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Economic and Social Commission for Asia and the Pacific

Promoting the inclusive and innovative space applications in Asia and the Pacific

Secretariat report to ICC-29, 2 September 2025, Seoul, Republic of Korea

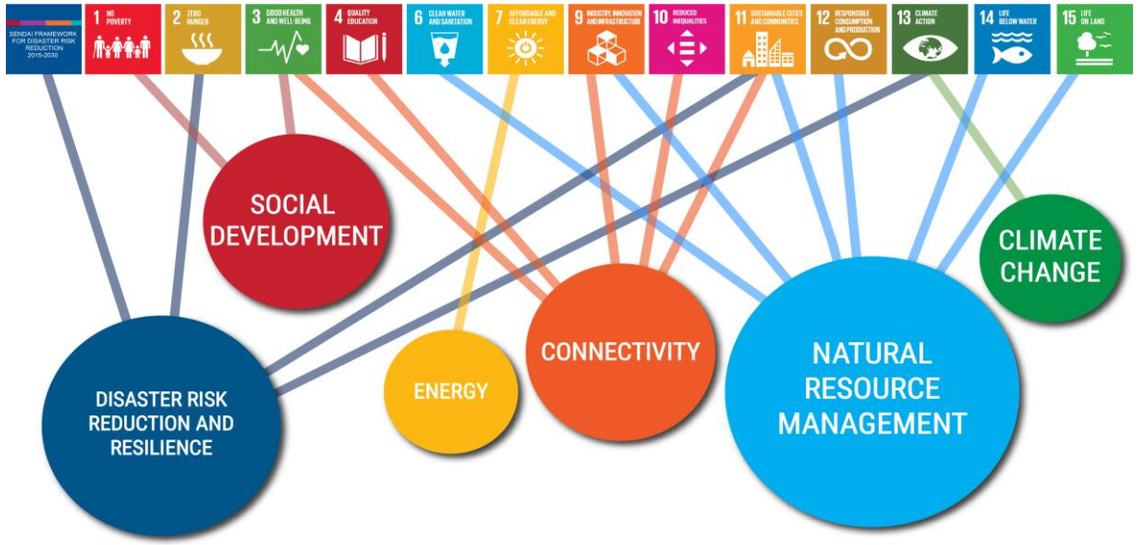
Keran Wang

