



QUICK TIPS

INTEGRATING THE ENVIRONMENT AND CLIMATE CHANGE IN AND BY DIGITALISATION

Digital solutions can be powerful enablers to realise the objectives of the Green Deal. Digitalisation can contribute to the transition to a carbon neutral, green and circular economy in virtually all sectors. Digital entrepreneurship and connectivity infrastructure can serve as the backbone of IT-based circular economy business models. To underline the importance of digital technologies we only have to look around us to see that they have been instrumental in keeping our economies and societies running during the pandemic. Yet, the environmental footprint of digital technologies itself is significant. Rapidly growing electricity consumption, for example by data centres and mobile networks,

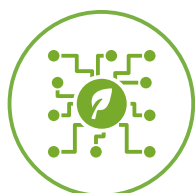
contributes to global GHG emissions. Mining of raw materials is known for its serious social and environmental repercussions. Annually, 53 million tonnes of e-waste is produced. This 'urban mine' of e-waste has an estimated value of EUR 50 billion in recyclable metals, yet less than 20% is actually recycled.

Digitalisation thus carries the potential to bring positive and negative consequences. To fully exploit the environmental advantages of digitalisation, targeted policies and actions are needed. This note provides quick practical tips to maximise the positive potential of ICT while preventing negative effects.



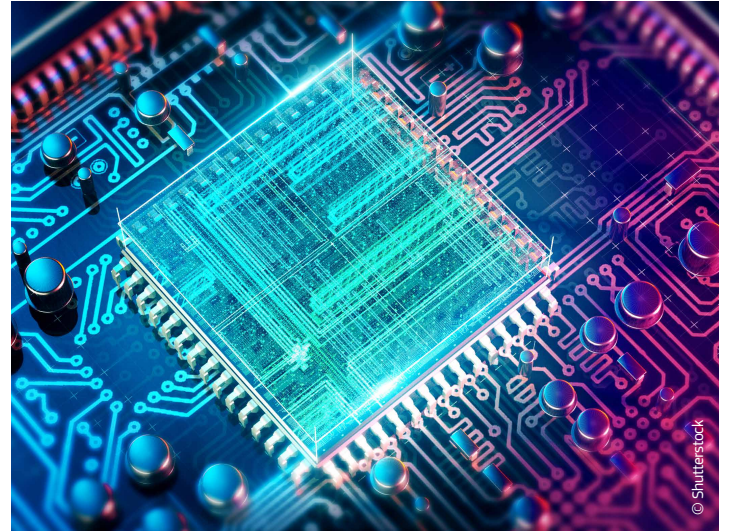
Minimise negative impacts on environment and climate

- ▶ Climate mitigation: avoid additional GHG emissions by improving energy efficiency of both production and use of digital technologies (devices, data centres and networks), investing in green electricity, and reusing waste energy. Digital technologies can and should save more emissions than they produce.
- ▶ Circularity: ensure that electronic devices are designed for durability, maintenance, dismantling, reuse and recycling, including a right to repair or upgrade to extend the lifecycle of devices.
- ▶ Ensure responsible procurement of raw materials, abiding by relevant environmental and social safeguards.
- ▶ Support the establishment of regulatory and policy frameworks for environmentally sound management of digital/ ICT-derived waste (and avoid dumping of e-waste).
- ▶ Encourage transparency of telecom operators with regards to their environmental footprint.



Digitalisation can enhance sustainability in virtually all sectors, by enabling:

- ▶ in **agriculture**, precision agriculture that saves on fuel, seeds, water, fertilisers and pesticides; better distribution of perishable products and increased farmer income; food security through earth observation for disease control, yield forecast, invasive species, disease control, climate change, etc.; information sharing among farmers.
- ▶ in **forestry**, remote sensing techniques that assist in monitoring and administrative processes of forest exploitation permits, fires, illegal clearing, etc.;



- ▶ in **energy**, “intelligent” electricity networks, with efficient and resilient (mini)grids, integrating renewable energy generation, with reduced O&M costs and outages; smart metering that reduces energy consumption in households;
- ▶ in **transport**, reduction of GHG emissions through optimisation of mobility, mobility-as-a-service and shared mobility solutions, telepresence technologies (e-work, e-learning, e-banking, e-health), route optimisation technologies, and smart logistics;
- ▶ in **water**, distant real time monitoring of water use, water pollution and marine resources; monitoring, evaluating and optimising infrastructure to reduce pressure on water resources;
- ▶ in **manufacturing**, efficiency in production, the sharing of products, servitisation (products with linked services such as maintenance, related to SaaS, i.e. service as a product solutions) and virtualisation (creating a simulated remote computing environment instead of a physical version);
- ▶ in **construction**, smart buildings to reduce energy consumption;
- ▶ in **biodiversity conservation**, remote sensing and mobile phone applications (“citizen science”) for monitoring of wildlife, fisheries, fires, illegal activities, land use and land conversion, connectivity for administrations;
- ▶ in **climate adaptation**, analysis of long-term climate data to predict climate variability and to respond to climate change (early warning, disaster risk reduction);
- ▶ in **disaster risk management**, provision of geospatial data for floods, fires, droughts forecasting and for supporting emergency and/or recovery activities in the aftermath of a disaster;
- ▶ in **smart cities**, sustainability in all aspects of life, i.e. governance, economy, environment, water, mobility, people, living, waste management.



