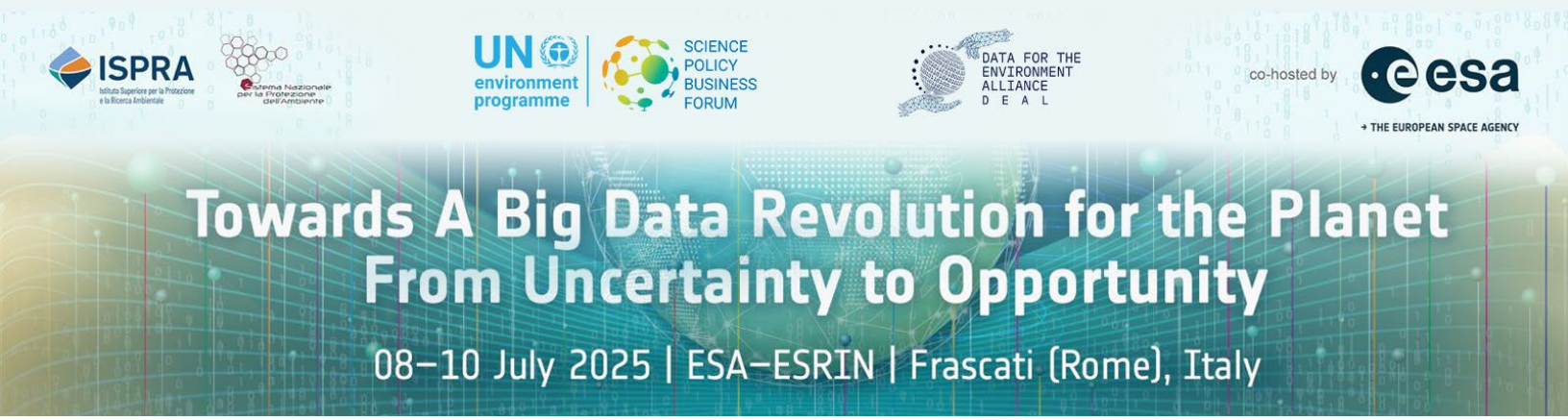

The Frascati Principles and Pathways for Environmental Data

An Expert Multi-Sector Perspective

Contributions to the GEDS Revision

I. EXECUTIVE SUMMARY

This interim document reflects early expert contributions from the UNSPBF-DEAL High-Level Expert Group on Environmental Data (HLEG), following its convening in Frascati from 8 to 10 July 2025.

It presents elements from a draft set of Frascati Principles and an initial group of illustrative Pathways, developed through expert discussion and breakout sessions.

These contributions aim to inform ongoing efforts to improve global environmental data governance, including but not limited to the July 2025 revision of the UN Global Environmental Data Strategy (GEDS).

The global environmental data landscape remains highly fragmented, uncoordinated, and increasingly misaligned with the needs of decision-makers. While the availability of environmental data has expanded, the systems that produce, manage, and disseminate it often lack interoperability, consistency, and governance.

This not only hampers the effectiveness of environmental monitoring and policymaking but also undermines trust, credibility, and access. The Frascati process was convened in response to these challenges, with the aim of identifying principles and initial directions that can support coherent, usable, and trusted environmental data systems.

To inform this process, the HLEG drew on insights from the 2023 Vienna Expert Group on Environmental Data. A structured survey conducted with 145 expert respondents prior to the Vienna meeting provided a strong empirical foundation.

Of these, eighty-one percent of respondents agreed on the need for more integrated, interoperable systems. Ninety-eight percent believed that a UN-led strategy would be beneficial. The top priorities emerging from the survey included data quality, interoperability standards, data access and availability, and independent assurance. Importantly, respondents also strongly

supported the integration of private sector sustainability disclosure data into public systems, under strong governance conditions.

The draft Frascati Principles reflect a shared commitment to developing environmental data infrastructures that are usable, credible, and aligned with diverse institutional needs. They call for:

- Governance models that ensure transparency, modularity, and alignment with FAIR, CARE, and TRUST frameworks
- Accessibility and usability across geographies, languages, and technical capacities
- Ethical integration of Indigenous and citizen-generated data, supported by safeguards and validation protocols
- Prioritization of data that informs environmentally-sound regulatory, policy, and investment decision-making
- Shared governance frameworks involving UN agencies, Member States, academics, civil society, citizen science and private sector institutions through the DEAL and UNSPBF mechanisms.
- Long-term infrastructure investment and capacity building
- Independent verification, metadata traceability, and quality assurance mechanisms

While these Principles are not exhaustive or final, they provide a foundation for further institutional and technical development. They are also an effort to articulate a vision for global environmental data governance that remains responsive to shifting geopolitical conditions, including the growing emphasis on national data sovereignty and the limitations of consensus-based processes.

A set of illustrative Pathways were also developed during the Frascati meeting. These are not to be taken as formal recommendations, but rather as starting points for expert elaboration and future collaboration. Of these, several address one or more of the following GEDS priorities: Priority 2 (Data Quality), Priority 4 (Interoperability), Priority 5 (Sustainability Disclosures), and Priority 9 (Country Pilots and Capacity Building).