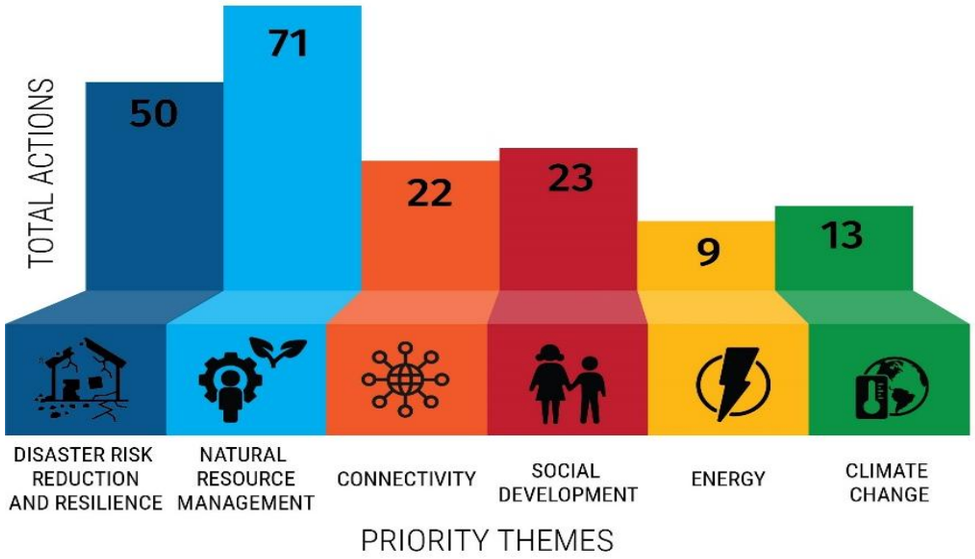
Chief, Space Applications Section

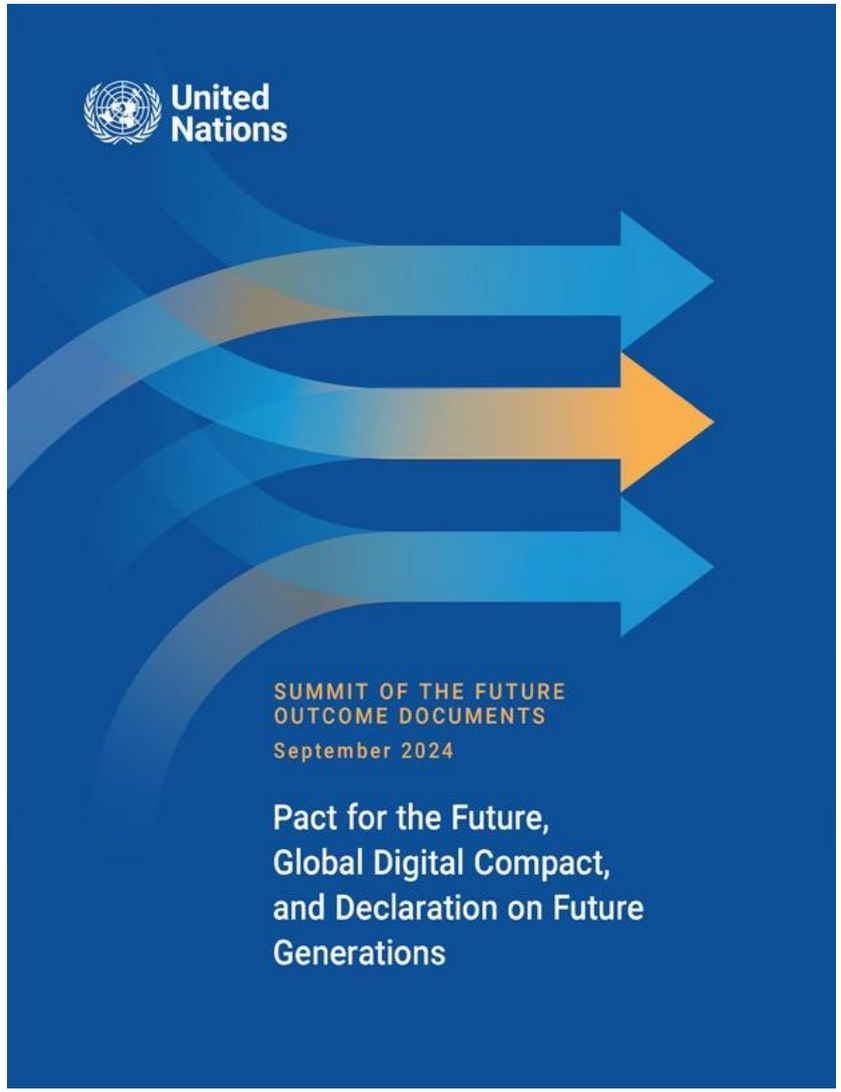
Information and Communications Technology and Disaster Risk Reduction Division

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Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030)







