**Closing the digital divide through an environmentally sustainable digital transformation**

**A Background note to the Debate of the UN General Assembly on Digital Cooperation and Connectivity**

**27 April 2021**

A combination of data and digital networks, technologies and related innovations are sweeping the planet at an exponential rate with the potential to unleash major structural economic, environmental and social transformations at a global scale. One of the priorities is to ensure that the environmental aspects of sustainability are strengthened and accelerated together with the economic and social aspects through new digital channels and not left behind (as in the past). Indeed, sustainable digital transformation can help unlock significant progress towards meeting our global environmental and climate targets:

* Digital information and communication technologies (ICT) can enable up to a 20 percent reduction of global CO2 emissions by 2030 when applied to five sectors: mobility, manufacturing, agriculture, energy, and buildings. Smart use of green ICT solutions can help cut multiple times more CO2e than they emit.[[1]](#footnote-2)
* Digital technologies such as tracking, tracking and design can help reduce the natural resources and other materials used in products by 90% - through efficiency and by turning products into services in a circular economy.[[2]](#footnote-3) This can help reduce the impact of material extraction on nature and the environment, and it can reduce pollution and industrial emissions as well as support consumers choice for more sustainable products.
* Digital technologies and circular design can help reduce waste & detoxify supply chains by a factor of 10-100x.[[3]](#footnote-4)

The above are examples of the potential of ICT that we need to realize through smart deployments that are based on greenest choices and uses of ICT. As the world continues to digitalize and close the digital divide to half of the planet’s population, there will be a massive increase in the use of ICTs and related digital infrastructure. This could cause three major environmental impacts that must be considered as we connect the planet.

1. One of the biggest challenges to address is the energy requirements to power the digital economy. Closing the digital divide will need to go hand in hand with investments in decentralized renewable energy infrastructure. However, to meet the growing demand for green energy technologies, the extraction of minerals, such as graphite, lithium and cobalt, could increase by 500% by 2050.[[4]](#footnote-5)
2. In 2019 a record 53.6 million metric tonnes of e-waste was produced. [[5]](#footnote-6) The equivalent weight of 125,000 Boeing 747 jumbo jets – more than all of the commercial aircraft ever created. [[6]](#footnote-7) This makes e-waste the fastest-growing domestic waste stream. Only 17.4 per cent of e-waste was documented as formally collected and recycled. Only 78 countries have e-waste legislation.[[7]](#footnote-8)
3. Digitalization is acting as a catalyst for accelerating consumption rather than driving sustainable behaviors and lifestyles. It is giving unsustainable consumption a powerful boost using a combination of techniques: personalized and location-based algorithmic advertising; peer to peer endorsements; gamification; and digital nudging.[[8]](#footnote-9) Not enough consumers can access or voluntarily use digital tools that promote sustainable consumption,[[9]](#footnote-10) or have the information to help them make these decisions.

**An Action Agenda for Digitalizing and Scaling Environmental Sustainability**

Through multilateral cooperation we can close the digital divide, improve energy access and “hard code” environmental sustainability across the platforms, algorithms and filters of the digital economy. Digital technology can help us address existential threats such as global pandemics, climate change, biodiversity loss, land degradation and pollution – but only if we build the infrastructure, standards, digital algorithms, and governance framework with this strategic intent. Multilateral and multi-stakeholder cooperation around a common vision and Action Agenda is key. In this regard, UNEP has identified five “Grand Challenges” for an action agenda that need to be solved to accelerate environmental sustainability through digital channels:

