

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

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Contribution by GEO

to the CSTD 2023-2024 priority theme on “Data for Development”

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## PRIORITY THEME 1: Data for Development

### United Nations Commission on Science and Technology for Development (CSTD)

To whom it may concern

The [26<sup>th</sup> CSTD annual session](#) selected “Data for Development”, as one of the priority themes for its 27th session (2023-24 period).

Data, including for scientific and research purposes, are becoming a key strategic resource for sustainable development. If well managed, data can help overcome major global development challenges, such as poverty, food security, climate change, disaster risk management, and pandemics. If badly handled, they can generate unequal development outcomes. General Assembly’s resolution 77/150 of 14 December 2022 noted that the Commission on Science and Technology for Development could explore the connection between data and sustainable development, including data governance, while taking into account the multiple dimensions of data. The development implications of data, including data quality, data capabilities, and responsible data handling should also feature prominently in discussions about the Global Digital Compact and in the Summit of the Future, adding to the relevance of the CSTD’s perspectives on this issue as the UN focal point for STI for development.

Under this theme, the Commission will consider issues such as major contributions and risks of data in relation to the achievement of the 2030 Agenda for Sustainable Development; how to ensure that developing countries benefit from the data revolution while considering risks; national and international policies and support measures that can help address the challenges of the developing countries in the area of data relevant for sustainable development, while taking into account the multiple dimensions of data.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting to be held in the second half of October 2023 in Portugal. In this context, we would like to solicit inputs from international organizations, UN entities and agencies, and regional commissions on this theme. We would be grateful if you could kindly answer the following questions based on your organization’s work at the global, regional, and/or national levels:

1. What are the major contributions and risks of data in relation to the achievement of the 2030 Agenda for Sustainable Development?
2. How can developing countries benefit from the data revolution while considering risks?
3. What national and international policies and support measures can help address the challenges of the developing countries in the area of data relevant for sustainable development, including scientific and research purposes, data quality, data capabilities and data governance, while taking into account the multiple dimensions of data?
4. What could be the role of the CSTD as part of the overall work on the UN in the field of digital data?

Please indicate contact person(s) responsible for projects/policies and international collaboration in this context in case we need clarification on the inputs.

Please send your responses and any further inputs on the theme to the CSTD secretariat ([stdev@unctad.org](mailto:stdev@unctad.org)) by **15 August 2023**. We look forward to receiving your valuable inputs.

Sincere regards,

CSTD secretariat

1. What are the major contributions and risks of data in relation to the achievement of the 2030 Agenda for Sustainable Development?

The Group on Earth Observations (GEO) has an initiative called **Earth Observations for the Sustainable Development Goals (EO4SDGs)**. EO4SDGs continues to demonstrate practical and innovative uses of Earth observations, building capacity, promoting data access, and supporting country and stakeholder adoption, especially in enabling the use of Earth observations in broader ways to inform decisions and actions.

For instance, EO4SDG has been instrumental in helping UN custodian agencies enhance their SDG indicator monitoring guidelines through the use of Earth Observations, leading to advancements in method development and data availability. In particular, collaborations with UN Environment on Indicators 6.6.1 (spatial extent of water-related ecosystems) and 6.3.2 (ambient water quality), with UNCCD on Indicator 15.3.1 (proportion of degraded land per total land), and with UN Habitat on Indicator 11.7.1 (average share of the built-up area of cities that is open space for public use) enabled these 4 indicators to be recognized as conceptually clear with internationally accepted methodologies. In addition, the Initiative contributed input to UN Habitat's SDG 11 Synthesis Report on Sustainable Cities and Communities.

The initiative also provides technical and other guidance for SDG relevant projects developed under the other 48 GEO projects, serving a coordination role to GEO's overall service to the SDGs. Important lessons have been learned in GEO's experience in implementing the SDGs, which are captured below.