Geospatial Practices Database and Dashboard

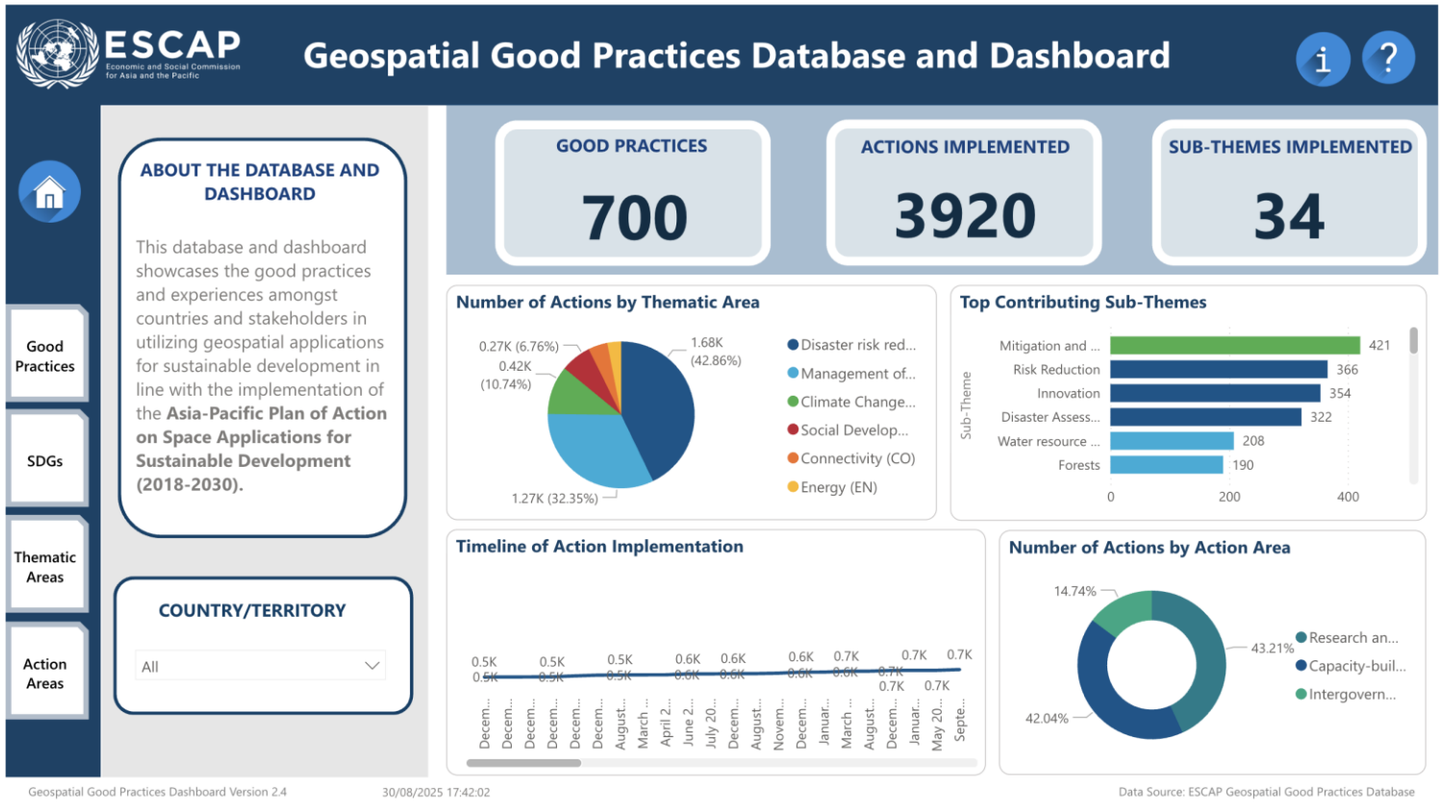
Sharing of implementation progress towards the Plan of Action

Easy-to-use storage and sharing of good practices from around the region

Allowing for data to be **uploaded and shared** via a portal **at any time**

It enables users to...

- **Showcase and share** good practices
- **Be inspired** by innovative examples
- **Seek collaboration**



