

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

**Geneva, Switzerland
6 November 2026**

Contribution by Indonesia

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

DISCLAIMER: The views presented here are the contributors' and do not necessarily reflect the views and position of the United Nations or the UN Trade and Development.

SUBMISSION BY INDONESIA

Inputs to the Secretariat Questionnaire for the 30th Session of the UNCSTD

I. INTRODUCTION

Data governance has become a core development issue because data is not only an input for digital services, but also a strategic resource for research, artificial intelligence (AI), public service, and the achievement of SDGs. Yet the capacity to collect, store, process, and monetize data remains highly concentrated. Many developing countries generate large volumes of data but participate only marginally in the higher-value stages of the data economy. Indonesia therefore supports a development-oriented approach to data governance.

Some elements that need to be highlighted:

- Addressing data and digital gap requires investment in domestic and regional data infrastructure, statistical and computing capacity, and research institutions.
- Data sovereignty should enable countries to determine appropriate conditions for the collection, access, storage, processing, reuse and international transfer of data, and protect legitimate national policy space.
- Developing countries should be able to move up the data value chain, from raw data generation to domestic processing, research, analytics, AI development and locally retained economic and social value.
- The CSTD could be the platform to enhance practical capacity-building, sustainable financing, South-South cooperation, fair participation in standard-setting.

II. RESPONSES TO THE SECRETARIAT'S QUESTIONNAIRE

1. Can you share challenges that your country faces in building and leveraging data capacities, including issues related to infrastructure, ownership and stewardship, free and trusted cross-border flows, and benefit-sharing?

Indonesia has established a solid legal and institutional framework through :

- Presidential Regulation No. 39/2019 on One Data Indonesia establishes a whole-of-government framework for high-quality, interoperable and accountable public-sector data.

- Law No. 27/2022 on Personal Data Protection strengthens the rights of data subjects and the obligations of data controllers and processors, including for cross-border transfers.
- BRIN's National Scientific Repository (Repositori Ilmiah Nasional/RIN) and related research computing capacity provide an important foundation for the preservation, sharing and responsible reuse of scientific data

Indonesia faces interrelated challenges:

First, infrastructure and device access remain uneven across a large archipelagic country.

According to official national telecommunications statistics/BPS (2024), digital accessibility and readiness remain heavily mobile-dependent and structurally uneven across regions and income tiers:

- 72.78% of the Indonesian population accessed the internet.
- 68.65% of individuals owned/possessed a mobile phone.
- Only 18.52% of households owned a computer/laptop.
- Only 0.99% of households retained fixed-line telephone connections.

Second, data quality and interoperability vary across sectors and levels

This low household computing footprint limits advanced data processing capabilities and data literacy outside major urban centers.

Concurrently, PDP Law No. 27/2022 elevates trusted cross-border data flows, international transfer safeguards, adequacy standards, and digital trust to central national policy priorities.

The *Satu Data Indonesia* framework mandates the enforcement of common data standards, standardized metadata, unified reference codes, and system interoperability to address uneven implementation across line ministries, regional governments, and sectors.

Third, the governance of scientific, biodiversity, genomic and digital sequence information raises questions of sovereignty, provenance and benefit-sharing.

In scientific research and innovation, safeguarding data sovereignty over national biodiversity and genomic assets against uncompensated extraction (*biopiracy*) is critical.

- National Scientific Repository (RIN) Breakthrough: The National Research and Innovation Agency (BRIN) operates the RIN platform built on *Open Journal System* and *Dataverse* architectures, supported by High-Performance Computing (HPC) supercomputing facilities. RIN serves as national infrastructure for storing,

processing, and securing R&D data assets. . Indonesia, as a megadiverse country, has a strong interest in open science that advances knowledge while preventing uncompensated extraction of biological and genetic value.

- Access and Benefit-Sharing (ABS) Stewardship: BRIN enforces strict ABS protocols governing national biological and genetic data. International scientific partnerships involving Indonesian genomic data must include explicit data licensing, technology transfer agreements, and equitable benefit-sharing mechanisms returned to the nation. Benefits from the use of digital sequence information should be shared fairly and equitably.

