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Submissions from entities in the United Nations system, international organizations and other stakeholders on their efforts in 2025 to implement the outcomes of the WSIS

Submission by

United Nations Environment Programme

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 29th session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

UNEP contribution to WSIS 2025 reporting

Part One: Executive summary

Within the WSIS framework, UNEP serves as facilitator for Action Line 7 on ICT Applications for the E-Environment, advancing the use of digital technologies to protect the environment and promote sustainable resource use. UNEP's work under this mandate contributes to global efforts to leverage ICTs for sustainability while addressing their environmental risks. In 2025, UNEP identified eight persistent challenges shaping implementation of Action Line 7: the limited integration of digital issues into environmental fora; insufficient alignment of digital and environmental strategies; fragmented standards for environmental data and digital impacts; weak sustainability incentives in e-commerce; difficulties in ensuring a just transition; overlapping demand for critical minerals; unequal global distribution of digitalization's benefits and burdens; and the digital divide limiting environmental gains.

Despite these challenges, UNEP has achieved notable progress in five key areas:

- **Digital Platforms and Applications**: Advancing the World Environment Situation Room as a federated global environmental data platform.
- **Data Governance**: Driving consultations and regional pilots for the forthcoming Global Environmental Data Strategy (GEDS), to be presented at UNEA-7.
- **Capacity Building**: Scaling the Digital4Sustainability learning pathway and implementing the SDG Digital Joint Programme in Kenya to strengthen green digital skills and public service capacity.
- **Knowledge Products**: Publishing guidance on sustainable data centres, circular business models, and greening digital policy frameworks.
- **International Advocacy**: Launching the Coalition for Environmentally Sustainable AI, now uniting over 100 partners to align AI with sustainability.

Looking ahead, UNEP will:

- Present and support implementation of the Global Environmental Data Strategy (GEDS).
- Expand the World Environment Situation Room in line with GEDS.
- Develop Environment GPT, a science-based policy advisory chatbot.
- Produce guidance on greening digital policies and mitigating AI's environmental impacts.
- Support delivery of the Global Digital Compact, particularly its sustainability provisions.

At the 2025 WSIS High-Level Event, UNEP, ITU and WMO convened stakeholders to define future priorities for Action Line 7, highlighting:

- Sustainable AI measurement and disclosure frameworks.
- Global standards for product sustainability data and digital product passports.
- National capacity-building for environmental digitalization.
- Digital tools for traceability of critical minerals.
- Scaling e-waste management and producer responsibility.
- Interoperable frameworks for digital product passports.
- Investments in digital infrastructure for "Early Warning for All."
- Strengthening physical and institutional infrastructure for resilient disaster response.
- Regulatory frameworks for ethical use of digital technologies in disaster management.
- Integration of digital sustainability into multilateral environmental agreements.
- Greening of national digital, AI and data strategies.
- Adoption of a global environmental data governance strategy.
- Advancing digital environmental justice and closing the digital divide.
- Promoting sustainable ICT consumption in developed economies.
- A holistic approach to assessing digital technologies' full environmental impacts.

Through these efforts, UNEP is positioning digital transformation as a key enabler of environmental sustainability, while ensuring that its risks are responsibly managed and its benefits are equitably shared.

Part Two: Overview of trends and challenges in implementation at national, regional and global levels

UNEP has observed eight main challenges in the implementation of WSIS Action Line 7 (E-Environment):

