INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

Geneva, Switzerland
6 November 2026

Contribution by UNEP

to the CSTD 2026-2027 priority theme on
"Data Governance for Development: From Asymmetry to Equitable Stewardship"

CSTD Questionary on "Data Governance for Development: From Asymmetry to Equitable Stewardship"

Input provided by the OCDO

1. **What key challenges do countries face in building and leveraging data capacities, including infrastructure, ownership and stewardship, free and trusted cross-border data flows, interoperability and benefit-sharing? (Please provide examples and, where possible, quantitative evidence or indicators of these challenges and their impacts)**

Through the development of the Global Environmental Data Strategy (GEDS), UNEP identified a set of constraints that reinforce one another. Many countries lack basic monitoring infrastructure, including weather stations, water-quality sensors and air-pollution monitors. Existing networks are often outdated or poorly maintained, while limited connectivity and the high cost of cloud computing and data processing leave institutions dependent on legacy systems.

The more persistent barriers, however, are institutional. Environmental data are often dispersed across ministries and agencies with unclear mandates, weak coordination and few incentives to share. GEDS found that institutional culture, competing priorities and limited political support can be greater obstacles than technology itself.

This pattern was also evident in UNEP's East Africa Transboundary Environmental Data Sharing Initiative. Kenya, Uganda and Tanzania identified institutional, technical and governance barriers that limited the timely exchange of data for flood and drought preparedness. The initiative showed that investment in infrastructure must be accompanied by common standards, clear governance and stronger institutional collaboration.

UNEP country assessments under UN Development Account project 1819Q (2018–2021, with Bangladesh, Burkina Faso, Colombia and Guyana) reached similar conclusions: responsibilities were fragmented, interagency data-sharing mechanisms were weak and trained staff could not apply their skills because the necessary systems and infrastructure were not in place. Interoperability remains a related challenge. Although international standards exist, awareness and implementation are inconsistent, while formats, metadata and terminology differ across institutions and environmental domains. At the national reporting level, this unevenness is visible in how differently countries are able to populate the SDG framework: Austria, for example, reported data on 13 of the 17 SDGs in the first Measuring Progress[1], with nine of those showing positive progress — a level of coverage far beyond what most low- and middle-income countries can currently achieve, reflecting differences in statistical capacity as much as differences in environmental performance.

[1] UNEP's "Measuring Progress" of the environmental dimensions of SDGs https://sdgs.unep.org/MonitoringProgress

Cross-border data sharing also raises legitimate concerns about sovereignty, privacy and the rights of Indigenous Peoples and local communities. At the same time, overly restrictive approaches can limit international environmental cooperation. GEDS therefore highlights the risk of data colonialism, where data are extracted from less-developed regions without fair benefit-sharing, as well as growing dependence on a small number of commercial cloud providers.

Underlying these challenges is a persistent financing problem. Environmental data systems often rely on short-term projects that fund new data collection but not maintenance, institutional capacity or long-term integration into national systems. UNEP itself has linked the SDG data shortfall directly to underinvestment, noting that a significant lack of data has corresponded to a lack of investment toward achieving the environmental dimension of the SDGs — underscoring that the financing gap and the data gap are two sides of the same problem rather than separate issues.

2. How do inequalities affect the way data is generated, collected, governed and used for development? In particular, how do biases in data collection and use, such as gender data gap, affect policymaking, service delivery and development outcomes? (Please provide examples, evidence and any measures being taken to address these disparities)

N/A

3. Based on your organization's work, what national strategies, regulatory frameworks or policy instruments have been effective in promoting equitable and interoperable data governance? What are the lessons learned? (Please describe any specific challenges, failures or successes encountered during implementation)

A key lesson from UNEP's work is that countries do not always need a standalone environmental data strategy. Developing one from scratch can be slow and politically demanding, particularly in lower-capacity settings. In many cases, it is more effective to use existing legal or institutional authority.

Peru's SINIA platform, for example, was operationalized through a 2021 decree based on powers already contained in its General Environment Law. Indonesia's Satu Data framework was established through presidential regulation, while Rwanda uses a whole-of-government data governance framework led by the national statistics office. These cases show that the appropriate instrument depends on the function: legislation is durable but slow; regulations under existing laws are often more practical; strategies are faster but rely on political commitment; and inter-agency agreements can formalize cooperation quickly but are usually less durable.

The failures are equally important. Overly complex frameworks, such as the EU's INSPIRE Directive, can impose requirements that lower-capacity institutions struggle to implement. A minimal common core with flexible national application is often more effective. Short-term

donor projects also tend to fail when they focus on training rather than institutions, overlook local actors, or create dependence on external providers. Similarly, commitments to open data have little effect unless countries define clear exceptions, licensing rules and review mechanisms.

UNEP's work in East Africa reinforces this point: effective data governance depends on clear institutional roles, agreed protocols and interoperable systems, not technology alone.

The Environmental Data Capacity (EDC) Toolkit translates these lessons into practical support for governments. It combines an assessment of existing capabilities, a roadmap of priority actions and a policy guide for embedding decisions in durable governance arrangements. Its starting point is what a country already has, rather than assuming that a new strategy must be created from scratch. The EDC Toolkit is being finalized and will be piloted in early 2027.

4. Can you share examples of initiatives that have helped reduce asymmetries and promote more equitable data stewardship in development sectors such as public services, education, health and agriculture? (Please provide examples, lessons learned and remaining challenges where possible)

N/A

5. What mechanisms or institutional arrangements have proven useful in fostering collaboration on data governance for development among different stakeholders (e.g., university-industry, private-public, or multi-stakeholder initiatives)?

