

Foreword



The digital economy, often praised for its virtual and intangible nature, has created the illusion of a world unburdened by material waste. However, this *Digital Economy Report 2024* starkly reveals the fallacy of this perception. The information and communications technology sector's carbon footprint in 2020, estimated at between 0.69 and 1.6 gigatons of carbon dioxide (CO₂) equivalent emissions, accounted for 1.5 to 3.2 per cent of global greenhouse gas emissions – at the upper range, slightly below the entire shipping industry's contribution to CO₂ emissions. The production of a single 2 kg computer requires the extraction of a staggering 800 kg of raw materials.

These figures are only set to rise, with the production of minerals essential for the digital transition, such as graphite, lithium and cobalt, projected to surge by 500 per cent by 2050 to meet the growing demand for digital and low-carbon technologies. Data centres, the backbone of the digital world, consumed an estimated 460 TWh of electricity in 2022, a figure projected to double by 2026. The number of semiconductor units quadrupled from 2001 to 2022 and continues to grow. Fifth-generation mobile broadband coverage is expected to increase from 25 per cent of the population in 2021 to 85 per cent by 2028, while the number of Internet of things devices is projected to grow from 16 billion in 2023 to 39 billion in 2029. This expansion, coupled with the growing popularity of e-commerce, which saw business sales rise from \$17 trillion in 2016 to \$27 trillion in 2022 in 43 countries, paints a complex picture of the digital economy's environmental impact.

This report serves as a wake-up call, urging us to confront the environmental consequences of our digital lifestyles.

The environmental impact of digitalization is a global issue, but its effects are not evenly distributed. Developing countries, often rich in the resources needed for digital technologies, bear a disproportionate burden of its costs while reaping limited benefits. For example, discarded smartphones, laptops, screens and other electronic devices grew by 30 per cent between 2010 and 2022, reaching 10.5 million tons globally. Developed countries generated an average of 3.25 kg of e-waste per person, compared to less than 1 kg in developing countries and 0.21 kg in least developed countries. Shockingly, only 24 per cent of this waste was formally collected globally in 2022, with a mere 7.5 per cent collected in developing countries.

Another point to consider is the impact of the extraction of minerals essential for digital technologies on environmental and social sustainability. Such extraction is often sourced through artisanal and small-scale mining, which is often associated with unsafe working conditions, environmental degradation and exploitation of vulnerable communities, including children. These



circumstances highlight the urgent need for greater transparency and responsible sourcing practices within the digital supply chain, ensuring that the pursuit of technological progress does not come at the expense of vulnerable communities or the environment.

Yet, despite these challenges, digitalization also holds immense potential for environmental good. Digital technologies can drive energy efficiency, optimize resource use and enable innovative solutions for climate change mitigation and adaptation.

This report emphasizes the need for a balanced approach. We must harness the power of digitalization to advance inclusive and sustainable development, while mitigating its negative environmental impacts. This requires a shift towards a circular digital economy, characterized by responsible consumption and production, renewable energy use and comprehensive e-waste management.

As we navigate this complex landscape, international cooperation is paramount. We must strive for equitable distribution of the benefits and costs of digitalization, ensuring that no one is left behind in the digital age. We must work together to establish comprehensive global governance frameworks that promote sustainable digital practices and empower developing countries to participate fully in the digital economy.

The *Digital Economy Report 2024* draws attention to an important area. It underscores the urgent need for action at all levels – from Governments and businesses to international organizations and civil society. We must embrace a new mindset that considers sustainability at every stage of the digital life cycle.

I am confident that this report will provide valuable insights and recommendations for policymakers, industry leaders and all stakeholders committed to building a sustainable digital future. The choices we make today will determine the kind of world we leave for generations to come. Let us seize this opportunity to create a digital economy that thrives in harmony with our planet.



Rebeca Grynspan
Secretary-General of UNCTAD