- **Challenge 1:** Environmental fora (e.g. multilateral environmental agreements) are not systematically including digital technologies as enablers of their goals or considering negative impacts from digital technologies.
- **Challenge 2:** National and international strategies, policies and programmes for digital transformation and digital public infrastructure are not systematically considering environmental risks and opportunities from digital transformation.
- **Challenge 3:** There is a fragmented patchwork of international standards supporting the inter-operability and governance of environmental data as well as measuring the direct, indirect and higher-order effects of AI and ICT on the environment. This is leading to conflicting or inconsistent measurement standards on environmental impacts.
- **Challenge 4:** Digital platforms for e-commerce are not systematically promoting sustainable products and services or helping inform consumer choice and sustainable lifestyles.
- **Challenge 5:** Ensuring a just transition that links climate stability and environmental sustainability to the broader development agenda remains a complex issue.
- **Challenge 6:** The critical minerals needed for energy and digital transitions largely overlap, necessitating new frameworks, such as digital product passports, to track and maximize their recovery and circularity.
- **Challenge 7:** The global distribution of the benefits and impacts of digitalization is unequal. Developing countries often experience disproportionate environmental impacts from digitalization, such as from raw materials extraction or disposal of e-waste, while receiving fewer of the economic and social benefits associated with digital transformation.
- **Challenge 8:** Countries and communities with limited access to digital infrastructure and technologies (the digital divide) are unable to fully leverage the environmental benefits of digital solutions, thereby exacerbating inequality in addressing environmental challenges globally.

Part Three: Current and future implementation of the WSIS Action Line

A) Current actions

In the dynamic digital landscape of 2025, UNEP's Digital Transformation Subprogramme made important strides, to unite environmental sustainability with digital technology as per WSIS Action Line 7.

Our commitment to international digital governance processes and the pursuit of UNEA resolution 4/23's goal of a global environmental data strategy (GEDS) by 2025 bore significant fruit. Our successes can be encapsulated in five major accomplishments:

1. **Digital Platforms and Applications:** UNEP continued to advance the technical foundation for the World Environment Situation Room[1], a platform to federate the best available environmental data from different stakeholders. This included the development of the platform architecture, data governance policy and prototype testing.
2. **Data Governance:** UNEP conducted global, regional and national stakeholder consultations to support the development of the Global Environmental Data Strategy (GEDS)[2] as mandated under UN Environmental Assembly Resolution (UNEA) 4/23[3]. GEDS aims to improve the quality, accessibility, interoperability, and governance of environmental data, alongside capacity-building initiatives. GEDS will be presented to member

states at the 7th session of UNEA from 8 to 12 December 2025. At the country level, UNEP has partnered with GIZ to implement the Transboundary Environmental Data Project – East Africa. This regional initiative aims to co-develop a transboundary data-sharing use case with Kenya, Tanzania, Uganda, and Rwanda. The project facilitates regional cooperation and policy dialogue on environmental data governance. To date, national consultations have been successfully conducted in all four countries. A joint in-person validation workshop was also implemented in June-July 2025. In parallel, the project is designing an online learning module to synthesize insights, highlight regional best practices, and promote principles for effective transboundary environmental data sharing. The initiative runs through December 2025.

3. **Capacity Building:** UNEP continued to develop and offer virtual and in-person training on digital sustainability. The flagship "Digital4Sustainability E-Learning Path"[4] has been developed through a joint partnership in 2023 between UNEP and the UN System Staff College (UNSSC) in collaboration with GIZ, the EU, the Coalition for Digital Environmental Sustainability (CODES) and the Office of the UN Technology Envoy. This course continued to attract additional participants. At the country level, the SDG Digital Joint Programme is a flagship initiative co-led by UNESCO and jointly implemented by UNEP, UN Women, and UNCDF. The programme aims to catalyze digital capacity in Kenyan communities, with UNEP focusing on empowering women and youth engaged in green businesses, strengthening public sector digital competencies, and advancing sustainable digital policy dialogues. To date, the consortium has partnered with the Kenya School of Government to co-develop a national curriculum, which will be rolled out to 20,000 public servants over three years. In addition, UNEP and UN Women have formalized collaboration with 15 digital innovation hubs across the country. These hubs have commenced training targeting women and youth, particularly those operating in the green economy. The objective is to reach 100 MSMEs within two years, equipping them with practical digital skills for effective participation in the digital economy. Training activities began in May 2025. As of August 2025, approximately 40 MSMEs have been trained.