Major Contributions of Data:

- **Informed Decision-Making:** Data plays a crucial role in providing evidence-based information to policymakers, governments, and stakeholders. Access to accurate and timely data enables better decision-making processes and ensures that actions taken are aligned with the goals of the 2030 Agenda.
- **Monitoring Progress:** Data serves as the foundation for monitoring and evaluating progress towards the SDGs. It allows us to track various indicators, assess trends, and identify areas where additional efforts are required to achieve the targets.
- **Identifying Priorities:** Data analysis helps in identifying priority areas and understanding the specific challenges faced by different regions or communities. This information is vital in allocating resources and designing targeted interventions to address the most pressing issues.
- **Accountability and Transparency:** Data-driven reporting promotes accountability among governments and stakeholders. It facilitates transparency in the implementation of policies and actions, fostering a sense of responsibility towards achieving the SDGs.
- **Innovation and Research:** Data serves as a valuable resource for researchers, scientists, and innovators working towards sustainable development. It allows them to gain insights, identify patterns, and develop innovative solutions to address complex challenges.

Major Risks of Data:

- **Data Quality and Reliability:** Ensuring the accuracy and reliability of data is essential for meaningful decision-making. Inaccurate or biased data can lead to flawed analyses and misguided policy implementations.
- **Data Accessibility and Inequality:** Data accessibility varies across regions and communities, leading to potential disparities in understanding the progress of SDGs and in implementing

appropriate measures. Efforts must be made to bridge the data gap and promote equal access to information.

- In continuation of the point above, it is not just access to data but opportunities to use this data. Even when it is available without restriction and with a global coverage (Landsat, Copernicus) but with limited opportunities for processing (everyone can download a few scenes, but not everyone is able to continuously process peta or terabytes of data to create an operational service). This leads to inequalities.
- Siloes and fragmentation: Despite the peta-bytes of Earth observations data now available there is still fragmentation, redundancy, and gaps in vital information for the most vulnerable communities, and we are not yet providing systematic support to MEAs, nor scaling up proven operational services at scale.

## 2. How can developing countries benefit from the data revolution while considering risks?

GEO has been supporting Member States consider risks, and benefit from the data revolution, by advancing integrated solutions through its portfolio of 48 projects that are co-designed with the users along the Earth observations value chain.

Our most recent effort, in support of SDG 11, the [Global Heat Resilience Service](#) has GEO convening partners to develop a service that will provide every urban area in the world with intelligence on the health risks from exposure to extreme heat. These insights will help cities develop plans to adapt to heat and reduce the impact on citizens' health and local economies. This user-oriented, trusted, free and open-access decision-support tool will allow cities to collect, analyse and integrate global, regional and local data and knowledge, on weather, health, demographics, the built environment, infrastructure and the social factors to be able to better understand the health-risks from extreme heat. Input data will come from Earth observations (satellites and in-situ measurements), existing statistical and geospatial data, local surveys and field measurements. Citizen-science and data collection initiatives will offer the opportunity to empower communities, including young people, to contribute to developing knowledge on heat vulnerability in their cities.

Other examples include **GEO GLAM's** work with Uganda to provide a crop monitoring system that provided early warning system that helped unlock millions of dollars in financing and benefit 90,405 households. With another GEO project (**GEO GloWS**), with support from Green Climate Fund (GCF), the Government of Malawi established a Community-Based Flood Early Warning System that deployed and immediately tested during Tropical Storm Ana and Tropical Cyclone Gombe, providing a 15-day lead time rather than a few hours. The Government's post-flood cost analysis found that the service reduced the disasters' financial impact by 40 percent compared to similar floods. Additionally, not a single loss of life was reported.

Over the past two decades, GEO has learned important lessons through its experiences in working for the greater availability, access and use of Earth observations:

- **Strengthen Earth Observation Systems:** Developing countries can invest in building and strengthening their Earth observation systems. This involves deploying and maintaining satellite constellations, ground-based sensors, and other monitoring infrastructure to collect valuable data about the Earth's surface, atmosphere, and oceans.
- **Access to Global Earth Observation Data:** Participating in international Earth observation initiatives and collaborating with organizations like GEO can provide developing countries access to a wealth of global data. These platforms offer shared data repositories and tools for analysis, as well as decision-ready data, enabling governments to benefit from a broader range of information.

