



**ESCAP**  
Economic and Social Commission  
for Asia and the Pacific

# Liaison report of the Secretariat

29 November 2024

Keran Wang

Chief, Space Applications Section

ICT and Disaster Risk Reduction Division, ESCAP

Secretariat of UN-GGIM-AP

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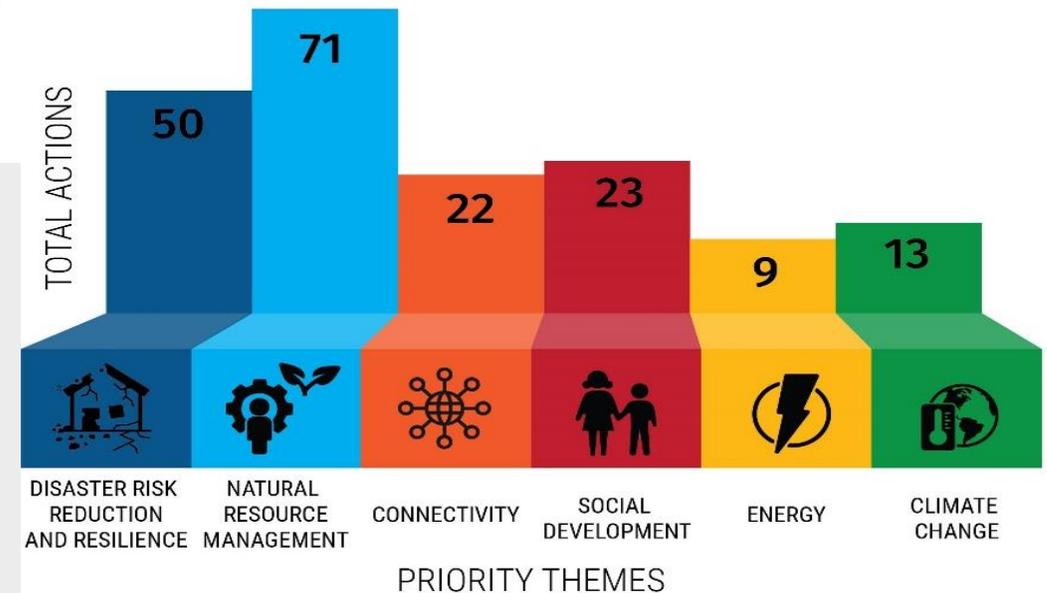
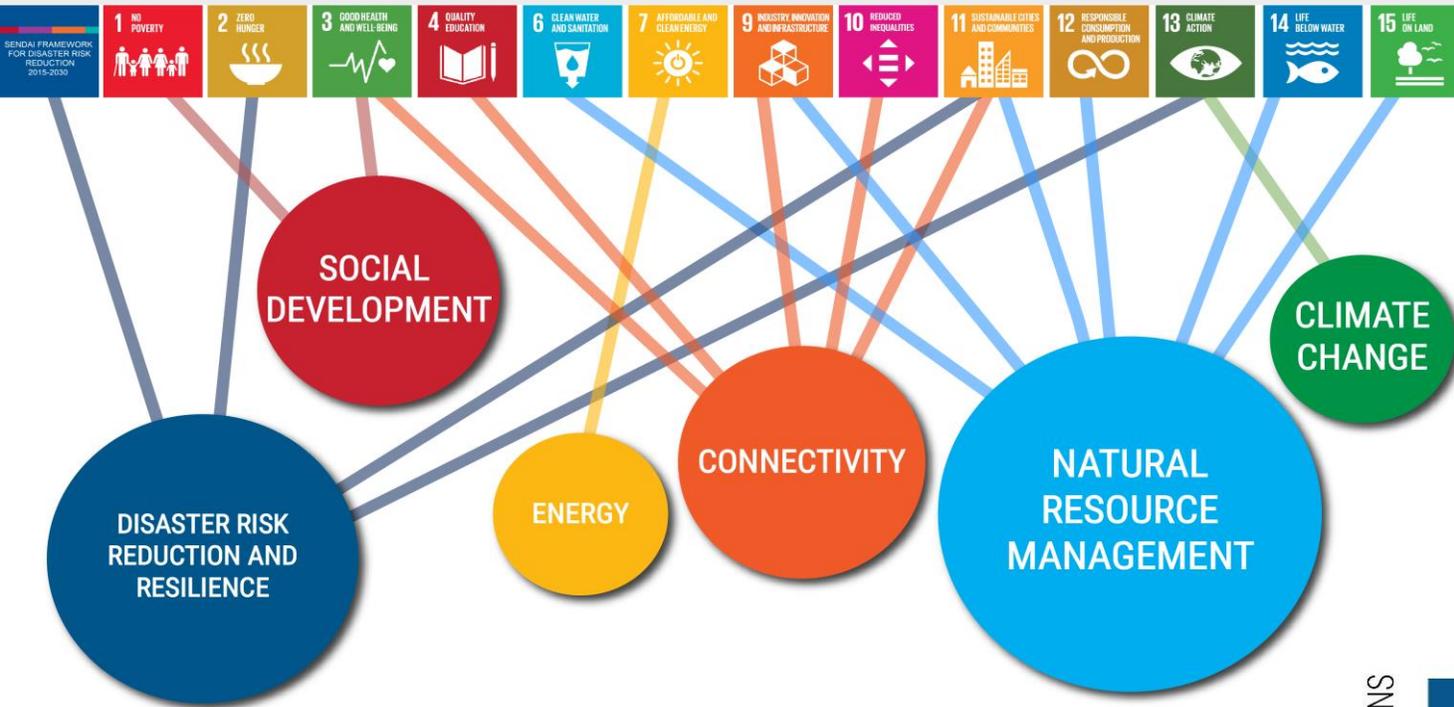
03