4. **Knowledge Products**: UNEP published a new guidance note on "Sustainable Data Centres for Public Procurement" [5]. The document provides practical, actionable guidelines for public and private procurement to drive the market for energy-efficient data centers. In addition, UNEP together with the One Planet Network, Wuppertal Institute and the Coalition for Digital Environmental Sustainability (CODES) published a new report entitled "Digitalization of Circular Business Models" [6]. The report explores how digital technologies such as IoT, AI, and Digital Product Passports (DPPs) enable new circular business models. UNEP also began to develop a new guidance note on Greening Digital Policy Frameworks, covering environmental best practices for national policies on digital transformation, data and artificial intelligence.

5. **International Advocacy and Outreach:** UNEP, in partnership with the Government of France and the International Telecommunication Union (ITU), collaboratively launched the Coalition for Environmentally Sustainable Artificial Intelligence at AI Action Summit on 11 February in Paris. The Coalition brings together over 100 partners—including 37 tech companies, 11 countries, and five international organizations—with the shared goal of ensuring that AI development follows an environmentally sustainable path and maximizes its positive impact on the planet.[7]

B) Future Actions

UNEP is exploring the following future actions:

- **Environmental Applications:** UNEP is exploring the development of an environmentally focused chatbot called "Environment GPT" that would help policy makers access and understand authoritative environmental science.
- **Environmental Data Governance:** The Global Environmental Data Strategy (GEDS) will be presented to UNEA 7 in December 2025. Follow-up measures could include UNEP support for the implementation of the GEDS framework, including targeted capacity building for member states. UNEP will also revamp the World Environment Situation Room (WESR) to align to the GEDS framework.

- **Knowledge products**: UNEP is developing a series of knowledge products and guidance on assessing and mitigating the environmental impacts of digital technologies, within an initial focus on AI. UNEP is also developing a guidance note on "Greening National Digital Policies".
- **Support the Implementation of the Global Digital Compact**: UNEP aims to support the implementation of the environmental and sustainability provision of the GDC, with an emphasis on operationalizing the following paragraphs:
    - 8 (e) Digital technologies unlock new capabilities and opportunities for advancing environmental sustainability. Our cooperation will leverage digital technologies for sustainability while minimizing their negative environmental impacts
    - 11 (e) Promote sustainability across the life cycle of digital technologies, including context-specific measures to increase resource efficiency and to conserve and sustainably use natural resources and that aim to ensure that digital infrastructure and equipment are sustainably designed to address environmental challenges in the context of sustainable
    - 37. We recognize that responsible and interoperable data governance is essential to advance development objectives, protect human rights, foster innovation and promote economic growth. The increasing collection, sharing and processing of data, including in artificial intelligence systems, may amplify risks in the absence of effective personal data protection and privacy norms.
    - 48. We will promote and support interoperability between national, regional and international data policy frameworks. In this context, we request the Commission on Science and Technology for Development to establish a dedicated working group to engage in a comprehensive and inclusive multi-stakeholder dialogue on data governance at all levels as relevant for development. We encourage the working group to report on its progress to the General Assembly, by no later than the eighty -first session, including on follow-up recommendations towards equitable and interoperable data governance arrangements, which may include fundamental principles of data governance at all levels as relevant for development; proposals to support interoperability between national, regional and international data systems; considerations of sharing the benefits of data; and options to facilitate safe, secure and trusted data flows, including cross-border data flows as relevant for development (all SDGs).
    - 53. We recognize the immense potential of artificial intelligence systems to accelerate progress across all the Sustainable Development Goals. We will govern artificial intelligence in the public interest and ensure that the application of artificial intelligence fosters diverse cultures and languages and supports locally generated data for the benefit of countries and communities' development. This includes, in particular, international cooperation to support developing countries in building artificial intelligence capacities as well as efforts to address potential negative impacts of emerging digital technologies on labour and employment and on the environment.
    - 58. We call on standards development organizations to collaborate to promote the development and adoption of interoperable artificial intelligence standards that uphold safety, reliability, sustainability and human rights (SDGs 3, 5, 7, 9, 10, 12, 16 and 17).

