A guide to the circular economy of digital devices

What is the evolution of our digitally connected world? Let's hope the future does not follow the trends of the past: the mass production and consumption of digital devices; a world divided by digital "haves" and "have-nots"; the unthinking promotion of smart economies and a perspective of technology for technology's sake. It is not a choice – it simply will not work for people and the planet.

This guide 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.

Digital devices beyond the limits

There are more personal digital devices in the world than people; however, the distribution of the benefits and costs of digital devices is terribly unequal. We live on a planet that follows natural cycles and we have been consuming resources beyond natural boundaries, beyond the regenerative capabilities of nature. Climate change, biodiversity loss, land erosion, pollution, and resource depletion are the direct results of human impacts on the planet. The digital device on which you are reading this guide impacts our planet at each step in its life cycle.

This guide 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 13 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.

Rip, mix, share and reuse to get straight to what you need

There are many ways to read this guide. You can even start at the beginning! Or if you are unfamiliar with the language used in this guide, you may want to read the list of basic concepts at the end of Module 3 first. If you are part of an activist organisation, check the case studies to see what resonates with your aims, and then read Module 4 on extractivism, Module 9 on environmental rights, and Module 10 on policies affecting processes along the life span of a digital device. If you are involved in policy making, you can get familiar with the circular economy framework in Module 3 and then look at the relevant policy discussion in Module 10. If you are part of a social enterprise that works with hardware devices and software, you can look at the opportunities to integrate data and software tools to facilitate environmental and social impact assessments in Module 11, on circular practices and tools. If you are a procurement official or interact with one in your city or region, check out the bits about procurement in Module 7 and how it relates to all other processes in the circular economy of digital devices.

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