Digital Environmental Sustainability through Circular Economy and Responsible Production & Consumption: A guide to the circular economy of digital devices

A guide to the circular economy of digital devices

The guide to the circular economy of digital devices, produced in 2022, aims to show you how to understand, think and act collectively to clearly change direction towards a regenerative and redistributive economy respecting both human and ecological rights and limits. It is aimed at civil society organisations wanting to transform their day-to-day use of technology, social entrepreneurs who want to make a positive impact on the world and the environment we live in, or anyone else interested in connecting, whether online or offline, in a more sustainable way.

This resource focuses on the digital devices that we use and touch – desktop computers, laptops, mobile phones and tablets. We know that these personal devices depend on network devices such as routers, and big data centres crammed with racks of computer servers that deliver content and services. There is also an explosion of “smart” devices that create the “internet of things” (IoT). Billions of new IoT devices are produced every year. These electronic and connected “things” include similar electronic components to our personal digital devices, but contrary to these, they are limited to a specific purpose. While they definitely have energy and material impacts on the environment, this “other” category deserves another report.
We cannot hope to cut emissions to net-zero by 2050 without significant improvements in all processes along the life cycle of digital devices. These include product designs that seek maximal durability and repairability, manufacturing that incorporates recovered materials from e-waste instead of just mining for raw materials, and product repair and reuse. And even if the Intergovernmental Panel on Climate Change (IPCC) emissions targets are unlikely to be reached, we still need to act. In terms of practice, and practical steps, together we can do many things, and together we can change direction towards a more economically, socially and environmentally just world.

This guide is divided into 12 modules, and illustrated through case studies. It describes the concepts, processes and some of the major challenges to circularity, summarises the key challenges and opportunities, including for policy advocacy, and offers a glossary of terms to help you along.

- Module 1: The environmental impact of a digital device
- Module 2: Meeting the needs of the future
- Module 3: Defining the circular economy of digital devices
- Case study - eReuse: Building reuse circuits for social inclusion
- Module 4: How producing digital devices impacts on natural resources and on people
- Case study - The fate of women artisanal miners in Katanga in the Democratic Republic of Congo
- Case study - “We are struggling to survive”: Resistance against mining in Acacoyagua, Chiapas
- Case study - The microfactory model: SMaRT innovation for urban waste mining
- Module 5: The need for transparency in the design of digital devices
- Case study - Fairphone: Building a mobile phone that is socially and environmentally responsible, and lasts longer
- Module 6: The need for workers’ rights in assembly and manufacturing
- Case study - Electronics Watch: Utilising public procurement power to make the largest settlement of migrant worker recruitment fees possible
Module 7: Sustainable public procurement

Module 8: Extending the useful life of a device

Module 9: The value and cost of e-waste

Case study - Computer Aid’s Solar Learning Lab: Sustainable, scalable and adaptable to local needs

Case study - Planta de Gestión de Residuos Informáticos: The long and challenging road in setting up an e-waste recycling plant in Argentina

Case study - Karo Sambhav (Make It Possible): Working with manufacturers to create an e-waste ecosystem in India

Case study - Benelux Afro Center: Innovative relay stations involving young people in the proper recycling of e-waste in the DRC

Case study - GSM Repairers Association: Building capacity and creating opportunities for mobile repairers in Nigeria

Case study - Computadores para Educar: Ensuring circularity through managing e-waste properly in a computers-for-schools initiative

Module 10: An introduction to environmental rights as an advocacy framework

Module 11: Challenges and ways forward for policy action – awareness, mining, design, manufacturing and procurement

Module 12: Challenges and ways forward for policy action – use, reuse and e-waste

Case study - Transitioning to the circular economy in the South Asia region: A phased policy approach for Bangladesh, India, Sri Lanka and Pakistan

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