During the WSIS high-level event in Geneva from 7 to 11 July 2025, UNEP, WMO and ITU co-convened a stakeholder consultation around future priorities for Action Line 7 on e-environment. The following future priorities were identified during the consultation:

1. Establish Sustainable AI Measurement and Disclosure Frameworks

Ensure that emerging AI governance frameworks—such as those developed by the UN, ISO, OECD, and IEEE—include mandatory environmental impact assessment and disclosure requirements across the full AI lifecycle, from model training and deployment to energy use and hardware disposal. These frameworks should require reporting on key environmental indicators, including greenhouse gas emissions, energy consumption, water usage, e-waste generation, and the embedded material footprint of AI systems. Harmonized metrics and methodologies are essential to support responsible innovation, inform green AI procurement, and enable sustainability benchmarking across the AI sector.

2. Standardize Digital Product Sustainability Information

Develop global standards for product sustainability data—such as product carbon footprints, durability, reparability, and environmental footprint indicators—to power green digital services including sustainable search, guiding / supporting sustainable choices, and procurement. These standards should support the creation of environmental product information systems and digital product passports.

3. Build National Capacities for Environmental Digitalization, Implementation and Enforcement

Strengthen national and regional capacities in developing countries to adopt, govern, and enforce the use of emerging digital technologies for environmental protection. This includes investments in digital infrastructure, as well as targeted support for training, skills development, and institutional readiness in areas such as big data analytics, artificial intelligence, geospatial platforms, and environmental digital twins. Establish regional digital environment labs, regulatory sandboxes, and interoperable data-sharing platforms to accelerate innovation, improve environmental monitoring and enforcement, and ensure inclusive participation in the digital transformation of environmental governance.

4. Track and Trace Critical Minerals in ICT Supply Chains

Closing the digital divide and advancing universal digital access will inevitably drive increased demand for critical minerals—many of which are already under pressure from the energy transition. This growing cross-sectoral competition for scarce and often geopolitically sensitive minerals highlights the need for transparent, sustainable, and circular value chains. Develop interoperable digital tools and global traceability systems to monitor the extraction, trade, use, and recycling of critical minerals used in ICTs. These systems should support ethical sourcing, environmental due diligence, and enhanced recovery to align both digital and green transitions with just and sustainable outcomes.

5. Scale E-Waste Management and Extended Producer Responsibility (EPR)

Develop and implement national legislation on e-waste governance and Extended Producer Responsibility (EPR) mechanisms. Digital tools—including AI-powered systems for e-waste detection, flow monitoring, hotspot mapping, and predictive analytics—can optimize take-back schemes, improve recycling performance, and enhance traceability across global supply chains. These technologies are especially valuable for identifying and addressing flows through the informal sector, which is often under regulated. Dedicated financing is essential to manage the technical complexity and infrastructure requirements of e-waste systems, particularly in countries disproportionately impacted by digital waste.

6. Implement Digital Product Passport Regulations and Global Interoperability Standards

Establish international governance frameworks and technical standards to guide the implementation of Digital Product Passports (DPPs) across priority sectors. DPPs should be machine-readable, secure, interoperable, and accessible, enabling seamless exchange of product data across borders and supply chains. Environmental attributes—such as carbon footprint, resource intensity, repairability, durability, recyclability, and chemical content—must be embedded to drive circularity, support sustainable consumption, and enable green procurement. The European Union is advancing mandatory DPP requirements under the Ecodesign for Sustainable Products Regulation (ESPR), setting a precedent for digital traceability and environmental transparency. To ensure global consistency and prevent regulatory divergence, there is an urgent need to develop interoperable, internationally recognized standards and protocols for DPPs that can support inclusive and responsible trade within a digital circular economy.