2. How are inequalities embedded in the processes through which data is generated, collected and used? In particular, how do biases such as the gender data gap affect policymaking, service delivery and development outcomes?

Data inequality reflects underlying social and economic inequality. Populations with limited connectivity, lower digital literacy, less formal interaction with government or markets, are more likely to be misclassified or poorly represented in datasets. In Indonesia, particular attention is required for remote and island communities, women and girls, persons with disabilities, informal workers, micro and small enterprises.

Indonesia has achieved measurable progress in generating sex-disaggregated statistics, though closing the gender data gap remains an ongoing institutional priority. BPS reported that Indonesia's Gender Inequality Index (GII) dropped to 0.421 in 2024. Furthermore, female labor force participation improved at a faster rate than male participation, proving that granular data enables precise diagnosis of socio-economic disparities.

Significantly, 2024 marked the first year BPS successfully published GII metrics across all 38 provinces. This milestone was realized due to enhanced availability and integration of sex-disaggregated data from sub-national legislative bodies. This progress underscores that data asymmetry stems not only from social inequality but also from uneven data production across territories; bridging these gaps directly refines policy targeting in public health, social protection, employment, and political representation.

With the rapid expansion of Artificial Intelligence (AI), biased data collection poses severe risks of perpetuating *algorithmic bias*. BRIN developed an *Ethical Scientific Data Audit Framework* alongside curated local linguistic and cultural datasets as an inclusive AI & Ethical Data Audit Breakthrough. Through its Research Center for Data Science and Informatics, BRIN tracks sex-disaggregated indicators in human resources for science and technology, ensuring national AI models are trained on representative datasets.

3. Has your country implemented national strategies, regulatory frameworks or policy instruments to promote equitable and interoperable data governance? What lessons have been learned?

Indonesia's core framework combines One Data Indonesia, personal data protection, electronic government interoperability and the integration of national digital services. These instruments seek to improve data quality and reuse while maintaining security, accountability and legal safeguards.

- a. One Data Indonesia is based on four operational principles: data standards, metadata, interoperability, and the use of reference codes and master data. Its institutional architecture includes a Steering Council, a national Secretariat coordinated by the Ministry of National Development Planning/Bappenas, designated Data Stewards (Pembina Data), Data Custodians (Walidata) within central and regional institutions, Data Producers, and national and subnational One Data Forums.

The primary lesson learned is that technical interoperability does not occur automatically; it demands rigorous metadata compliance, multi-tiered validation, and sustained inter-institutional coordination.

- b. Education Sector Case Study: The national school database (Dapodik) managed by the Ministry of Education provides concrete evidence. The 2026 national coordination report showed a synchronization rate of 98% with a data quality score of 84.9.

This indicates that structural data governance is operational, though continuous improvements are required regarding data validity and completeness in remote border areas. Data quality requires recurrent investment. Metadata, validation, deduplication, updating and stewardship are continuing functions, not one-time digitization projects

- c. Open Research Data Policy & FAIR Principles: BRIN instituted a mandatory Open Research Data Policy for all publicly funded scientific research adhering strictly to FAIR principles (Findable, Accessible, Interoperable, Reusable). BRIN integrates the RIN platform directly into the SDI architecture as the national scientific data clearinghouse, preventing R&D budget duplication and accelerating technology transfer. It also shows that Sovereignty and interoperability can be mutually reinforcing. Clear national classifications, standards and authority make trusted sharing easier; ambiguity and weak

oversight make both domestic and international exchange riskier.

4. Can you share Indonesia's experience in reducing asymmetries and promoting more equitable data stewardship in public services, education, health, agriculture and other development sectors?