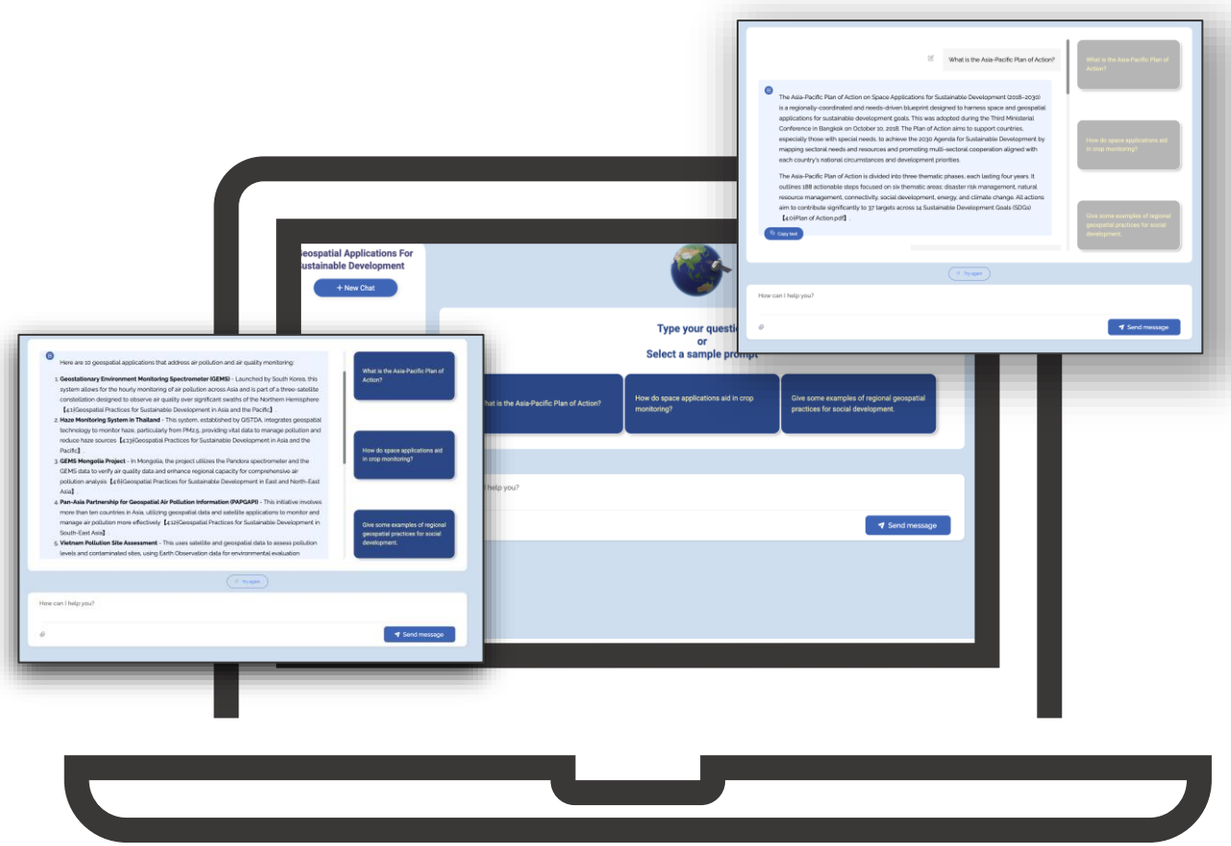
Collect, **store**, and **share good practices** on space applications in support of sustainable development

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Knowledge products on geospatial applications for sustainable development

GeoApps

- AI-powered tool
- Assists readers to query and generate information about geospatial practices across the Asia-Pacific
- Synthesizes information from the Compendium and other knowledge products



Visit http://geo-apps.info to learn more on how geospatial applications contribute to sustainable development!

Geospatial Practices for Sustainable Development: Compendium series

Disaster risk reduction and resilience

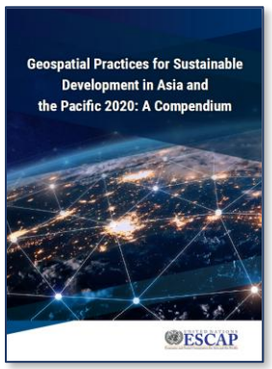
Management of natural resources

Connectivity

Energy

Social development

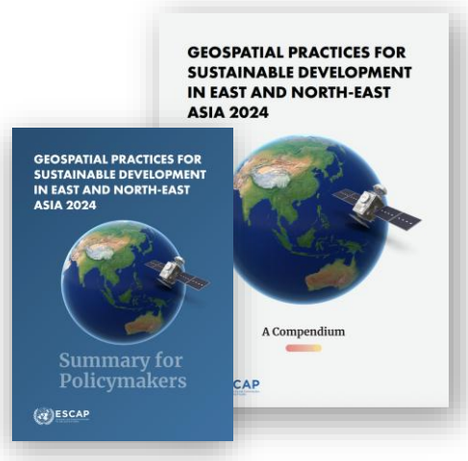
Climate change



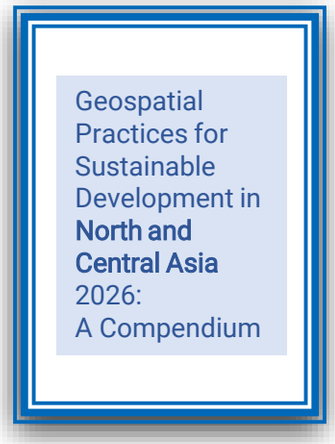
2020 edition



2022 edition



2024 edition



2026 edition (forthcoming)

The Compendium serves as a **benchmark** for the region's efforts to **implement the Plan of Action**, fostering knowledge-sharing, peer learning, and innovative solutions for sustainable development.