7. Invest in Digital Infrastructure for Early Warning for All

Expand investments in digital public infrastructure to accelerate the implementation of the “Early Warnings for All” initiative, ensuring that every person on Earth is protected by Multi-Hazard Early Warning Systems (MHEWS) by 2027. This includes support for and integration of open environmental data platforms, additional environmental sensor networks, AI-based forecasting tools, and last-mile connectivity for local dissemination. Special attention should be given to the digital inclusion of vulnerable communities, Indigenous Peoples, and those at the climate–nature–conflict nexus, ensuring early warnings are timely, targeted, actionable, and locally relevant, including local language and inclusive of Persons with Disabilities (PWDs).

8. Strengthen Physical and Institutional Infrastructure for Resilient Early Warning System Delivery

In addition to digital systems, robust physical and institutional infrastructure is essential to ensure early warning messages translate into timely and effective action. Investments should support resilient communication networks, reliable power systems (including renewable and off-grid energy sources), and emergency response facilities that remain operational during crises. Institutional capacity-building—particularly at the local and sub-national levels—is critical to manage, operate, and sustain these systems over time.

9. Enhance Regulatory Frameworks for the use of digital technologies for disaster management

Development and enforcement of regulatory frameworks that govern the responsible use of digital technologies for disaster risk management, including Early Warning Systems. These regulations should ensure data privacy, interoperability, equitable access, and ethical use of technologies such as AI and remote sensing. Strong governance mechanisms and public private partnerships will help build public trust, protect vulnerable populations, and ensure that digital tools enhance, rather than replace, human-centered disaster response. These efforts should be co-designed with affected communities and guided by principles of inclusion, transparency, and accountability.

10. Integrate Digital Sustainability into Multilateral Environmental Agreements

Encourage the scientific and policy bodies of multilateral environmental agreements (MEAs)—including the UNFCCC, CBD, and Basel Conventions—to integrate digital risks and opportunities into their strategies, implementation frameworks, and reporting templates. This includes adopting digital environmental indicators, exploring digital cooperation to accelerate targets, and embedding AI and data strategies into environmental implementation.

11. Green National Digital, AI, and Data Strategies

Support the integration of environmental risks, safeguards, and opportunities into national digital transformation strategies, artificial intelligence roadmaps, and data governance frameworks. A UNEP-led guidance toolkit should be developed to assist Member States in aligning digital development with environmental sustainability and climate/nature/pollution goals.

12. Adopt a Global Environmental Data Governance Strategy

Establish an international framework for environmental data governance that enables interoperability, quality control, equitable access, and transparency across systems and borders. This includes aligning with FAIR/CARE principles, the UN Data Principles, and digital commons approaches. UNEP should lead consultations on this strategy under the UNEA Resolution 4/23.

13. Advance Digital Environmental Justice and Close the Digital Divide

Address the unequal distribution of environmental impacts and benefits arising from digitalization. Developing countries often face disproportionate burdens from mineral extraction and e-waste, while benefiting less from digital innovation. Bridging the digital divide is essential to enable all countries and communities to access and deploy digital environmental solutions equitably.

14. Promote Responsible Consumption of ICT Products in Developed Countries

Digitalization in developed economies is driving unsustainable patterns of consumption—marked by high device turnover, energy-intensive services, and low rates of repair or reuse. National digital strategies in high-income countries must include measures to reduce the material and environmental footprint of ICT products through eco-design, right-to-repair legislation, product-as-a-service models, and sustainable public procurement. Public awareness campaigns and digital sustainability labelling can also empower individuals and institutions to make informed, low-impact digital choices.

15. Promote a more holistic approach to understanding the full environmental impacts of digital technologies

Current best practices for evaluating the environmental effects of digital technologies often focus narrowly on specific technologies (e.g., digital solutions to reduce carbon emissions or e-waste) or targeted interventions (e.g., Digital Product Passports, early warning systems). Such fragmented approaches risk significantly underestimating the cumulative environmental footprint of digital technologies. Adopting a more holistic framework—one that starts by considering the entire environmental system (atmosphere, biosphere, hydrosphere, lithosphere)—allows a deeper and

more complete understanding. This approach assesses how each lifecycle stage of digital technologies—design, production, use, repair, and disposal—interacts with and impacts the environment, revealing both beneficial outcomes and potential harms.

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