**Leverage  
innovative  
geospatial  
technology  
applications**



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



# Geospatial Good Practices Database and Dashboard

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

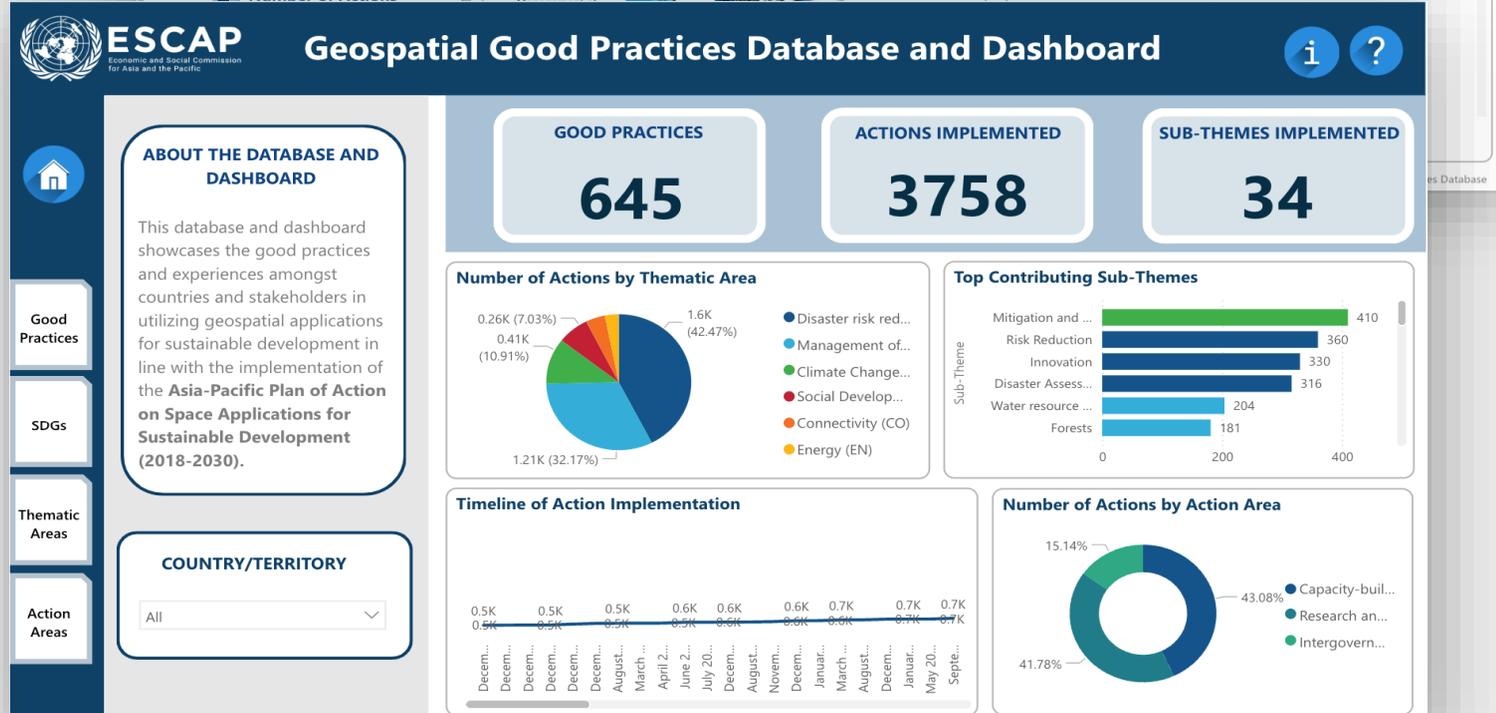
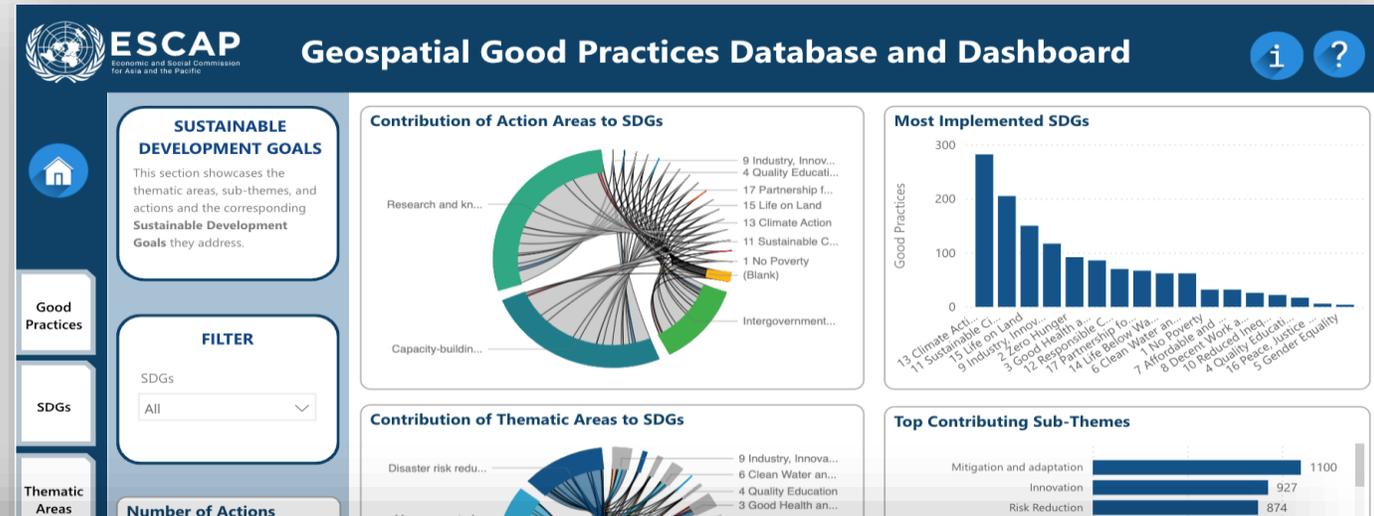
Sharing of implementation progress towards the Plan of Action