Building institutional capacity for the use of integrated spatio-temporal data in local SDG monitoring and decision-making

Indonesia



Selection of pond retention area

Thailand



Water quality monitoring and sustainable marine fish cage management

Uzbekistan



Soil salinity monitoring

Pakistan



Forest monitoring

Promoting Crop Biodiversity through Innovative Use of Space Applications

With support from the Aerospace Information Research Institute of the Chinese Academy of Sciences

Indonesia

BRIN – National Research and Innovation Agency

Brawijaya University

Subnational focus area: Junrejo District, East Java

Malaysia

Malaysian Space Agency

Universiti Putra Malaysia (Sarawak Campus)

Subnational focus area: Tanjung Karang, Selangor

The Philippines

PhilSA – Philippine Space Agency

Mariano Marcos State University

Subnational focus area: Batac, Ilocos Norte

Indonesia





The Philippines





Earth observation-based drought monitoring systems for Central Asia

- Customization of a crop monitoring system (focusing on wheat)
- Development of drought information system
- Technical assessments
- Training activities
- Regional knowledge sharing

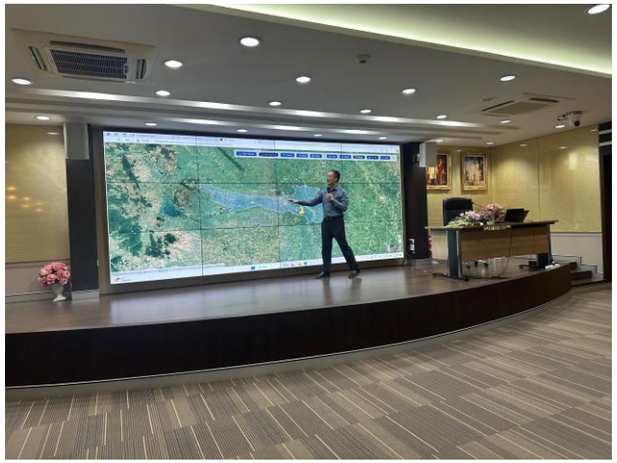


Workshops in Tajikistan and Uzbekistan
(August 13-20, 2025)



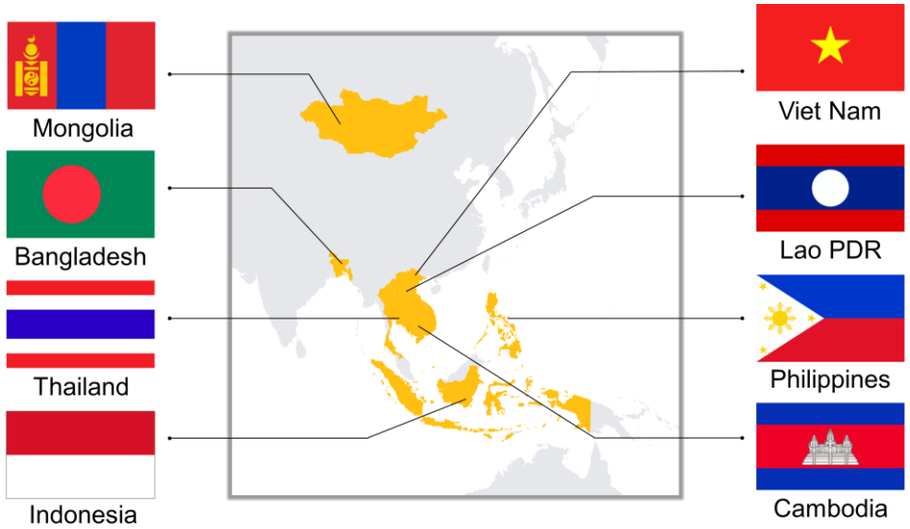
Building resilient agriculture in the Lower Mekong Basin