Indonesia demonstrates strong sectoral integration to eliminate information asymmetries:

Sector / initiative	Contribution to equitable stewardship	Remaining priorities
Health – SATUSEHAT	Integrates and standardizes data across health facilities and supports near-real-time analysis for services and policy. Public and restricted access are differentiated, with privacy, security and audit controls.	Data quality across facilities; clear secondary-use rules; patient rights; interoperability with local systems; equitable access in remote areas.
Education – Dapodik and PDDikti	National education databases improve visibility of schools, students, teachers and higher-education institutions and support planning, accreditation and resource allocation.	Accuracy and timely reporting; correction mechanisms; protection of children's data; reducing administrative burden; inclusion of remote institutions.
Agriculture – sectoral data and farmer systems	Linking farmer identity, land and programme data can improve targeting of extension services, inputs and subsidies and support food-security planning.	Avoiding exclusion caused by incomplete registration;; offline access; validation of land and identity data; transparent eligibility rules.
Science and innovation – RIN and research computing	National research repositories strengthen preservation, discoverability and reuse of scientific data and can reduce duplication in publicly funded research.	Sustainable funding; discipline-specific standards; sensitive-data governance; researcher incentives; licensing; sovereign and equitable access to compute.
BRIN's Research Organization for Aeronautics and Space, the agency manages the National Remote Sensing and Earth Observation Data Bank via the National Satellite Data Infrastructure.	providing high-resolution satellite imagery and earth observation datasets free of charge to line ministries, regional governments, and universities. BRIN democratizes access to spatial data for key strategic applications (such as tracking forest fires, predicting crop yields, planning land use, and mitigating disasters) without incurring high commercial costs.	Timely access for local authorities; interoperability with sectoral systems; long-term archives; local analytic capacity; responsible access to high-resolution data.

5. What mechanisms or institutional arrangements are in place to foster collaboration among government, academia, industry, civil society and other stakeholders?

Indonesia's data governance architecture delineates clear institutional roles:

1. Data Trustee (*Pembina Data*): BPS (Statistical Data Steward) and Geospatial Information Agency/BIG (Geospatial Data Steward).

2. Data Coordinator (*Koordinator Data*): Bappenas (Managing the National SDI Secretariat).
3. Data Custodian (*Walidata*): Ministry of Communication and Digital at the central level and regional Communication & Information Departments (*Diskominfo*) tasked with collecting, validating, managing, and disseminating data.
4. Data Producers (*Produsen Data*): Operational units in ministries, agencies, and regional departments.

This architecture is operationalized locally through regional One Data Forums convening Bappeda, regional BPS offices, and local Diskominfo. Key lessons indicate that institutional mandates must be supported by technical capacity building, routine data validation, and clear accountability mechanisms.

BRIN contributes to the science, technology and innovation data ecosystem through research repositories, data services, computing infrastructure, research collaboration and the development of evidence for public policy.

- BRIN as Data Steward for Science and Technology: Under the SDI framework, BRIN officially serves as the national Data Steward (*Pembina Data*) for Science, Technology, and Innovation (STI).
- Triple-Helix Data Collaboration: BRIN pioneered a Triple-Helix partnership model (Government-Academia-Industry). Utilizing RIN infrastructure and co-working research schemes, BRIN grants private enterprises access to verified scientific datasets for commercial innovation while safeguarding intellectual property rights and national data sovereignty.

6. What major bilateral, regional or international partnerships has Indonesia engaged in to foster equitable and interoperable data governance?

- ASEAN Regional Level: Indonesia plays a key role in implementing the *ASEAN Digital Masterplan 2025* and negotiating the *ASEAN Digital Economy Framework Agreement* (DEFA) to harmonize digital trade rules and cross-border data flows. Indonesia also advocates regulatory sandboxing to test emerging technologies in a secure environment.
- Global Level: Indonesia was the first ASEAN country to complete UNESCO's *AI Readiness Assessment Methodology* (RAM AI), linking data governance, AI ethics, and trusted data flows. Indonesia actively contributes to UN CSTD consultations on Data Governance for Development.
- Global Scientific Data Network: Indonesia actively play role in global scientific consortia, including the *Global Biodiversity Information Facility* (GBIF), *Group on Earth Observations* (GEO), and *Committee on Data for Science and Technology* (CODATA), including by advocating for fair recognition of *Digital Sequence*

Information (DSI) under the Kunming-Montreal Global Biodiversity Framework and Nagoya Protocol, ensuring global scientific data sharing respects origin country rights.