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



SCAN ME



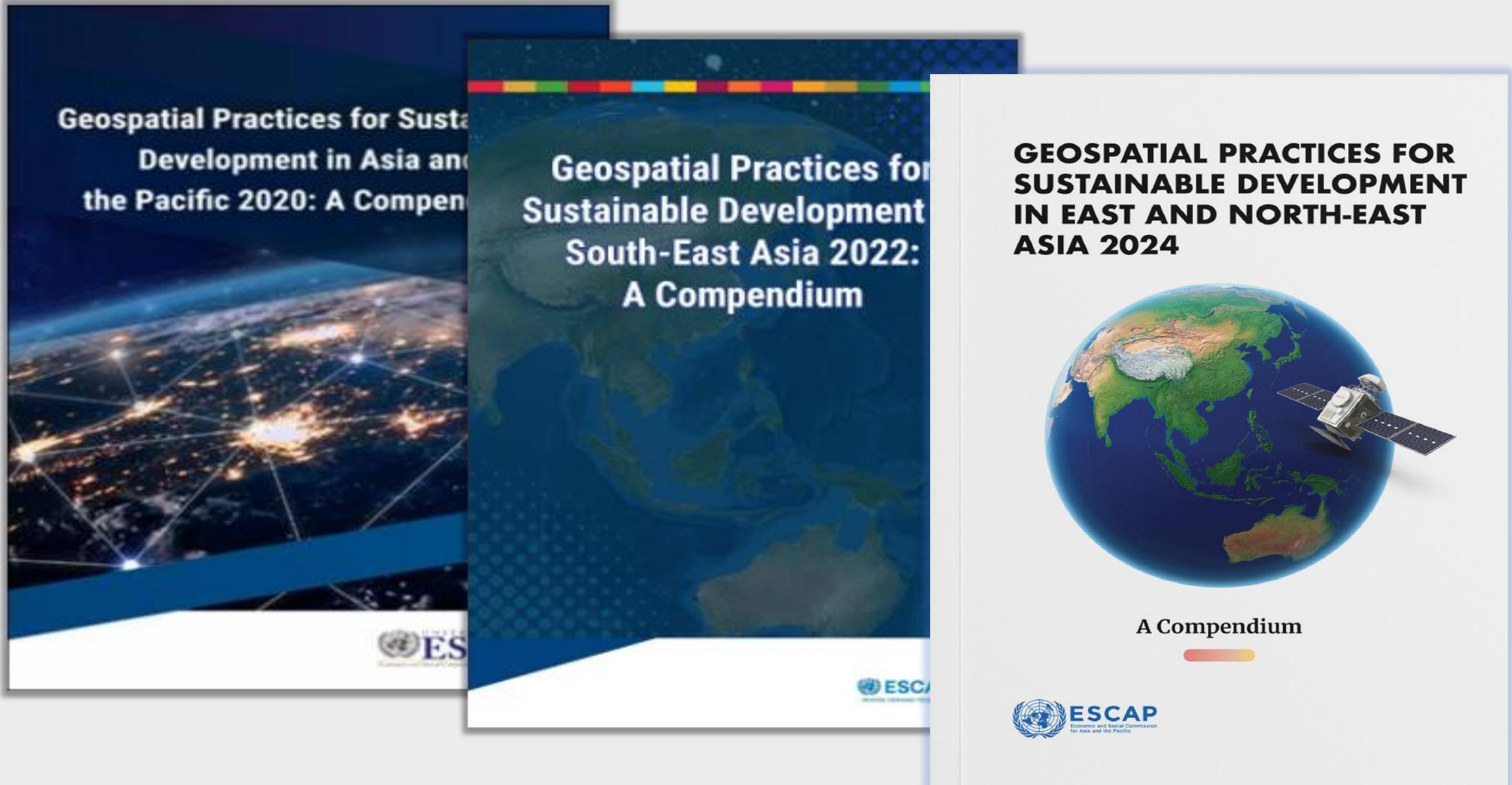
# The 4<sup>th</sup> Ministerial Conference on Space Applications in Asia and the Pacific



October 2022, in Jakarta



## Knowledge products to share the geospatial practices



- ❑ Data is a special resource; it has value; the value can be measured
- ❑ Data with the location and time, can be interoperated across the sectors
- ❑ In space and geospatial information applications, NO one can deliver alone; You share more, you gain more
- ❑ SPACE+ for our Earth and Future: Transcend the conventional space applications for SDGs
- ❑ 4As: Available, accessible, affordable and actionable
- ❑ 4Ps: Benefit people and inform practices, processes and policies
- ❑ 3Is: Integration, Innovations and interdisciplinary



# Youth Forum on Innovative Geospatial Information Applications

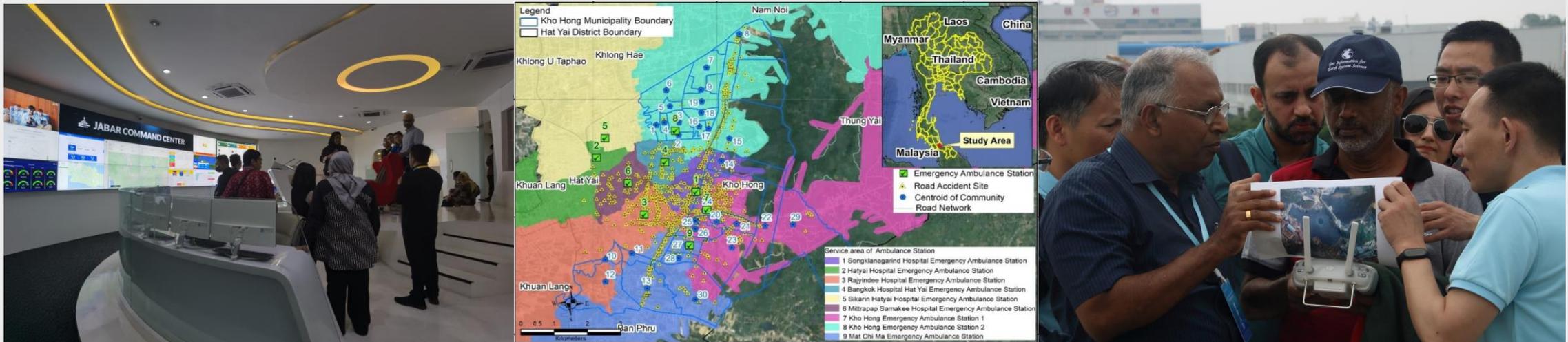


[https://youtu.be/Sd\\_C24xvvtE?feature=shared](https://youtu.be/Sd_C24xvvtE?feature=shared)