They include: a UN Data Backbone to coordinate federated data systems; a UN Open Data Common Agreement to enable modular legal and technical interoperability; a Human and Earth Data Nexus to integrate citizen and Indigenous science; a Data Trust Pathway focused on assurance and provenance; and an Upscaling of the Development Data Partnership to expand private data access for the public good. These directions are indicative and will be further refined by the expert community.

Beyond technical improvements, the Frascati discussions underscored a broader institutional shift. Environmental data has become central to how societies regulate, finance, and respond to planetary risks. Financial markets, corporate actors, and regulators now depend on high-quality environmental data to evaluate progress against climate and biodiversity goals and assess exposure and price risk. Yet they operate within a fragmented, opaque data landscape that limits accountability and trust.

Participants emphasized that the GEDS, and any future data strategy, must confront this reality. By building credible, shared infrastructures, promoting verifiable standards, and enabling open access to assured environmental data, global institutions can create conditions for more meaningful public and private environmental action. The Frascati Principles address these needs by calling for institutional clarity, provenance protocols, and safeguards for integrating corporate disclosure data. According to the Vienna survey, 89 percent of respondents supported integrating such data into public systems, while calling for strong regulatory backing, standardization, and public oversight.

If implemented, this approach can lower barriers to entry, reduce duplication, and enable cross-jurisdictional comparability. It can support regulatory harmonization, informed decision-making, and strategic investment. More importantly, it can restore confidence in the environmental information systems that underpin global governance.

A final Frascati Principles and Pathways position paper will be released in September 2025.

II. THE FRASCATI PRINCIPLES FOR ENVIRONMENTAL DATA – MULTI-SECTOR EXPERT PERSPECTIVE

VISION AND STEWARDSHIP

1. Promote shared resources for all users and for the common good, through long-term multistakeholder partnerships anchored in UN stewardship.
2. Ensure transparency to enable accountability, including on the environmental footprint of data, as well as build and defend credibility and trustworthy data across the whole ecosystem.
3. Be supported by global and regional governance frameworks, reflecting national focus.
4. Be supported by comprehensive means of implementation, in accordance with the 2030 Agenda.

ETHICS AND QUALITY

5. Be flexible, agile, and modular to encourage innovation and continuous improvement, adhering to FAIR, CARE, and TRUST ethical principles.[1]
6. Be designed to be fit-for-purpose, with clear goals that are effectively communicated to data users, and ensure transparency in data provenance, methodology, and models.
7. Be human-centric, incorporating data on the nexus of human and environmental health, and building in indigenous and citizen science data as part of its core approach.

ACCESS, INCLUSION, AND USABILITY

[1] FAIR data principles refers to Findable, Accessible, Interoperable, and Reusable. CARE refers to Collective benefits, Authority to control, Responsibility, and Ethics. The TRUST principles for digital repositories stand for Transparency, Responsibility, User-focus, Sustainability and Technology.

8. Ensure that scientific insights are clearly linked to policy to inform current and future decision-making.
9. Prioritize equity and inclusivity while building capacity and increasing technical and leadership competencies across the data community.
10. Promote accessibility and discovery across the data ecosystem, building redundancy into the data ecosystem to defend against single failure points, and being mindful of data monopolies.
11. Ensure systems are simple and easy to use for all end-users to engage, based on co-design principles, to foster trust and uptake.

INTEROPERABILITY AND PARTNERSHIPS

12. Improve harmonization by adopting the most suitable standards to enhance interoperability and break down systemic silos.
13. Actively engage and recognize the vital role and accountability of industry and the private sector, including SMEs, and encourage new public-private partnership opportunities.
14. Incentivize both public and private investments in line with accountability, transparency and reporting frameworks.

URGENCY AND ACTION

15. Recognize the urgency of actionable knowledge for the environmental crises and encourage the data community to accelerate strategic pilots that demonstrate the power of data to support policy implementation.

III. DRAFT FRASCATI PATHWAYS

1. UN DATA BACKBONE FOR SUSTAINABLE DEVELOPMENT

Frascati Principle: 1
GEDS Priorities: 4 (Interoperability), 9 (Pilots and Capacity Building)

- **Establish a UN-led comprehensive, unified, interoperable data infrastructure that enhances the use, reuse, and value of environmental data from multiple sectors**.

  This will accelerate progress toward the SDGs by enabling data-driven decision-making, fostering long-term partnerships, and ensuring efficient resource use **and higher levels of accountability**.

Key actions:

- UNGA Endorsement and high-level political commitment
- Design of a federated, interoperable common platform

- Pilot programs in health and environment sectors
- Partnerships with private sector, academia, NGOs
- Capacity building in data governance and use
- Alignment with data protection frameworks (e.g., GDPR)
- Resource pooling and joint funding mechanisms
- Incentives for interoperability
- Impact metrics for performance tracking

Actors involved: UN agencies, national governments, Multi-sectoral networks organized and/or coordinated under UNSPBF including: tech firms, data providers, academic and research institutions, standards bodies (ISO), financial institutions.