- National level : Indonesia has developed Satu Data Indonesia (SDI) as an implementation model for development-oriented data governance

Satu Data Indonesia (SDI) provides a relevant example of how data governance principles can be translated into institutional practice in national context. Established through Presidential Regulation No. 39/2019, SDI creates a whole-of-government framework to improve the quality, accessibility, interoperability, and accountability of public-sector data. It operationalizes data governance through common data standards, metadata, interoperability requirements, reference codes, master data, and defined institutional roles such as data producers and data stewards.

SDI is also develop open data portal, data.go.id and National Data Catalog System, managed by the Ministry of National Development Planning/Bappenas. The portal functions as a convergence point for government data and supports transparency, accountability, and evidence-based national development planning. In addition to dataset publication, SDI has developed practical tools such as Data Insight dashboards covering areas including regional budgets, stunting, poverty, investment, education, environment, infrastructure, and food security.

Indonesia's experience also demonstrates the importance of harmonizing national and subnational data systems. Through the development of reference codes for development indicators, SDI supports alignment between national planning documents, SDGs, regional indicators, and sectoral systems. This approach helps reduce duplication, improve comparability, and strengthen the use of data for planning, monitoring, and evaluation.

7. How can international cooperation strengthen equitable and interoperable data governance, and how can the CSTD contribute?

International cooperation should recognize that countries enter the data economy with very different levels of infrastructure, institutional capacity, market power and fiscal resources. A formally identical rule may produce unequal outcomes when implementation capabilities are highly asymmetric. International cooperation should focus on bridging digital capacity divides, establishing interoperable global metadata standards, developing rights-based

cross-border data transfer rules, and strengthening the technical capacities at the national level.

The UN CSTD can contribute significantly by:

1. Publishing comparative data governance guides and documenting country best practices.
2. Fostering consensus among developing nations around interoperability standards.
3. Translating the *Global Digital Compact* (GDC) into actionable national data governance toolkits.
4. Supporting national SDI implementations, data quality audits, and cross-sectoral integration across health, education, and agricultural data ecosystems.

Some Recommendations for UNCSTD:

1. Global Scientific Digital Public Infrastructure (DPI): UNCSTD should promote global standards for Open Science Data governance that do not financially disadvantage research institutes in developing countries.
2. Equitable Benefit-Sharing Framework for Genomic Data: CSTD should draft international guidelines on genomic data stewardship and traditional knowledge to ensure global biological data utilization is tied to fair Access and Benefit-Sharing (ABS) mechanisms.
3. Data Quality & AI Audit Capacity Building: Establish technical assistance programs to empower research and statistical bodies in developing nations to conduct data quality audits and mitigate algorithmic AI bias.
4. South–South and triangular cooperation: peer-learning networks and regional pilot projects, compilation of best practices
5. Capacity and financing facility: Coordinated technical assistance and financing for statistical systems, regulators, public data infrastructure and skill.

The CSTD is well placed to connect the implementation of the Global Digital Compact with the development mandate of the United Nations. Its comparative advantage lies in convening Member States and stakeholders around concrete development questions, translating principles into implementable options, and ensuring that the perspectives and capacities of developing countries shape global data governance.

III. CONTACT POINT

a. Prof. Dr. Ir. Anugerah Widiyanto, B.Sc., M.Eng.

Director of Economic, Employment, and Regional Development Policy

National Research and Innovation Agency (BRIN)

Address: Jl. M.H. Thamrin No. 8, Jakarta 10340, Indonesia

WA: +6285959941705

Email: anug001@brin.go.id

b. Nurul Sofia

Minister Counsellor/ Coordinator for Economic Affairs I

Permanent Missions of the Republic Indonesia

Email : Sofia.nurul@mission-indonesia.org