better design of components in electrical and electronic equipment to facilitate reuse and recycling (EEE), greater capture and recycling of old (EEE), and better tracking of e-waste and the resource recovery process.

Encouragingly, more countries are adopting e-waste legislation, the report says. Today 66% of the world's people, living in 67 countries, are covered by national e-waste management laws (up from 44% in 61 countries in 2014), an increase caused mainly by India's adoption of legislation last year.

Still, only 41 countries quantify their e-waste generation and recycling streams officially and "the fate of a large majority of e-waste (34.1 of 44.7 Mt) is simply unknown."

Notes the report: "Having a national e-waste management regime in place does not always correspond to enforcement and setting the measurable collection and recycling targets essential for effective policies."

In countries where there is no national e-waste legislation in place, e-waste is likely treated as any other waste, leading to a high risk that toxic elements in e-waste are improperly managed, sometimes scavenged for e.g. copper or gold by informal enterprises without proper worker protections.

Meanwhile, the type of e-waste covered by legislation differs considerably throughout the world, highlighting the need for harmonization.

"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" the report says.

Such data is also needed to better track illegal international movements of e-waste from richer to poor regions in the world.

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Comments

"The world's e-waste problem continues to grow. Improved measurement of e-waste is essential to set and monitor targets, and identify policies. National data should be internationally comparable, frequently updated, published, and interpreted. Existing global and regional estimates based on production and trade statistics do not adequately cover the the health and environmental risks of unsafe treatment and disposal through incineration or landfilling."

Jakob Rhyner, Vice-Rector, United Nations University (UNU)

“Environmental protection is one of the three pillars of sustainable development and ITU is at the forefront of advocating for the safe disposal of waste generated by information and communication technologies. E-waste management is an urgent issue in today’s digitally dependent world, where use of electronic devices is ever increasing – and is included in ITU’s Connect 2020 Agenda targets. The Global E-waste Monitor serves as a valuable resource for governments developing their necessary management strategies, standards and policies to reduce the adverse health and environmental effects of e-waste – and will help ITU members to realize this Connect 2020 target.”

Houlin Zhao, ITU Secretary-General

“We live in a time of transition to a more digital world, where automation, sensors and artificial intelligence are transforming all the industries, our daily lives and our societies. E-waste is the most emblematic by-product of this transition and everything shows that it will continue to grow at unprecedented rates. Finding the proper solutions for e-waste management is a measure of our ability to utilise the technological advances to stimulate a wasteless future and to make circular economy a reality for this complex waste stream that contains valuable resources. But first, we need to be able to measure and collect data and statistics on e-waste, locally and globally, in a uniform way. The Global E-Waste Monitor 2017 represents a significant effort in the right direction and ISWA will continue to support it, as it is the first but very important step towards the global response required.”

Antonis Mavropoulos, President, International Solid Waste Association (ISWA)

“With higher incomes in many parts of the world come increasing levels of e-waste, presenting several challenges to achievement of the Sustainable Development Goals (SDGs). Better e-waste data will contribute in particular to the achievement of SDG 12: ‘To ensure sustainable consumption and production patterns’.”

Ruediger Kuehr, Head, UNU-ViE SCYCLE

“With 53.6 per cent of global households now having internet access, ICTs are improving peoples’ lives and empowering them to enhance their social and economic well-being, The Global E-Waste Monitor represents an important step in identifying solutions for e-waste. Better e-waste data will help evaluate developments over time, set and assess targets, and contribute to developing national policies. National e-waste policies will help minimize e-waste production, prevent illegal dumping and improper treatment of e-waste, promote recycling, and create jobs in the refurbishment and recycling sector.”

Brahima Sanou, Director, Telecommunication Development Bureau, International Telecommunication Union (ITU)

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United Nations University (www.unu.edu)

UNU is an autonomous organ of the UN General Assembly dedicated to generating and transferring knowledge and strengthening capacities relevant to global issues of human security, development, and welfare. The University operates through a worldwide network of research and training centres and programmes, coordinated by UNU Centre in Tokyo.

The Bonn, Germany-based Sustainable Cycles (SCYCLE) Programme hosted by UNU's Vice Rectorate in Europe is providing world-class research and action on e-waste. SCYCLE aims to enable societies to reduce the environmental burden caused by the production, consumption and disposal of ubiquitous goods.

Telecommunication Development Bureau, International Telecommunication Union
(www.itu.int)

ITU is the leading United Nations agency for information and communication technologies (ICTs), driving innovation in ICTs together with 193 Member States and a membership of nearly 800 private sector entities and academic institutions. Established over 150 years ago in 1865, ITU is the intergovernmental body responsible for coordinating the shared global use of the radio spectrum, promoting international cooperation in assigning satellite orbits, improving communication infrastructure in the developing world, and establishing the worldwide standards that foster seamless interconnection of a vast range of communications systems. From broadband networks to cutting-edge wireless technologies, aeronautical and maritime navigation, radio astronomy, oceanographic and satellite-based earth monitoring as well as converging fixed-mobile phone, Internet and broadcasting technologies, ITU is committed to connecting the world. www.itu.int

International Solid Waste Association (www.iswa.org)

ISWA promotes the worldwide exchange of information and experience on all aspects of waste management. It fosters the adoption of acceptable systems of professional waste management, and technological development and the improvement of practices to protect human health and the environment and to conserve materials and energy resources.