Partnership

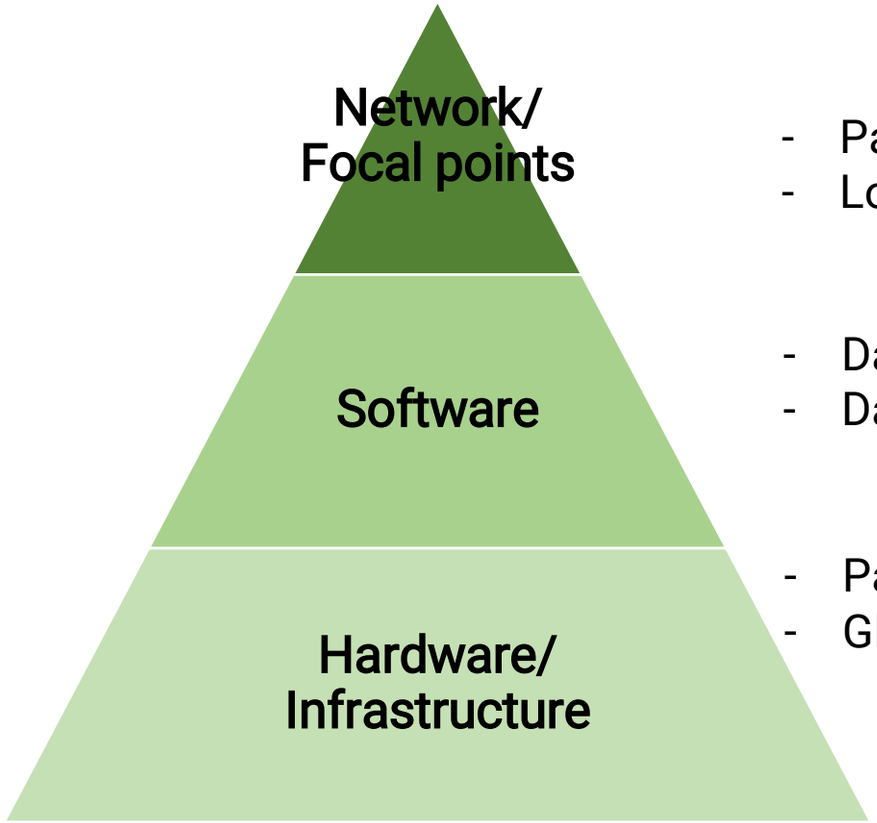
Building the Pan-Asia Partnership for Geospatial Air Pollution information



Subject Area	#	Member States
Space	4	BG, IN, PH, TH
Environment	4	KH, LA, MN, VT

Project coverage in the Asia Pacific region

- COUNTRIES: 17% no. of countries (World Bank, 2020)
- SPATIAL: 13.8% of land area (World Bank, 2020)

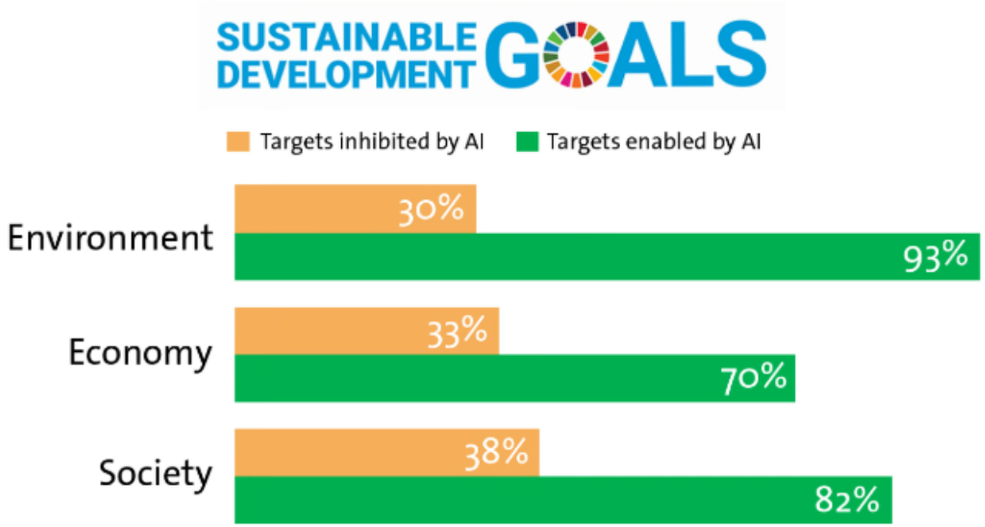


- Pandora local operators
- Local investigator/experts

- Data retrieval algorithm (L2)
- Data applications (L3, L4)

- Pandora network
- GEMS

- There were a total of 213 participants in organized meetings over the years 2022 through 2024
- The participation is on an increasing trend.