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

**Pilot cities: Makassar and Bandung, Indonesia; Songkhla, Thailand**



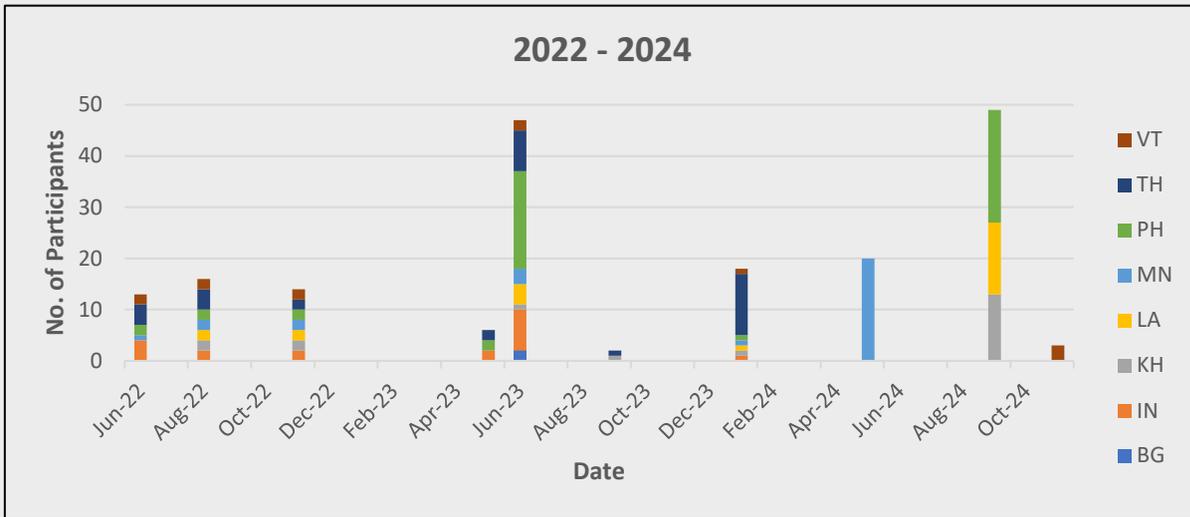
# Building resilient agricultural in the Lower Mekong Basin



Partnership



# Building the Pan-Asia Partnership for Geospatial Air Pollution information



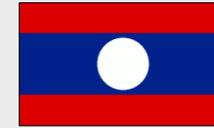
Bangladesh  
SPARRSO



Cambodia  
MoE



Indonesia  
BRIN



Lao PDR  
MONRE



Mongolia  
IRIMHE



Philippines  
PhiISA



Thailand  
GISTDA



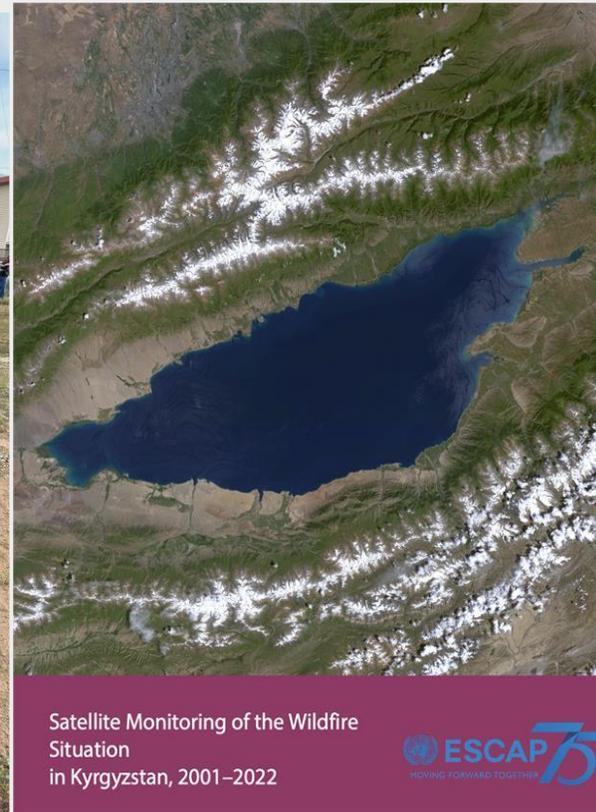
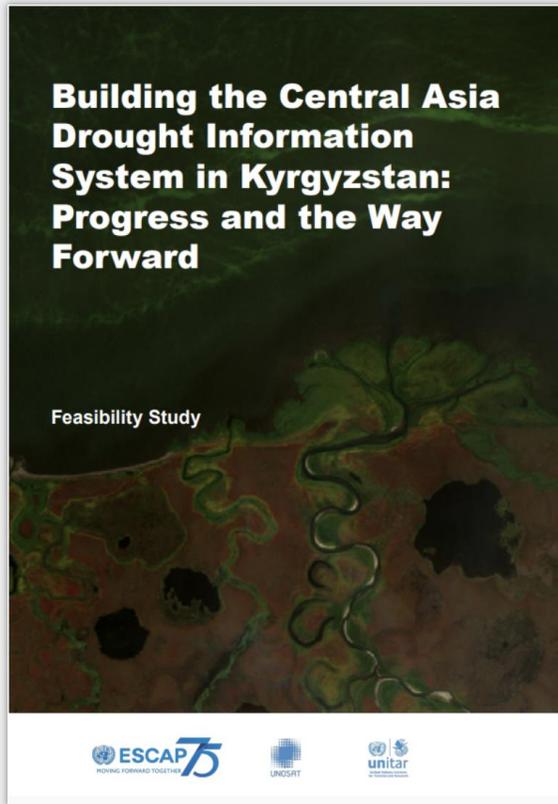
Viet Nam  
MONRE