* **Building a digital ecosystem of trusted environmental data for real time transparency and situational awareness:** Fragmentation of environmental data and the lack of seamless integration into the emerging data infrastructure must be addressed. At present, progress towards achieving 68% of the environmental SDG goals cannot be measured at the global level due to a lack of inter-operable data and significant data gaps.[[10]](#footnote-11) This can be addressed by building a global digital ecosystem of trusted and open environmental data as a digital public good, together with the necessary licenses, standards, infrastructure and safeguards to protect quality, security and maintain public trust. This digital ecosystem must enable real time monitoring and predictive analytics of the global environmental situation and help assess progress towards our collective environmental goals.
* **Aligning finance and investments to environmental sustainability goals:** There is misalignment between our global environmental goals and the global financial and capital markets, including those supporting digital transformation. Financial and capital markets are unable to effectively factor and price in environmental risks, opportunities, incentives arising from value chains and their impacts. At present, of the 95 trillion invested in global stock markets[[11]](#footnote-12), only 1 trillion is aligned to Environment, Social and Governance (ESG) principles.[[12]](#footnote-13) However, as digital transformation spreads to all corners of global financial markets, it will become easier, cheaper and more seamless to integrate environmental and climate considerations into costing models, risk assessments, chain of custody, and due diligence requirements to align markets and finance with sustainability. There is a need for metrics and auditing frameworks that measure consistently the net impact of digitalization in a given context. Based on such metrics and KPIs, the financial community will also be able to assess how to invest in digital transformation with the largest environmental benefits.
* **Measuring the sustainability performance of supply chains**: Most products or services are supported by complicated globalized supply chains. One of the difficulties relates to tracking and tracing the lifecycle of products and services through their supply chains which often require sifting, aggregation, integration and analyses of large amounts of complex non-standardized data produced by a range of different sources. Embedding digital technologies within the global supply chain and using life-cycle analysis combined with AI offers opportunities to make sense of this data to accurately measure and compare the sustainability performance of different products. This requires the adoption of global and open standards to ensure interoperability and coherence so that different regional developments do not introduce fragmentation and obstacles to trade and global supply chains. We should build on recent developments regarding the adoption of digital product passports and support global approaches for data inter-operability and standardization.
* **Nudging and incentivizing sustainable consumption practices:** There are over 2 billion digital consumers in the world[[13]](#footnote-14) – using a combination of digital platforms, filters, algorithms and mobile apps to make consumption decisions. One recent study indicates that 65% of consumers said they want to buy purpose-driven brands that advocate sustainability, yet only about 26% actually do so.[[14]](#footnote-15) This intention-behavior gap needs to be closed. Major investments and policy frameworks are needed to nudge, gamify and incentivize consumer behaviors in the digital landscape – including citizens, governments and business – so they can more easily identify and favor sustainable products, services and lifestyles. Digital technologies present an opportunity to effectively and directly engage individual and institutional consumers through ecolabels and digital product passports as well as streamlined hyper-targeted, customized, value-based communication.
* **Sustainable procurement of digital technologies and infrastructure:** As governments and development actors procure and install digital infrastructure to close the digital divide, they need sustainable procurement policies that minimize the energy, e-waste and supply chain impacts as well as support a circular economy. Sustainable procurement policies can have a major influence on market demand dynamics, especially through government procurement that represents 15-20% of global GDP.[[15]](#footnote-16) Institutions are uniquely positioned to demand transparency to the upstream and downstream impacts of goods and services and are capable of incorporating sustainability criteria into purchasing decisions at a scale that can shift markets. Green Public Procurement criteria and best practices should be consolidated and shared across Member States. UN agencies also are collaborating on this work & are already committed to systematically integrate sustainability considerations in procurement policies at all levels. UN-led programs addressing the digital divide will need to align with the SDGs and support the integration of environmental sustainability considerations in the procurement of ICT goods and services that close the digital divide.

To advance these goals, UNEP, UNDP, the International Science Council, the German Environment Agency (UBA), the Kenyan Ministry of Environment and Forestry, Future Earth and Sustainability in the Digital Age have joined forces to act as co-champions in the development of a Coalition for Digital Environmental Sustainability (CODES) as part of the implementation process for the [UN Secretary General’s Digital Cooperation Roadmap](https://www.un.org/en/content/digital-cooperation-roadmap/assets/pdf/Roadmap_for_Digital_Cooperation_EN.pdf). The CODES initiative aims to bring stakeholders from the public and private sectors as well as civil society who work on the environment and digital transformation nexus to coordinate efforts, share lessons learned as well as mobilize resources and political commitments for action. The key outcome will be a shared Acceleration Plan for Digitalizing Environmental Sustainability and a series of political, technical and financial commitments. The registration link for the CODES initiative can be accessed [here](http://www.sparkblue.org/CODES) and the press release is available [here](https://www.sparkblue.org/content/press-release-launch-new-global-initiative-advance-digital-environmental-sustainability).