AI and SDGs

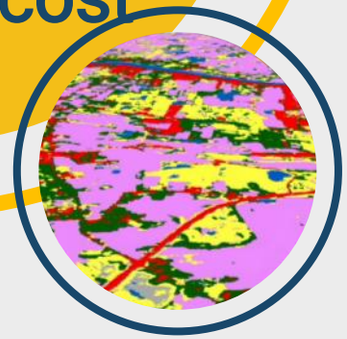
- In the **Global Digital Compact**, AI is recognized as a transformative tool capable of accelerating progress toward the Sustainable Development Goals (SDGs).
- The **Declaration on Future Generations**, underscores the transformative potential of AI in achieving the SDGs.
- The **UN General Assembly resolution A/RES/79/322** emphasizes the role of international cooperation, capacity-building, and inclusive access to AI technologies to support sustainable development in Central Asia.

SatGPT for Flood Hotspot Mapping

- Flooding has affected **over 3 billion people** and caused over **$900 billion in losses** in the past 30 years in the **Asia and the Pacific**.
- **SatGPT is a flood mapping expert accessible to every user in the region.**

Historical flood maps in less than 1 minute at a minimal cost





SATGPT

ESCAP

Ethical AI

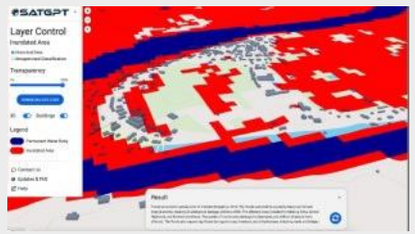
Participatory AI Modelling

End User

Customized UI

ChatGPT Query to Generate Code

Computing on GEE





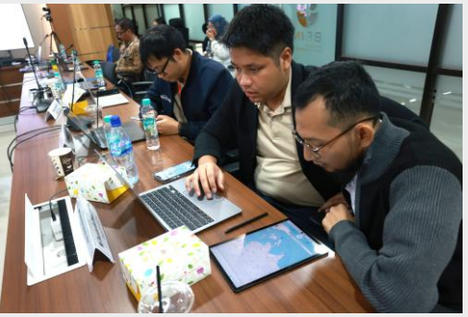


Infrastructure

SATGPT





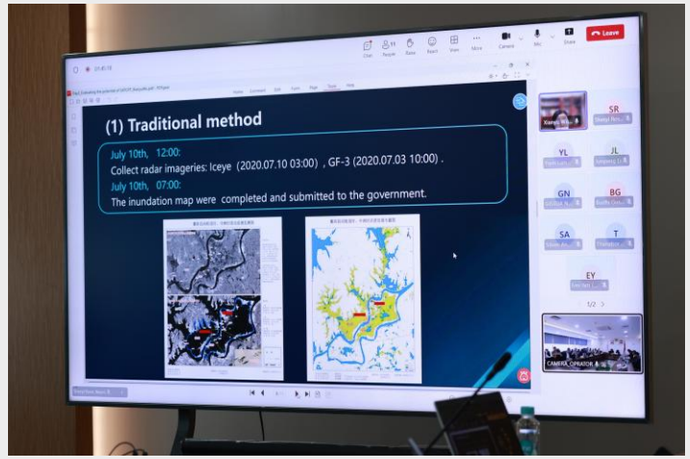





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BRIN
BADAN RISET DAN INOVASI NASIONAL
Building institutional capacity to use artificial intelligence and spatiotemporal data for flood impact analysis: thematic training workshop and youth forum
Geoinformatics Center, Asian Institute of Technology (AIT), Bangkok, Thailand
6 – 8 May 2025


WELCOME DELEGATES


#SATGPT
Layer Control


(1) Traditional method
July 10th, 12:00:
Collect radar imageries: Iceye (2020.07.10 03:00) , GF-3 (2020.07.03 10:00) .
July 10th, 07:00:
The inundation map were completed and submitted to the government.