	2022	2023	2024	Sum
BG	0	2	0	2
IN	8	10	1	19
KH	4	2	14	20
LA	4	4	15	23
MN	5	3	21	29
PH	6	21	23	50
TH	10	11	12	33
VT	6	2	4	12
<b>Sum</b>	<b>43</b>	<b>55</b>	<b>90</b>	<b>188</b>

17 Pandora instruments are installed in 7 countries (as of NOV 2024)



# Central Asia Drought Information System (CADIS) Pilot Project



## Workshop on Enhancing the Management of Geospatial Data Sharing for Disaster Risk Reduction and Sustainable Development

UN Global Geospatial Knowledge and Innovation Centre, Deqing, China 21-23 October 2024



The meeting recommends that the President of UN-GGIM-AP, with the support of the Secretariat, collaborate with related agencies in Indonesia, the Republic of Korea and other cooperation partners to sustain efforts to build and enhance a regional networked geospatial data hub for facilitating cross-border data sharing and collaboration in disaster risk reduction and sustainable development.



The meeting recommends that Indonesia advance the development of a virtual satellite constellation for disaster risk management and leverage satellite resources from multiple countries to provide continuous and timely data with a focus on pre-disaster risk monitoring and assessment so that disaster preparedness is strengthened, and disasters are better managed throughout their life-cycle.

## The 28th session of the Intergovernmental Consultative Committee (ICC) on the Regional Space Applications Programme for Sustainable Development (RESAP)

5 to 7 November 2024, Bangkok, Thailand

1. The Committee emphasises the importance of leveraging digital innovations, including artificial intelligence (AI), to enhance the integration of satellite-derived data and sectoral data to accelerate the achievement of the Sustainable Development Goals.
2. The Committee appreciates the offer to enhance sharing of data and platforms, provide technical support, support capacity development, and customize thematic applications platforms.
3. The Committee requests the secretariat to develop an online inventory of operational data and information platforms, products, and services for disaster risk reduction and sustainable development,
4. The Committee further requests the secretariat to work closely with the members on research, satellite data sharing frameworks for disaster risk reduction; regional training programme on AI and disaster analysis; innovations focused on integrating AI-driven analysis with geospatial data; and innovative solutions and technology integration for disaster risk management.



## Launched at the opening of the Thailand Space Week 2024

7 November 2024, Bangkok, Thailand

1. Showcases 100 relevant examples in six thematic areas, including (i) disaster risk reduction and resilience; (ii) management of natural resources; (iii) connectivity for the 2030 Agenda; (iv) social development; (v) energy; and (vi) climate change.
2. The Compendium also identifies five regional “accelerators” to fast-track implementation of the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018-2030): leave no country behind; leverage the geospatial expertise of members in East and North-East Asia; measure the impacts of geospatial solutions on sustainable development; foster regional data governance norms; and strengthen capacity-building for GeoAI.

### GEOSPATIAL PRACTICES FOR SUSTAINABLE DEVELOPMENT IN EAST AND NORTH-EAST ASIA 2024



A Compendium

- Edition 2022: Asia-Pacific region
- Edition 2024: Southeast Asia
- Edition 2026: North and Central Asia
- Edition 2028: Pacific

# Challenges

- How to address the new divides which will arise from whether countries have the capacity for digitally-driven innovations and apply them for decision-making and development areas
- How to engage end users across multiple sectors, including the private sectors, to strengthen the integration of geospatial information for sustainable development.
- How to engage the youth in the design and delivery of capacity-building activities and knowledge sharing of best practices to promote the adoption of new technologies.
- How to strengthen partnerships at the regional level for more financial and technical supports to countries, in particular, those with special needs.



# Leverage digital innovations to accelerate implementing the regional Space Plan of Action

## Disaster Risk Hotspot Mapping



Use **Big Earth Data**, **Cloud Computing** and **AI** to decrease the cost and time to generate disaster risk hotspots in Asia and the Pacific.

We are working with countries and cooperation partners to build an **ARRAY** of tools and apps to address the data and information needs in Asia and the Pacific