- Co-design solutions based on EO data. An organization like GEO enables its Members to participate in the transformation of raw data into actionable information. It gives the possibility to everyone to make their voices heard and co-develop solutions that fit their needs.
- Applications for Sustainable Development: Encouraging the development of applications and tools that use Earth observation data for sustainable development purposes is crucial. Local software developers and researchers can create innovative solutions that address specific challenges faced by developing countries, such as agriculture, disaster management, and resource monitoring.
- Disaster Management and Resilience: Earth observation data can significantly enhance disaster management and resilience efforts in developing countries. Timely and accurate information on natural disasters, like floods, droughts, and hurricanes, can enable effective response planning and allocation of resources.
- Climate Change Mitigation and Adaptation: Earth observation data provides valuable insights into the impacts of climate change. Developing countries can use this information to design and implement appropriate strategies for mitigating GHG emissions and adapting to changing climatic conditions.
- Natural Resource Management: Earth observation data helps in monitoring and managing natural resources sustainably. It aids in assessing changes in land use, monitoring deforestation, tracking water resources, and preserving biodiversity.
- Agriculture and Food Security: Developing countries heavily rely on agriculture for sustenance. Earth observation data can assist in crop monitoring, pest control, and water management, contributing to improved agricultural productivity and food security.
- Health and Environment Monitoring: Earth observation data is beneficial for tracking environmental factors that impact public health, such as air quality, water pollution, and disease vectors. This information can support evidence-based health policies and interventions.

#### Risks to Consider:

- Data Gaps and Quality: Developing countries may face challenges related to data gaps and data quality issues. Addressing these concerns is essential for ensuring accurate and reliable Earth observation data.
- Technological and Financial Constraints: Limited access to advanced technology and financial resources can impede the implementation and maintenance of Earth observation systems. International partnerships and capacity-building initiatives can help overcome these barriers.
- Data Sharing and Ownership: Collaborating with international partners may raise concerns about data sharing and ownership rights. Developing countries should negotiate equitable data-sharing agreements to ensure fair access to shared resources.
- Ethical Considerations: Collecting Earth observation data may raise ethical questions, such as the impact on local communities or potential privacy violations. Ensuring ethical data collection and usage practices is essential to avoid negative consequences.

By focusing on these aspects, developing countries can leverage Earth observation data to make informed decisions, support sustainable development goals, and address challenges specific to their regions while taking appropriate measures to mitigate associated risks.

3. What national and international policies and support measures can help address the challenges of the developing countries in the area of data relevant for sustainable

development, including scientific and research purposes, data quality, data capabilities and data governance, while taking into account the multiple dimensions of data?

GEO recognizes the importance of national and international policies and support measures to address the challenges faced by developing countries in the area of data relevant for sustainable development. These measures should consider the multiple dimensions of data, including scientific and research purposes, data quality, data capabilities, and data governance. Here are some policy recommendations and support measures:

- **National Data Governance Frameworks:** Developing countries should establish comprehensive data governance frameworks that define roles, responsibilities, and policies related to data collection, management, sharing, and usage. These frameworks should address data privacy, security, and ethical considerations, ensuring that data is used responsibly for sustainable development.
- **Open Data Policies:** Governments can adopt open data policies to promote data transparency, accessibility, and sharing. By making data available to the public and relevant stakeholders, opportunities for collaboration, research, and innovation are enhanced.
- GEO provides a set of principles<sup>1</sup> as well as recommendations and guidance for data sharing, data management<sup>2</sup>, data licensing<sup>3</sup> and it now transitioning to a greater vision of open knowledge<sup>4</sup>.
- **Data Infrastructure Development:** Investing in data infrastructure, including Earth observation satellite systems, ground-based sensors, and data centers, is essential for data collection, analysis, and storage. International support and partnerships can help alleviate financial constraints in developing and maintaining these infrastructures.
- **Capacity Development and Technical Training:** Developing countries can benefit from capacity building programs and technical training to enhance their data capabilities. Training in data collection methodologies, data analysis, and utilization of Earth observation tools can empower local professionals and researchers to leverage data effectively.
- **International Collaboration and Data Sharing:** Engaging in international collaborations and data sharing initiatives, such as those facilitated by GEO, can provide access to global datasets and expertise. This sharing of data and knowledge is vital for addressing common challenges and advancing sustainable development goals.
- **Data Quality Assurance:** Implementing data quality assurance mechanisms ensures that data used for decision-making is accurate, reliable, and unbiased. Developing countries can adopt international data standards and quality control procedures to uphold data integrity.
- **Integration of Indigenous Knowledge:** Recognizing and integrating indigenous knowledge into data collection and analysis can enhance the understanding of local ecosystems, cultures, and sustainable practices. It fosters a holistic approach to sustainable development.
- **Public-Private Partnerships:** Encouraging public-private partnerships can leverage private sector expertise and resources for sustainable development efforts. These partnerships can help bridge technology gaps and support data-driven initiatives.
- **Data for Policy Integration:** Governments can incorporate data-driven insights into policy planning and decision-making processes. Linking data to policy frameworks facilitates

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<sup>1</sup> GEO Data Sharing and Data Management Principles : [GEO Data Sharing and Data Management Principles \(earthobservations.org\)](https://earthobservations.org)

<sup>2</sup> GEO Data Sharing and Management Implementation Guidelines [GEO Data Management Principles Implementation Guidelines \(earthobservations.org\)](https://earthobservations.org)

<sup>3</sup> Data Licensing Guidance [Data Licensing Guidance \(earthobservations.org\)](https://earthobservations.org)

<sup>4</sup>GEO Statement on Open Knowledge [https://earthobservations.org/documents/geoweeek2021/GEO-17-](https://earthobservations.org/documents/geoweeek2021/GEO-17-4.1_GEO%20Statement%20on%20Open%20Knowledge.pdf)

[4.1\\_GEO%20Statement%20on%20Open%20Knowledge.pdf](https://earthobservations.org/documents/geoweeek2021/GEO-17-4.1_GEO%20Statement%20on%20Open%20Knowledge.pdf)

evidence-based governance and enhances the impact of sustainable development strategies.

4. What could be the role of the CSTD as part of the overall work on the UN in the field of digital data?
  - Recognizing the value of Earth observation data in the context of digital data, CSTD could collaborate closely with organizations like GEO to harness the full potential of this data. GEO's expertise in transforming raw Earth observation data into actionable information makes it a valuable partner for CSTD in ensuring data relevance and usability for member states.
  - Considering the multiplicity of data sources, CSTD can also play a role in promoting data interoperability and ensuring that different datasets can be seamlessly integrated for comprehensive analysis. This also involves adopting and promoting international standards for data.
  - The CSTD can promote the integration of digital data into monitoring and evaluation systems for the SDGs. It could advocate for data-driven approaches to track progress, identify gaps, and accelerate action towards achieving sustainable development targets.
  - The CSTD also serves as a platform for fostering existing and emerging international cooperation and partnerships in the realm of digital data. It could facilitate collaborations between relevant UN agencies and other intergovernmental organisations, member states, the private sector, and civil society to leverage resources and expertise effectively. Platforms such as the **GEO Knowledge Hub** contain fit-for-purpose knowledge packages and tools for countries.
  - The CSTD can highlight the ethical considerations of data collection, management, and use. They could create guidelines for member states, ensuring that the digital data revolution respects individual rights and promotes inclusivity.
  - CSTD can advocate for funding and investments in digital data infrastructure, ensuring that all countries, especially those in the developing world, have access to quality, timely, and relevant data.

\* Note: GEO Secretariat is available to provide more information on the specific examples provided in the document, where useful.