Timeline:

- Year 1: UNGA endorsement, governance framework, pilot launch
- Year 2–3: Platform development, training rollout
- Year 4: Expansion to new sectors
- Year 5: Full implementation across UN system

Challenges: Political consensus, long-term funding, privacy compliance, technical complexity, infrastructure cost.

Outcome: Integrated, efficient UN data architecture that reduces redundancy, accelerates SDG progress, and builds trust.

2. UN OPEN DATA COMMON AGREEMENT

Frascati Principles: 2 and 5
GEDS Priorities: 2 (Data Quality), 4 (Interoperability)

- **Establish a UN-led transparent, modular, and agile data-sharing framework grounded in FAIR, CARE, and TRUST principles.**

Key actions:

- Launch pilot topics for testing
- Develop modular legal architecture that respect set principles of sovereignty and cooperation
- Introduce compliance tools
- Develop cloud-agnostic data governance and verification
- Establish a multi-sector working group on policy and compliance mechanisms to ensure equity and inclusivity of the environmental data ecosystem
- Institutionalize modular tools across sectors

Actors involved: Data owners and users, legal experts, open-source communities, standards bodies, policy stakeholders

Timeline:

- Year 1: Pilots and legal drafts
- Year 2–3: Expansion and compliance tooling
- Year 4–5: Scaling, evaluation

Challenges: Licensing, IP protection, funding, cloud strategies, principles governing sovereignty and sensitive data

Outcome: Unlocks data silos, supports innovation, increases accountability, and makes UN data ecosystems more accessible.

3. HUMAN & EARTH DATA NEXUS: INDIGENOUS AND CITIZEN SCIENCE INTEGRATION

Frascati Principle: 7
GEDS Priorities: 9 (Pilots and Capacity Building)

- **Empower communities to co-create and contribute data reflecting local realities, especially in health and environmental monitoring.**

Key actions:

- Co-design data themes with communities
- Partner with Indigenous alliances (e.g., GEO, SIRGE)
- Build capacity and stewardship tools
- Align ontologies between local and global systems
- Embed ethical principles, data verification and data sovereignty

Actors involved: GEO Indigenous Alliance, SIRGE, local communities, UN agencies, academics, citizen science networks.

Timeline:

- Year 1: Partner engagement and workshop design
- Year 2–3: Protocol testing and integration pilots
- Year 4–5: Institutionalization

Challenges: Balancing epistemologies, third-party verification methodologies and tools, digital access, trust-building, long-term funding.

Outcome: Broadens data inclusion, enhances local-global alignment, and supports inclusive, actionable knowledge.

4. BUILDING DATA TRUST: A PATHWAY TO INFORMED ACTION

Frascati Principle: 6
GEDS Priorities: 2 (Data Quality), 5 (Product Sustainability Disclosures)

- **Create trusted, transparent data systems that provide a single source of truth for decision-makers across sectors.**

Key actions:

- Develop provenance, third-party verification and transparency standards
- Implement expiration and quality assurance policies
- Support stakeholder co-design and user guidance
- Pilot real-world applications with major partners

Actors involved: UN agencies, regulators, industry and private sector actors, scientific bodies, standards organizations, rating agencies, tech firms, telecoms, national governments, local actors.

Timeline:

- Year 1–2: Standards and pilot programs
- Year 3–5: Full deployment

Challenges: Political buy-in, industry coordination, third-party verification methodologies, standards and tools, ethical risks, need for steady funding.

Outcome: Builds user confidence, reduces misinformation, and fosters consistent, data-informed action.

5. UPSCALING THE DEVELOPMENT DATA PARTNERSHIP

Frascati Principles: 1 and 13
GEDS Priorities: 4 (Interoperability), 5 (Product Sustainability Disclosures), 9 (Pilots and Capacity Building)

- Build upon an existing successful initiative by augmenting and upscaling the Development Data Partnership (DDP) in order to foster cooperation between private tech companies and civil society, facilitate access to environmental data, and create new public-private partnership opportunities, all for the global public good.

Key actions:

- Create coherence by examining opportunities to build on the existing World Bank and UNDP/UNESCO Development Data Partnership (DDP) if feasible and lessons learnt from that process.
- Leverage private sector data for public good
- Streamline legal frameworks and certification mechanisms
- Broaden geographic scope and sectoral themes
- Link data use to SDG monitoring and crisis response

Actors involved: UN agencies, UNSPBF, DEAL, World Bank, IMF, IADB and other development banks, regional banks, private firms (already more than 30 companies and partners in the DDP), academia, and civil society groups.

Timeline:

- Year 1–2: UNEP integration into the partnership and framework expansion
- Year 2–3: Broaden partner base and thematic scope

Challenges: Trust-building across sectors, balancing commercial/non-commercial data, coordination logistics, Transparency and Disclosure.

Outcome: Enhances private data access for development, avoids duplication of efforts, and positions the UN as a facilitator of existing solutions.

In collaboration with