2023



Flood Hotspot Mapping

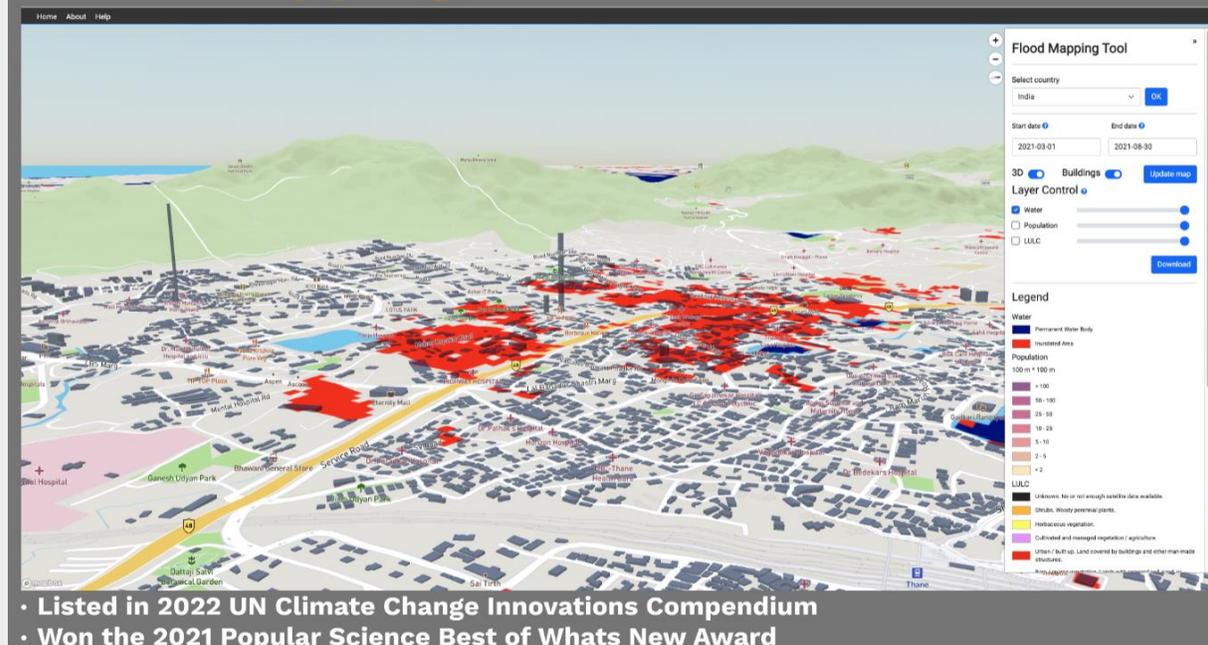


Wildfire Hotspot Mapping

2026



## Flood Mapping Tool ([floodmapping.inweh.unu.edu](http://floodmapping.inweh.unu.edu))



Home About Help

Select country: India [OK]

Start date: 2021-08-01 End date: 2021-08-30

3D Buildings [Update map]

Layer Control

- Water
- Population
- LULC

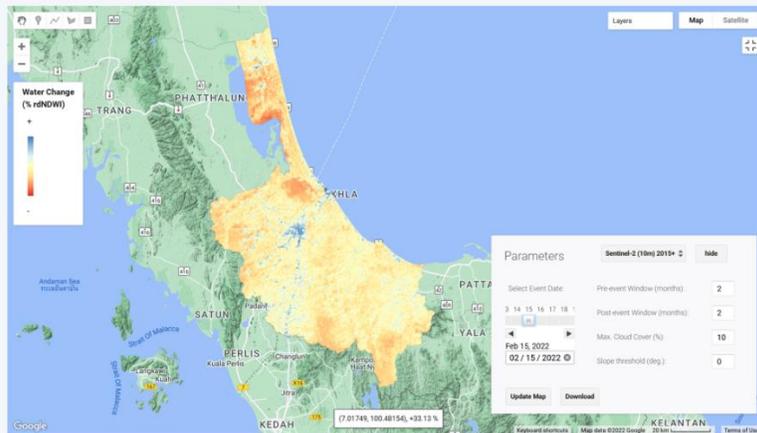
Download

Legend

- Water
  - Permanent Water Body
  - Inundated Area
- Population
  - 100 m \* 100 m
  - > 100
  - 50 - 100
  - 10 - 50
  - 5 - 10
  - 2 - 5
  - < 2
- LULC
  - Unknown. Not an enough satellite data available
  - Shrub, Woody perennial grasses
  - Herbaceous vegetation
  - Cultivated and managed vegetation / agriculture
  - Urban / Built up. Land covered by buildings and other man-made structures
  - Wetlands

• Listed in 2022 UN Climate Change Innovations Compendium  
• Won the 2021 Popular Science Best of Whats New Award

## Massive Open Online Courses (wlc.un.edu)



### Active and Passive Satellite Data Analysis Using Cloud Computing for Surface Water/Flood Mapping

This online course introduces the participants to Earth Engine Code Editor platform and implementation of surface water detection algorithm using passive and active remote sensing.

[Enroll Now](#)



### Spatiotemporal Drought Assessment by Leveraging Google Earth Engine Platform

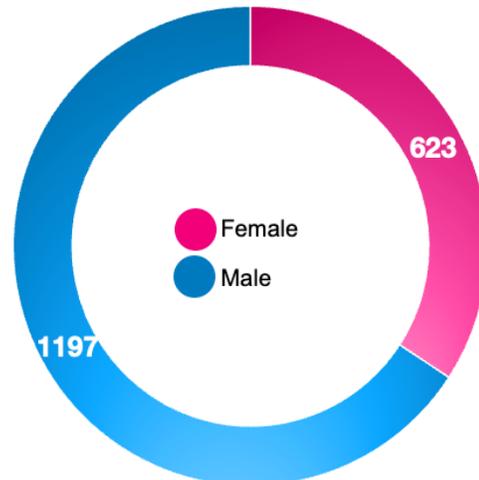
This online course introduces the participants to Earth Engine Code Editor platform and the implementation of drought detection and monitoring algorithm using passive and active remote sensing.

[Enroll Now](#)

