Greening the Future: Navigating Digital Transformation for Land Restoration

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At **UNEP**, we work to tackle the **Triple Environmental Crisis**

CLIMATE STABILITY

HARMONY WITH NATURE

POLLUTION-FREE PLANET

Digital Transformation

The **two sides** of the coin

DIGITALIZATION FOR SUSTAINABILITY

Digital technologies to address environmental challenges

SUSTAINABLE DIGITALIZATION

Ensuring the environmental sustainability of technology

Potential Digital Applications for Land Restoration

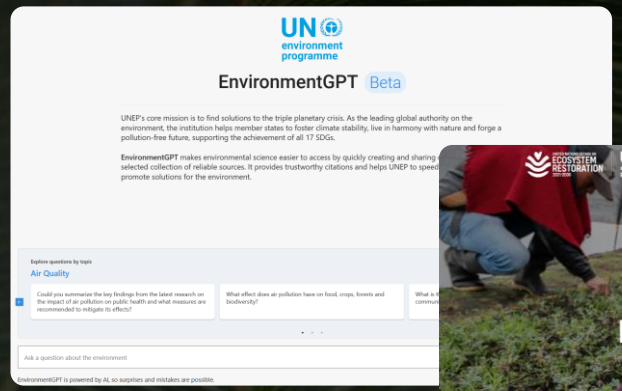
How we can leverage digital tools

- Data Collection and Monitoring
- Graphic Information Systems (GIS)
- Internet of Things (IoT)
- Big Data and Artificial Intelligence (AI)
- Blockchain
- Crowdsourcing and Citizen Science
- Simulation and Modeling
- Knowledge Sharing and Collaboration Platforms
- ...

UNEP Digital Accelerator Lab

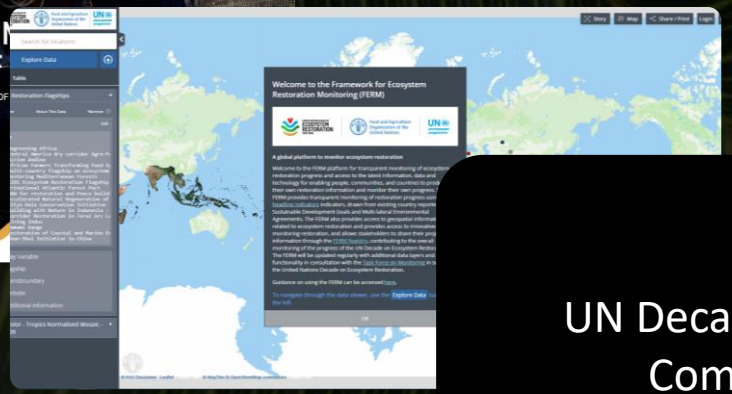
& other digital initiatives at UNEP for land restoration