Member states as well as Major Groups and Stakeholders that are seeking further guidance on how to harness the environmental opportunities and mitigate the risks from the use of digital technologies can find further information from the following initiatives where UNEP is acting as either lead, partner or collaborator:

* [One Planet Programme on Sustainable Public Procurement (SPP)](https://www.oneplanetnetwork.org/sustainable-public-procurement)
* [Greening the Blue Initiative: Promoting Sustainable management practices in the UN system](https://www.oneplanetnetwork.org/initiative/un-environment-sun-programme-promoting-sustainable-procurement-un-system)
* [Inter-agency Group on Tackling E-waste](https://unemg.org/our-work/emerging-issues/innter-agency-issue-management-group-on-tackling-e-waste/)
* [ITU focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies](https://www.itu.int/en/ITU-T/focusgroups/ai4ee/Pages/default.aspx)
* [Resilience Frontiers Initiative of the UNFCCC](http://www.resiliencefrontiers.org/)
* [Policy Network on Environment and Digitalization](https://www.intgovforum.org/multilingual/content/policy-network-on-environment-and-digitalisation-pne) and the [Best Practice Form on Environmental Data Governance](https://docs.google.com/document/d/1vSKYAy75EPCsSl7Y83mXNNvh1yvzZ2lWQWUm_KPukQU/edit?usp=sharing) of the Internet Governance Forum
* [Sustainable Digital Financial Alliance](https://www.sustainabledigitalfinance.org/)
* [Global Enabling Sustainability Initiative (GeSI)](https://gesi.org/)
* [Digital Future Society](https://digitalfuturesociety.com/)
* [European Green Deal](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en), [the European Council conclusions on Digitalization for the Benefit of the Environment](https://www.consilium.europa.eu/en/press/press-releases/2020/12/17/digitalisation-for-the-benefit-of-the-environment-council-approves-conclusions/) , the [EU Data Strategy](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0066&from=EN) as well as the [EU Green Digital Coalition and Declaration](https://ec.europa.eu/digital-single-market/en/news/companies-take-action-support-green-and-digital-transformation-eu)
* [UNEP’s new digital transformations for the environment subprogramme](https://wedocs.unep.org/bitstream/handle/20.500.11822/35162/Doc3%20Reve1%20EnglishK2100501.pdf?sequence=1&isAllowed=y), the [Global Environmental Data Strategy](https://wedocs.unep.org/bitstream/handle/20.500.11822/28486/K1901170.pdf?sequence=3&isAllowed=y), [World Environment Situation Room](https://data.unep.org/) and the [UN Science-Policy Business Forum](https://un-spbf.org/)
* Data for the Environment Alliance (DEAL)

1. <https://www.ctc-n.org/sites/d8uat.ctc-n.org/files/resources/full_report2.pdf> [↑](#footnote-ref-2)
2. James Arbib and Tony Seba. 2020. Rethinking humanity. [↑](#footnote-ref-3)
3. James Arbib and Tony Seba. 2020. Rethinking humanity. [↑](#footnote-ref-4)
4. <http://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf> [↑](#footnote-ref-5)
5. <https://www.itu.int/en/ITU-D/Environment/Documents/Toolbox/GEM_2020_def.pdf> [↑](#footnote-ref-6)
6. <https://www.weforum.org/agenda/2019/01/we-generate-125-000-jumbo-jets-worth-of-e-waste-every-year-here-s-how-we-can-tackle-this-toxic-deluge/> [↑](#footnote-ref-7)
7. <https://www.itu.int/en/ITU-D/Environment/Documents/Toolbox/GEM_2020_def.pdf> [↑](#footnote-ref-8)
8. Steffen Lange and Tilman Santarius. SMART Green World. 2020. P 31 [↑](#footnote-ref-9)
9. Steffen Lange and Tilman Santarius. SMART Green World. 2020. P 29 [↑](#footnote-ref-10)
10. <https://wedocs.unep.org/bitstream/handle/20.500.11822/27627/MeaProg2019.pdf?sequence=1&isAllowed=y> [↑](#footnote-ref-11)
11. <https://www.cnbc.com/2020/11/12/global-stock-market-value-rises-to-a-record-95-trillion-this-week-on-vaccine-hope.html> [↑](#footnote-ref-12)
12. <https://www.cnbc.com/2020/08/11/coronavirus-esg-and-sustainable-funds-surpass-1-trillion-for-the-first-time.html> [↑](#footnote-ref-13)
13. <https://www.statista.com/statistics/251666/number-of-digital-buyers-worldwide/#:~:text=This%20timeline%20displays%20a%20forecast,global%20digital%20buyers%20in%202016> [↑](#footnote-ref-14)
14. <https://hbr.org/2019/07/the-elusive-green-consumer> [↑](#footnote-ref-15)
15. <https://ec.europa.eu/growth/single-market/public-procurement/international_en> [↑](#footnote-ref-16)