Total number of participants **1820**

Reporting date: 25 Jan 2024  
Course launch date: 28 December 2022

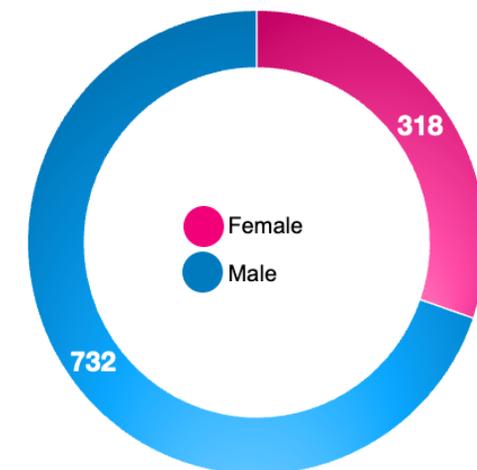
Completion rate **27%**



Total number of participants **1050**

Reporting date: 25 Jan 2024  
Course launch date: 28 December 2022

Completion rate **23%**

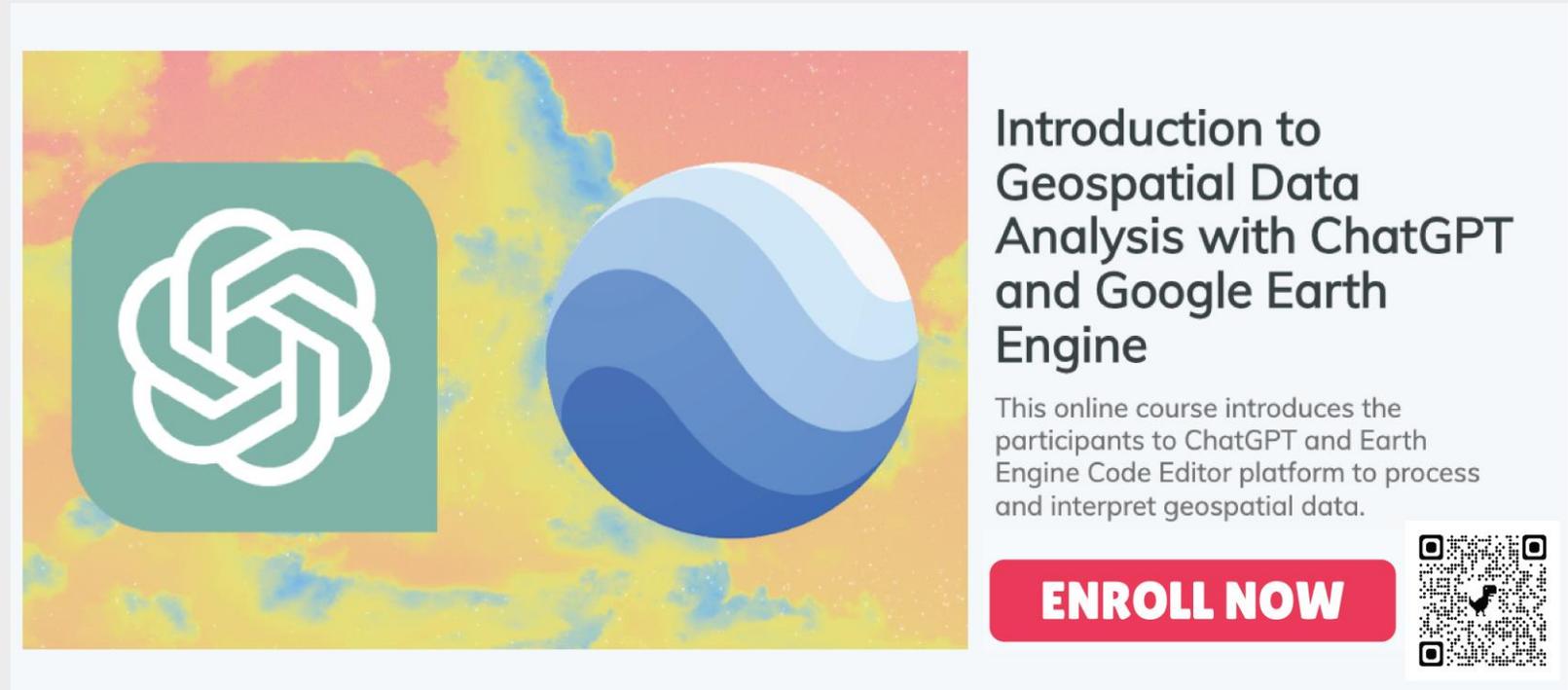
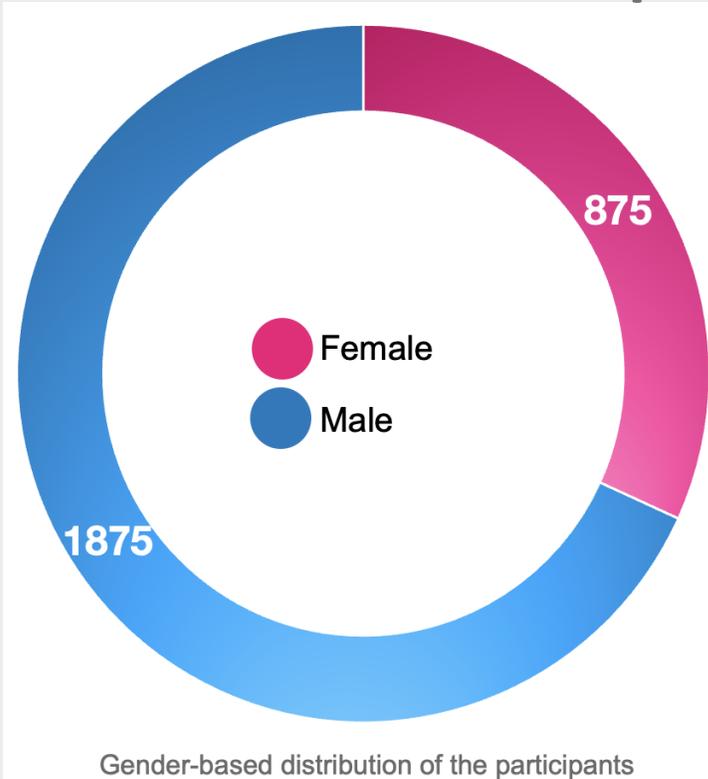


Participants are from universities, research institutes, and government agencies.



## Online Course

# Introduction to Geospatial Data Analysis with ChatGPT and Google Earth Engine



**Introduction to Geospatial Data Analysis with ChatGPT and Google Earth Engine**

This online course introduces the participants to ChatGPT and Earth Engine Code Editor platform to process and interpret geospatial data.

**ENROLL NOW**



**Total number of participants 2750**  
**Total number of countries 110**

[wlc.unu.edu](http://wlc.unu.edu)



## Use cases: improving accuracy and timeliness of flood risk assessment and EW through integration of LLMs into geospatial data analysis\_SatGPT



**Label images:** LLMs will be used to label images with relevant information, such as the type of disaster, the extent of the damage, and the number of people affected.



**Classify data:** LLMs will be used to classify remote sensing data, such as distinguishing between different types of disasters or different levels of damage.



**Generate reports:** LLMs will be used to generate reports that summarize the findings of remote sensing data analysis and integrate sectoral data to aid decision-making and policy formulation.