Create an enabling digital environment to unleash the green potential of digitalisation

- ▶ Use digital tools and platforms to (i) provide information for decision making, (ii) assess effectiveness of policies and regulations, or (iii) ensure public access to information on the state of the environment and on related decision making;
- ▶ Support educational and vocational training institutions in integrating and effectively deploying learning of digital technologies for sustainability;
- ▶ Support the inventory and digitisation of data archived in paper (on climate, biodiversity, etc.), to inform policies and monitoring. Make sure it is associated by proper capacity development;
- ▶ Engage citizens to become co-creators of knowledge and evidence that decision-makers, businesses, investors and other citizens can use.
- ▶ Create an enabling environment for digital entrepreneurship by supporting MSMEs in securing access to the right skills and empower them to use innovative - notably circular economy - business models.
- ▶ Build capacity of intermediary business support organisations to mainstream digital skills in professions, with a view to improving their members' resource efficiency and circularity.
- ▶ Engage with the European private sector and benefit from their connections in partner countries to share experience on greening digital businesses



Digital technologies possibly applied in electricity mini-grids



Provide incentives for innovation and scale up

- ▶ Develop proposals that boost markets for secondary raw materials and leverage the potential of reuse, repair, refurbishment, remanufacturing and recycling, based on life cycle thinking.
- ▶ Set up mechanisms and foster funding opportunities for green-digital technologies start-ups.
- ▶ Develop performance indicators that measure decarbonisation and sustainable achievements enabled by digital technologies, particularly linked to the SDGs.
- ▶ Create economic and financial incentives through Green Public Procurement and support jobs linked to the circular economy.
- ▶ Facilitate the flows of the circular economy with free movement of goods to promote reuse, repair and recycling.
- ▶ Create incentives for digital transformation of key public/public service providers towards green sustainability (i.e. water and energy utilities, local authorities, etc.).



Contribute to international environment and climate commitments

- ▶ Verify how the activities proposed contribute to disaster risk reduction and the Rio Conventions related to climate change mitigation and adaptation, biodiversity, and combating desertification. You can get inspiration from the document [Guidance on activities in digitalisation that qualify for Rio markers](#).
- ▶ Check if digitalisation plays a role in a partner country's Climate Policy (including its Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs)) and prioritise interventions that will support its implementation.



Address both environmental threats and opportunities of digitalisation in budget support and investments

- ▶ Use Strategic Environmental Assessment (SEA) to strengthen the environmental and climate aspects of the digitalisation strategy and the EU support programme.
- ▶ Ensure the digitalisation project pipeline contributes to the Green Deal objectives of climate neutrality, circularity, sustainability and biodiversity protection.



E-Governance and Citizen Services

- Public Information, Grievance Redress
- Electronic Service Delivery
- Citizen Engagement
- Citizens - City's Eyes and Ears
- Video Crime Monitoring



Waste Management

- Waste to Energy & fuel
- Waste to Compost
- Waste Water to be Treated
- Recycling and Reduction of C&D Waste



Water Management

- Smart Meters & Management
- Leakage Identification, Preventive Maint
- Water Quality Monitoring



Energy Management

- Smart Meters & Management
- Renewable Sources of Energy
- Energy Efficient & Green Buildings



Urban Mobility

- Smart Parking
- Intelligent Traffic Management
- Integrated Multi-Modal Transport



Others

- Tele-Medicine & Tele Education
- Incubation/Trade Facilitation Centers
- Skill Development Centers



Digital solutions applied in Smart cities

- ▶ In cases where “green” measures increase immediate project costs, while economic and environmental savings may only be attained on a longer term, consider using a grant to cover the additional costs.
- ▶ If there are significant environmental or climate-related risks or opportunities, ensure appropriate performance indicators are included.
- ▶ Include environmental and climate-related themes in the digitalisation policy dialogue and vice versa.
- ▶ Provide technical assistance to strengthen the partner government's capacity on environment and climate change.
- ▶ Digital transformation of public services and utilities can support energy efficiency, smart mobility, etc.



Further information and support:

- ▶ Guidelines “[Integrating the environment and climate change into EU international cooperation and development](#)”
- ▶ [Digital Europe - Digitalisation as Key for a Sustainable Europe](#) - Our Call to Action for the EU's Strategic Agenda 2019-2024
- ▶ European Policy Centre (2020), The digital circular economy: A driver for the European Green Deal ([executive summary](#))
- ▶ [Digital 4 Development: mainstreaming digital technologies and services into EU Development Policy](#) (2017)
- ▶ EIT Climate KIC (2018), [Digitalisation – unlocking the potential of the circular economy](#)
- ▶ The Shift Project: The Carbon Transition Think Tank (2019): “[LEAN ICT](#)” - [Towards Digital Sobriety](#)
- ▶ ITU (2018) [Handbook for the development of a policy framework on ICT/e-waste](#)
- ▶ [Global e-Sustainability Initiative](#) with tools such as Climate Scenario Analysis Framework and the Ecochain online sustainability data management platform.
- ▶ [The Responsible Minerals Initiative](#) for companies to address responsible mineral sourcing issues in their supply chains.
- ▶ Global e-waste Statistics Partnership (GESP): [The Global E-waste Monitor 2020](#)

* All documents are available on capacity4dev (public group: [Environment, Climate Change and Green Economy](#))

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