Measuring Public Investment and Returns in Space Technology Applications for Sustainable Development

$$\text{Composite ROI} = \frac{\sum_{i=1}^{n}(B_i - M_i) - \sum_{i=1}^{n} C_i}{\sum_{i=1}^{n} C_i}$$

Where:

- B_i: Annual monetized benefit of sector *i* (e.g., avoided disaster losses, improved crop yields, lives saved).
- M_i: Sector-specific multiplier (constant across the evaluation period, drawn from authoritative macroeconomic studies).
- C_i: Cost of investment in space applications for the sector *i.*
- n: Number of sectors included in the composite (7 in our case).

$$Intertemporal\ CROI = \left(\frac{\sum_{t=0}^{T} \frac{\sum_{i=1}^{n}(B_{it} * M_i) - C_{it}}{(1+r)^t}}{\sum_{t=0}^{T} \frac{\sum_{i=1}^{n} C_{it}}{(1+r)^t}} \right) x\ 100$$

Where:

- B_{it}: Realized annual benefit for sector *i* in year *t*.
- C_{it} : Annual investment in sector *i* in year *t*.
- M_i : Sector-specific multiplier (capturing indirect and induced effects., drawn from authoritative macroeconomic studies).
- r : Real annual discount rate (3%, as recommended for public sector appraisals in emerging economies)
- T : Total number of years evaluated (10 fiscal years).

Example in India on Decadal result (FY2013–22):

By aggregating ten years of expenditure and benefits across the space sector, and incorporating broader economic multipliers where data are available, the Composite ROI (CROI) is positive and robust:

Decadal Return Ratio = 4.615; Decadal CROI% = 361.5 %

Over FY2013–22, every ₹1 invested in India's space program returned about ₹4.62 in economic and monetized value.

- **Indicators for Measuring Return on Investment (ROI) in Space Applications**
- **Return on Investment (ROI) is an indicator to measure the quantified impact of space applications**
- **Methodological Framework Proposed for Constructing a Composite ROI Index for Space Applications**
- **Analysis of examples in India, Indonesia, and Thailand**
- **Will share with ICC members to discuss and provide the inputs for validation.**

Secretariat report on the activities of the secretariat to implement the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018-2030)

1. Upgraded the Dashboard and Database on geospatial applications, with the valuable inputs from the ICC members. Nearly 4,000 practices in six thematic areas. are recorded.
2. Developed the GeoApp, an AI-Powered tool for navigating the geospatial applications & practices.
3. Engaged 532 participants, most of them young professional officials, in the thematic training workshop and the youth forums.
4. Developed SatGPT, an AI-powered geospatial tool for flood risk mapping; organized a series of training sessions for pilot countries in the region. Source code will be shared with ICC members after ICC-29. All training materials will be uploaded to the ESCAP iLearn platform. The pre-training module will be introduced via an online training workshop in late September 2025.
5. Proposed to develop SatGPT for forest fire and other natural disaster risk spots mapping. Call for pilot countries.
6. Conducted the research on indicators for space applications investment and return, the initial report will be shared after the ICC-29. An online workshop will be organized for the in-depth research. Call for pilot countries.
7. Developed the initial online inventories for a geospatial information platform. The report is uploaded to the ICC-29 website. An AI-powered search engine is under development.
8. Contribute to the Thailand Space Week 2025, APRSAF-31, and the Philippine Geomatics Symposium.
9. Develop the Compendium 2026 for Central Asia on geospatial practies.

Seek guidance

1. **How to address key challenges in integrating digital innovations in space and geospatial information applications for disaster risk reduction and sustainable development. Reinforce the importance of institutional support and long-term funding to create an enabling environment that supports digital transformation and sustains innovations.**

2. **How to further enhance substantive cooperation on space science and technology and their applications to leverage innovative digital applications, manage data and information more effectively, engage end users, and enhance partnerships with national, regional, and global stakeholders;**

3. **Identify approaches and practices related to the integrated applications of remote sensing, GIS, and satellite navigation and positioning for disaster preparedness and risk reduction, and for engaging the youth to actively participate in innovative geospatial applications; and**

4. **Opportunities to mobilize financial, technical, and human resource support to implement the Plan of Action and for potential contributions from ICC members.**

5. **Invite offers from members to co-organize the thirtieth session of the ICC (ICC-30) in 2026 and the Fifth Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific (MC-5) in the fourth quarter of 2026.**

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