Bridging Science and Policy



Knowledge sharing & information

Environmental data analysis



Collaboration & networking

UN Decade Digital Hub:
Coming soon…

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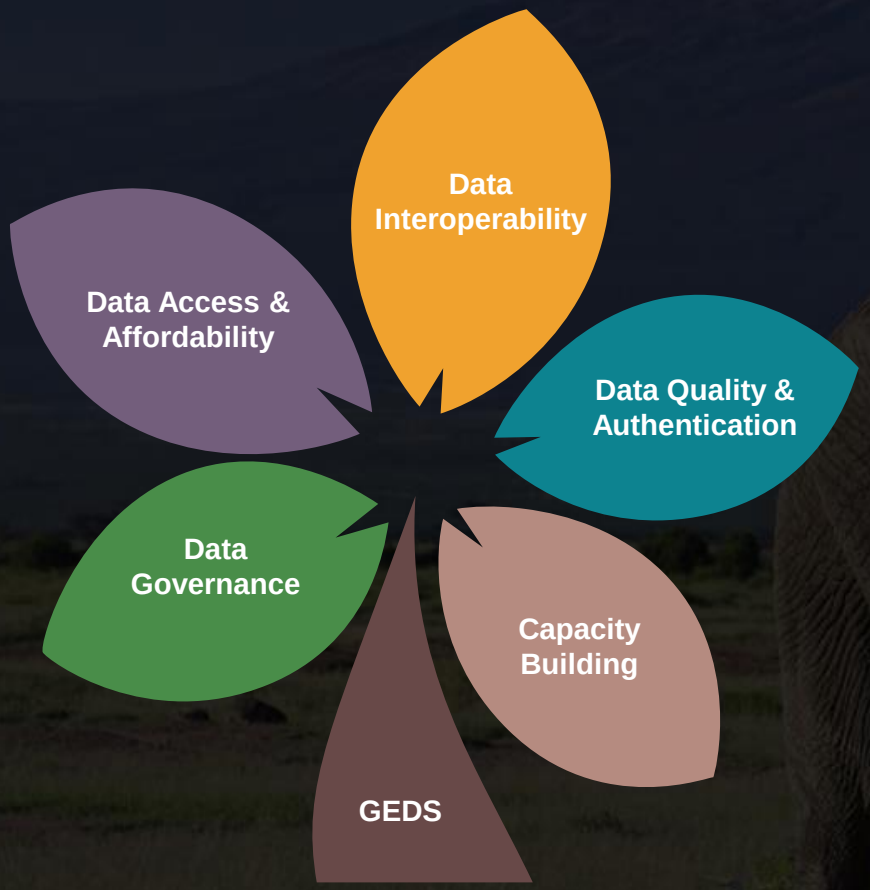
Global Environmental Data Strategy (GEDS)

UNEP presents five key pillars for a GEDS, subject to further consultation and co-design



Improve Data Governance:
Advance comprehensive governance models that address ethical, effective, and sustainable methodologies for environmental data management practices.

Promote Inclusive Data Access and Affordability:
Detail action items and policy recommendations to improve open access to environmental data and address challenges related to data affordability.

Promote Data Interoperability:
Identify and integrate global and thematic data standards into a global environmental data framework for efficient sharing among stakeholders.

Enhance Data Quality and Authentication:
Discuss frameworks and standards for defining and classifying environmental data quality levels accurately.

Facilitate Capacity Building:
Support member states in acquiring skills for data governance, foster best practice exchange, and strengthen global initiatives for inclusive engagement.

Environmental Impacts

Key risks and impacts of the technology on the Environment

ELECTRICITY

By 2030, AI could use **twice** the energy of **all of France**

Request to ChatGPT can exhaust **100 times more energy** than a conventional search engine.

CARBON FOOTPRINT

Generative AI responsible for as much global emissions as the **aviation sector.**

Training **1 LLM = 125 round-trip** flights NYC - Beijing

WATER USAGE

AI water demand = half of the UK demand by 2027

Training 1 LLM= cooling data centers with **3** Olympic-sized swimming pools daily

LIFE CYCLE – Rare earth elements consumption to e-waste

Fastest-growing waste streams in the world

Only **22%** of e-waste is recycled and disposed correctly

Rare Earth Minerals are critical for data centers. **Only 1% of them is recycled**

Key takeaways

Technology comes with opportunities and risks

Enhance Transparency, Accountability and Impact Analysis

Advanced digital technologies like remote sensing, GIS, IoT, AI, blockchain, and digital platforms are crucial for enhancing land restoration efforts by improving data collection, monitoring, planning, and community involvement. However, we must implement mechanisms to assess and disclose the environmental impacts of digital systems throughout their life cycles.

Sustainability by Design

While digital technologies offer significant environmental benefits, their development and use must prioritize sustainability to mitigate the substantial energy consumption, carbon emissions, water usage, and e-waste associated with these technologies.

Establish Effective Environmental Data Governance

Identification and adoption of best practices in global and thematic environmental data standards that enable technology and AI-ready environmental data and machine-readable data formats is key for high-quality digital, and specially AI applications. UNEP is in the process of conducting multi-stakeholder consultations to collect insights on the best data governance practices and standards.

UN environment programme

Thank You

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