

SUSTAINABILITY

E-waste versus Sustainability: A battle between people, big tech and responsible recycling

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A study conducted by the United Nations University in 2019 estimated that approximately 53.6 million metric tonnes of electrical and electronic waste products ("**E-waste**") were generated globally in 2019.[1] This number is expected to rise to approximately 74.7 million metric tonnes by 2030 due to increased demands for electrical and electronic products, the shorter lifecycles of these products and limited options to repair these products once broken.[2] As society is on the brink of entering the sixth industrial revolution, characterised by a rise in artificial intelligence, automation and efficiency,[3] striking a balance between e waste and [sustainability](#) is expected to become a herculean task.

E-waste poses various sustainability-related challenges.[4] One of the biggest challenges related to E-waste is the immense environmental impact thereof because E-waste contains hazardous materials that are toxic, such as lead, nickel barium, lithium and chromium that, once released into the environment, may result in, amongst other illnesses, kidney damage and blood toxicity in humans.[5] The hazardous material in E waste is likely to seep into groundwater, affecting both land and sea water, which in turn adversely affects not only land and sea ecosystems but also our access to natural drinking water.[6] In addition to these environmental impacts, E-waste also releases toxic chemicals into the air when heated, which contributes significantly to greenhouse gas emissions. The lack of responsible E-waste recycling and so-called "E-waste hoarding"[7] presents secondary environmental pressures, as the materials that comprise E-waste (such as non-renewable minerals like copper, lithium, silver and gold) are not recycled and require manufacturers to procure these minerals, placing pressure on the mining industry to provide a constant supply thereof.[8]

The social impact of E-waste was cited by the World Health Organisation ("**WHO**") in 2021. The WHO, in its report entitled 'Children and digital dumpsites: e-waste exposure and children health', estimated that approximately 12.9 million women work in the informal waste sector, which may expose these women and their unborn children to the toxic effects of E waste.[9] In addition, the WHO noted that approximately 18 million children and adolescents either (i) actively engage in informal waste processing or (ii) live, play or go to school near E waste recycling centres. The social implications of E-waste, therefore, will place immense pressure on the healthcare sector as people, especially children, who are exposed to toxic E-waste may develop various illnesses related to lung function and other chronic diseases.[10]

Good corporate governance and companies that strive to incorporate "sustainable technology"[11] production and disposal may alleviate the surge in E-waste generation. The increased global demand for electronic products places the companies that produce these products in an ideal position to address the risks associated with E-waste. Some of the strategies that manufacturing companies may use include (i) streamlining design and manufacturing process to develop longer lasting electronic products, (ii) using renewable energy sources to manufacture electronic products, (iii) promoting responsible disposal of E waste and (iv) using environmentally-friendly packaging.[12] Further, manufacturing companies may elect to comply with the King IV report, which places a higher standard on the directors and shareholders of such companies to comply with good corporate governance in the interest of the company, its employees and the communities within which it operates.

The implications of E-waste on the environment and society by the manufacturers of electronic devices are increasingly evident and in the absence of legislation that makes it untenable for companies and society to dispose of E-waste irresponsibly, the transition to net-zero emissions by 2050[13], will be but a pipe dream.

Footnotes

[1] See [Global Electronic Waste Up 21% in Five Years, and Recycling Isn't Keeping Up](#) (accessed on 21 April 2023)

[2] See Special Issue ["Electronic Waste Management and Sustainable Development"](#) (accessed on 26 April 2023)

[3] [SIXTH INDUSTRIAL REVOLUTION: AI AND ITS IMPACT](#) (accessed on 26 April 2023)

[4] ["Sustainability"](#) means the developments that meets the needs of the present generation without compromising the ability of future generations to meet their own needs

[5] See ["Toxicity, mechanism and health effects of some heavy metals"](#) (accessed on 21 April 2023)

[6] See ["5 Shocking Environmental Effects of E-Waste"](#) (accessed on 22 April 2023)

[7] ["E-waste hoarding"](#) occurs when human do not sell or recycle old electronic and electrical devices, but keep these devices, with the belief that it will be used again in future. See ["What is Electronics Hoarding, and Why is it Bad for the Environment?"](#) (accessed on 19 April 2023)

[8] See ["What is Electronics Hoarding, and Why is it Bad for the Environment?"](#) (accessed on 19 April 2023)

[9] 'Children and digital dumpsites: e-waste exposure and children health' report by the WHO published on 15 June 2021

[10] 'Children and digital dumpsites: e-waste exposure and children health' report by the WHO published on 15 June 2021

[11] ["Sustainable technology"](#) refers to a framework of digital solutions that can enable environmental, social and governance outcomes not only for enterprises but also its customers. See [Sustainable technology isn't a single objective; it's a framework of digital solutions that drives ESG outcomes. Make the most of it.](#) (accessed on 21 April 2023)

[12] See ["How engineers can use sustainable manufacturing strategies to eliminate e-waste"](#) accessed on 19 April 2023)

[13] The term net-zero applies to a situation "where [global greenhouse gas emissions from human activity are in balance with emissions reductions](#). At net zero, carbon dioxide emissions are still generated, but an equal amount of carbon dioxide is removed from the atmosphere as is released into it, resulting in zero increase in net emissions". See <https://www.wef.org> (accessed on 1 May 2023). The framework to reach net-zero emissions is the Paris Agreement, which is a legally binding international treaty, effective 4 November 2016 which set long-term goals to guide all nations to, amongst others, sustainably reduce greenhouse gas emissions to limit the global temperature increase in this century to 2 degrees Celsius whilst pursuing efforts to limit the increase even further to 1.5 degrees Celsius, and provide financing to developing countries to mitigate climate change, strengthen resilience and enhance abilities to adapt to climate impacts. See ["Goal 13: Take urgent action to combat climate change and its impacts"](#) (accessed on 1 May 2023)



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