Three broad types of arrangements have proven useful based on the GEDS and EDC Toolkit analysis.

Within government, EDC Toolkit identifies three main coordination models, each with distinct strengths and risks. A lead-agency model can provide clear direction and faster decision-making, but it often becomes a bottleneck when the lead institution lacks technical capacity, political support or the trust of other agencies. Other ministries may also see its role as an intrusion into their sectoral responsibilities.

A networked model distributes responsibility across ministries through designated data focal points. The US Federal Chief Data Officers Council is one example. This approach can build legitimacy and institutional ownership, but it may remain consultative rather than operational when participation is voluntary, decision-making authority is unclear or there is no dedicated secretariat to drive implementation.

A platform-based model coordinates institutions through shared digital infrastructure. Instead of relying mainly on formal authority, it establishes common systems and processes through which data must pass before it can be published or exchanged. This model can scale efficiently and is particularly well suited to routine, high-frequency data flows.

Across the public-private boundary, effective cooperation tends to depend on formal rather than ad hoc arrangements. These may include public-private working groups, advisory panels and technical committees that connect regulatory requirements with corporate reporting systems. The EU's EFRAG Sustainability Reporting Board provides one model. Such arrangements work best when expectations are explicit on both sides, including around data access, attribution, privacy and intended use. Corporate data should not be treated simply as a regulatory input; cooperation also needs to offer clear value to the organizations providing it. The Net Zero Data Public Utility and the EU–Finnfund Africa Connected Programme illustrate how this can work in practice.

A third set of arrangements is needed when commercial sensitivity, privacy or national sovereignty prevents the direct exchange of raw data. In these cases, trust architectures and intermediary structures can enable collaboration without requiring full data transfer. Examples include data trusts, where participants contribute data under common standards in exchange for access to standardized pooled datasets; data spaces such as the European Green Deal Data Space and European Mobility Data Space; trust federations such as GAIA-X and the European Open Science Cloud; and privacy-preserving approaches such as federated learning. The European Commission's Joint Research Centre has demonstrated how these methods can support public-private data reuse.

The broader lesson from GEDS is that governance arrangements are unlikely to work when private companies, academia and civil society are excluded from their design. These actors produce and use a large share of environmental data. Policies developed without them will therefore fail to reflect how the data ecosystem works in practice

UNEP's experience in other projects shows that multi-stakeholder governance mechanisms are essential for effective data governance. Through the East African Transboundary data sharing initiative, UNEP has brought together national ministries, regional organizations, academia, development partners and the private sector to jointly develop environmental data governance frameworks and trusted data-sharing arrangements.

6. What major bilateral, regional, or international partnership have helped advance equitable and interoperable data governance? (Please describe the benefits of participating in these partnerships, as well as any challenges related to coordination, capacity, trust, interoperability or benefit-sharing)

UNEP's collaboration with the East African Community (EAC), IGAD, GIZ, national governments (Kenya, Tanzania and Uganda) and other technical partners has strengthened regional cooperation on environmental data governance.

The SDG framework itself can reasonably be considered a form of international partnership, it was built on a negotiated global consensus among UN member states, and SDG 17 ("Partnerships for the Goals") explicitly frames international cooperation, data-sharing, technology transfer and capacity-building as a foundational mechanism for achieving the other

16 goals. The SDGs established a shared architecture of mutual accountability, common indicators and joint monitoring that countries voluntarily submit to through mechanisms like Voluntary National Reviews.

These partnerships have helped promote trusted cross-border data sharing, institutional coordination, and interoperable environmental data systems. Key benefits include shared expertise, harmonized approaches and stronger regional ownership, while challenges remain in aligning governance frameworks, building institutional capacity, sustaining trust and securing long-term financing.

7. How can international cooperation strengthen equitable and interoperable data governance to ensure that data contributes to shared prosperity and sustainable development? In what ways can the UN CSTD contribute to this effort?

International cooperation can strengthen equitable and interoperable data governance by helping countries align approaches, facilitating trusted cross-border data sharing, and investing in shared digital public infrastructure without limiting national control over data. This is the central proposition of GEDS: cooperation should be voluntary, enabling and focused on convergence, rather than creating new standards or reporting obligations.

In practice, this means supporting interoperability across existing systems, improving access to high-value datasets and enabling federated data infrastructure. UNEP proposes an Expert Group on Environmental Data Interoperability to encourage convergence around viable formats, metadata, semantic resources and machine-to-machine protocols, while building on existing initiatives rather than duplicating them. It also proposes a Global Environmental Data Utility to help under-resourced actors, particularly in the Global South, access priority datasets at low or no cost. Through WESR, UNEP flagship data platform, Member States could host and analyse data locally while contributing selected data and services to a wider system under their own licensing and consent arrangements.

At the national level, the Environmental Data Capacity Toolkit translates this model into practical tools that countries can adapt to their own institutions and priorities. The broader principle is simple: shared tools and greater interoperability, combined with sovereign implementation.

The CSTD could support this effort by convening Member States, UN entities and technical organizations around practical areas for cooperation. It could help identify the needs of developing countries, encourage voluntary pilots, share lessons across regions and connect environmental data governance with wider discussions on digital infrastructure, capacity and development. This role is not explicitly assigned to the CSTD in GEDS, but it follows from the Strategy's reliance on Member State uptake, partnership and implementation.

<u>Contacts:</u>

Polina Koroleva, Associate Data Scientist, UNEP (polina.koroleva@un.org)

Irene Mwoga, Digital Transformation Sub Program Coordinator for Africa (irene.mwoga@un.org)

Dany Ghafari, Statistician/Programme Management Officer (dany.ghafari@un.org)