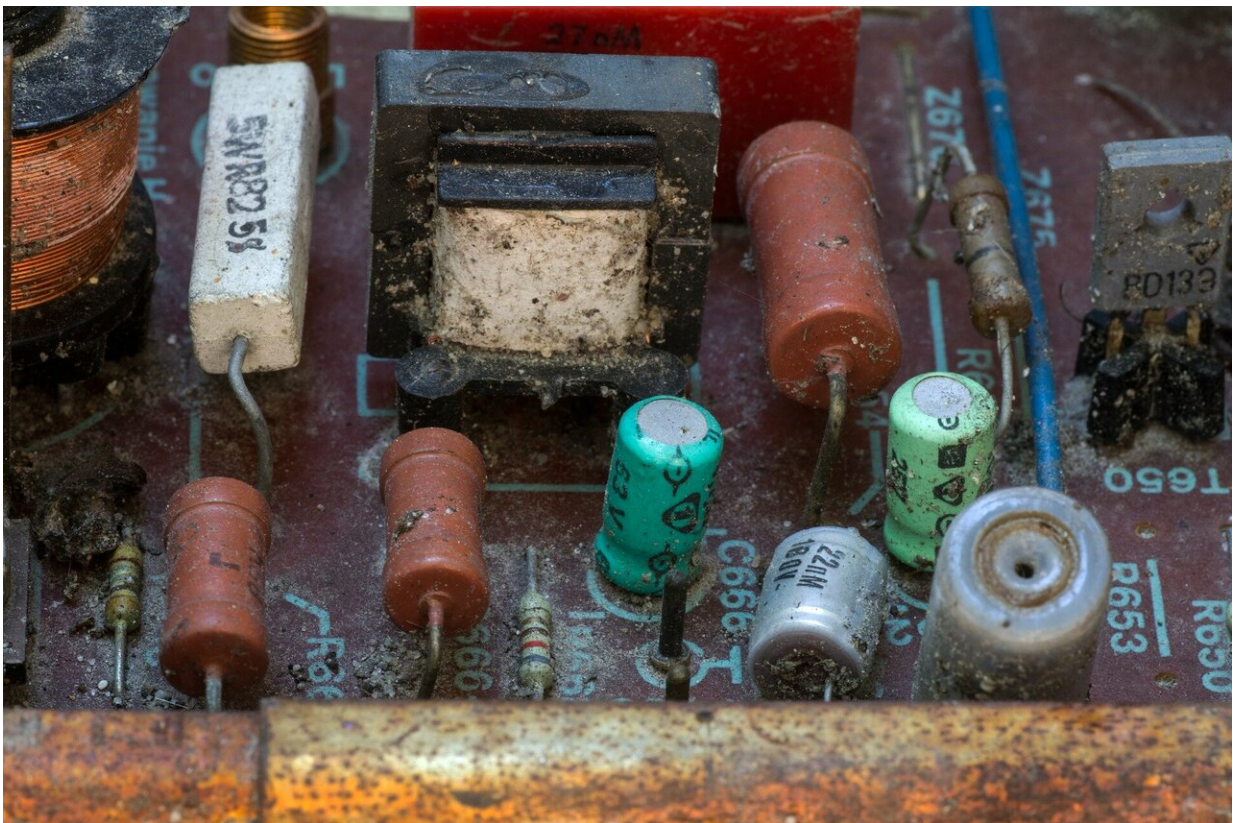


# Solving the e-waste challenge requires global action

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An international team of experts have highlighted the urgent need for global cooperation to reform the e-waste recycling industry and counteract the harm it poses to both human health and environment.

Old mobile phones, computers, and circuit boards are all examples of electronic waste or [e-waste](#).

E-waste often contains toxic components and is a major problem on the world stage. Even more concerning is the alarming rate at which e-waste is growing with almost 45 million metric tonnes recorded in 2016.

Huge volumes of e-waste are shipped around the world illegally or sent for processing to countries with underdeveloped and unsafe [recycling](#) capabilities. These practices pose a significant risk to [human health](#) and the environment.

The collaborative study, which involves Professor Lenny Koh from the University of Sheffield's Management School and a team of researchers from the USA and China, is published in *Nature Electronics*.

The authors of the paper aim to transform today's rudimentary recycling practices so that they become advanced, safe, and a profitable part of the global circular economy – an [economic model](#) where we extract the maximum use from a produce before it is recycled entirely or valuable parts are salvaged for future use.

Professor Koh, who is the Director for the Centre of Energy, Environment and Sustainability, and Director of the Advanced Resource Efficiency Centre, said: "E-waste can be turned into 'gold' and can contribute to the circular economy if it is handled effectively, efficiently and sustainably, thereby avoiding negative impacts on health and the environment."

Advanced equipment used to manage e-waste recycling such as Apple's iPhone recycling robot "Daisy" is expensive and unable to deal with the sheer volume of waste material.

Current preventative measures such as the United Nations' Basel Convention are unable to cope with the rapidly increasing quantity of hazardous waste.

However, the international team of experts which includes Professor Oladele Ogunseitan from the University of California, USA, and Professor Jinhui Li and Dr. Abhishek Awasthi from Tsinghua University, China, have developed recommendations to help alleviate the global challenge.

The researchers are calling for international cooperation and engagement from the private sector to tackle the pressing issue urging the best available technologies to be shared internationally and scaled up to deal not only with the e-waste mountain, but also with the safety issues around labour practises in this nascent industry.

The study also highlights standards in the e-waste industry which need to be improved. Profit margins for recyclers can be so small that they resort to using unsafe and environmentally damaging practices to meet demand. The researchers flag the need for oversight from governmental agencies to advance e-waste collection and strengthen recycling infrastructure.

Furthermore, financial incentives for this industry should be introduced. The academics point to an example of good practice where Indian banks have provided capital to promote [sustainable development](#) in rural regions which supports particular industries.

The researchers argue that this model can be applied to the e-waste industry to establish self-help group parks or cooperatives under the umbrella of the environmental regulatory authority of a country. This strategy aims to professionalise the industry, develop workers' skills, and sure up safe labour practises across countries.

Professor Koh added: "Accessible best available technologies, sustainable standards for e-waste recycling, and [financial incentives](#) will pave the way forward for global actions in solving the e-waste challenge. Our research and recommendations shown in this paper can be used directly by governments and [industry](#) globally in designing e-waste recovery and [circular economy](#) models and policy."

The paper "Circular economy and electronic waste" is published in *Nature Electronics*.

**More information:** Circular economy and electronic waste, *Nature Electronics* (2019). [doi.org/10.1038/s41928-019-0225-2](https://doi.org/10.1038/s41928-019-0225-2)

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