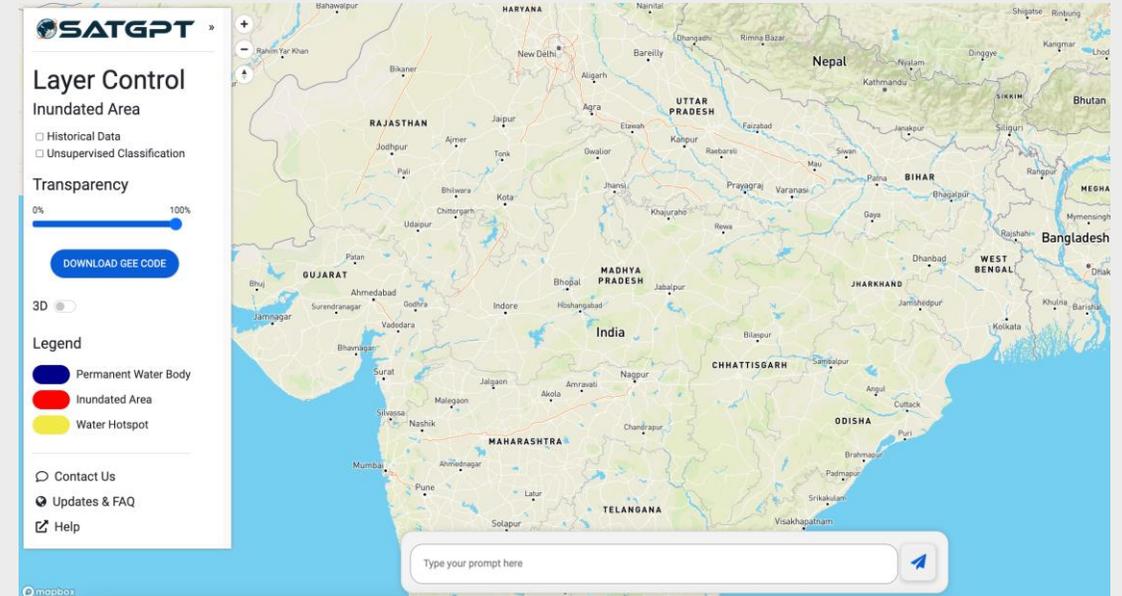
**Extract features:** LLMs will be used to extract features from remote sensing data, such as the location of a disaster, the severity of the damage, and the risk of future disasters.



## These functionalities will help generate the following information in a disaster management cycle.

- Identify and track natural hazards in real-time.
- Assess the risk of disasters.
- Warn people about impending disasters.
- Help people to prepare for and respond to disasters.
- Assess the damage caused by disasters.
- Identify the needs of affected communities.
- Prioritize resources for disaster recovery.
- Monitor the progress of recovery efforts.

## The potential users include:



- Disaster Management Agencies
- Government Departments and Ministries
- Research Institutions and Scientists
- Non-Governmental Organizations (NGOs) and Humanitarian Agencies
- International Organizations and Donor Agencies
- Public and General Users



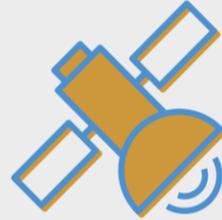


explore more at:  
[satgpt.net](http://satgpt.net)



# Virtual Satellite Constellation for Disaster Risk Management (VSC)

The **VSC** will develop a mechanism for sharing satellite imagery within Asia and the Pacific to build resilience in disaster risk hotspots

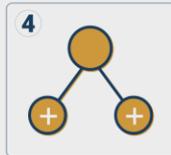


**Develop a satellite imagery sharing mechanism** for enhanced pre-disaster monitoring of risk in high disaster - low risk countries

**Improve the capacity** of local governments and disaster management-related agencies to be prepared and manage disasters over their entire cycle

**Provide inputs** to the spacefaring nations on the design of future satellites and sensors which address national and regional data needs

**1** **Set up an informal working group** to work out the operational details and conduct a study to map free and commercial remote sensing data providers and share the catalogue with all member States.



**4** **Match support and demand** for satellite data by the secretariat using the VSC Catalog and form a working group to facilitate data transfer.

**7** **Contribute to the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030) in the areas of:**

**2** **Invite spacefaring countries** to set aside a percentage of their satellite operational time or data archive for use by high disaster-risk and low-capacity countries.



**5** **Provide technical assistance** to the target countries in hosting, storing, processing and analysing the satellite data.



**Disaster Risk Reduction and Resilience**



**Social Development**



**Management of Natural Resources**

**3** **Invite target countries** to identify disaster risk hotspots for satellite imaging.



**6** **Share the data requests** with all the spacefaring nations to ensure that the regional needs are addressed in future satellite and sensor design.



## Meet the demands with supplies \_ pilots selection

- Collect the needs on pre-disaster risk management through a questionnaire and selection of the pilots
- Provide one-to-one training and Q&A for answering the questionnaire in 2024
- Share the needs of pilots with the service/data providers in spacefaring countries in 2024
- Match the needs with the suppliers on specific disasters, such as flood and wildfire, through a regional geospatial datahub and information-sharing framework in 2024-2026
- Provide training on the use of AI for disaster preparedness and policy making, with the integration of the social-economic data of the disaster hotspots in 2024-2025
- Share the experience with other disaster-prone countries in 2025-2026.



## **Workshop on Strengthening Disaster Resilience in the Asia-Pacific Region: Integrated Risk Management through Geospatial Data and Disaster Hotspot Mapping for Enhanced Preparedness 20-22 November 2024, at the National Research and Innovation Agency, Indonesia**



Karawang City has been selected as a pilot city. Participants from Indonesia, Fiji (online), Thailand, Tonga (online) and Uzbekistan use SatGPT tools developed by the ESCAP secretariat on flood hotspot mapping and impact on the population, water, food and economy. The next workshop will be held in Uzbekistan for drought and landslide mapping. Thailand will host the workshop on digital twins in Khon Kaen city.



# Assessing Economic Losses from Inundation in Karawang, Indonesia: A Multi-Platform Geospatial Analysis



Total Losses (Rp)

# 2.8

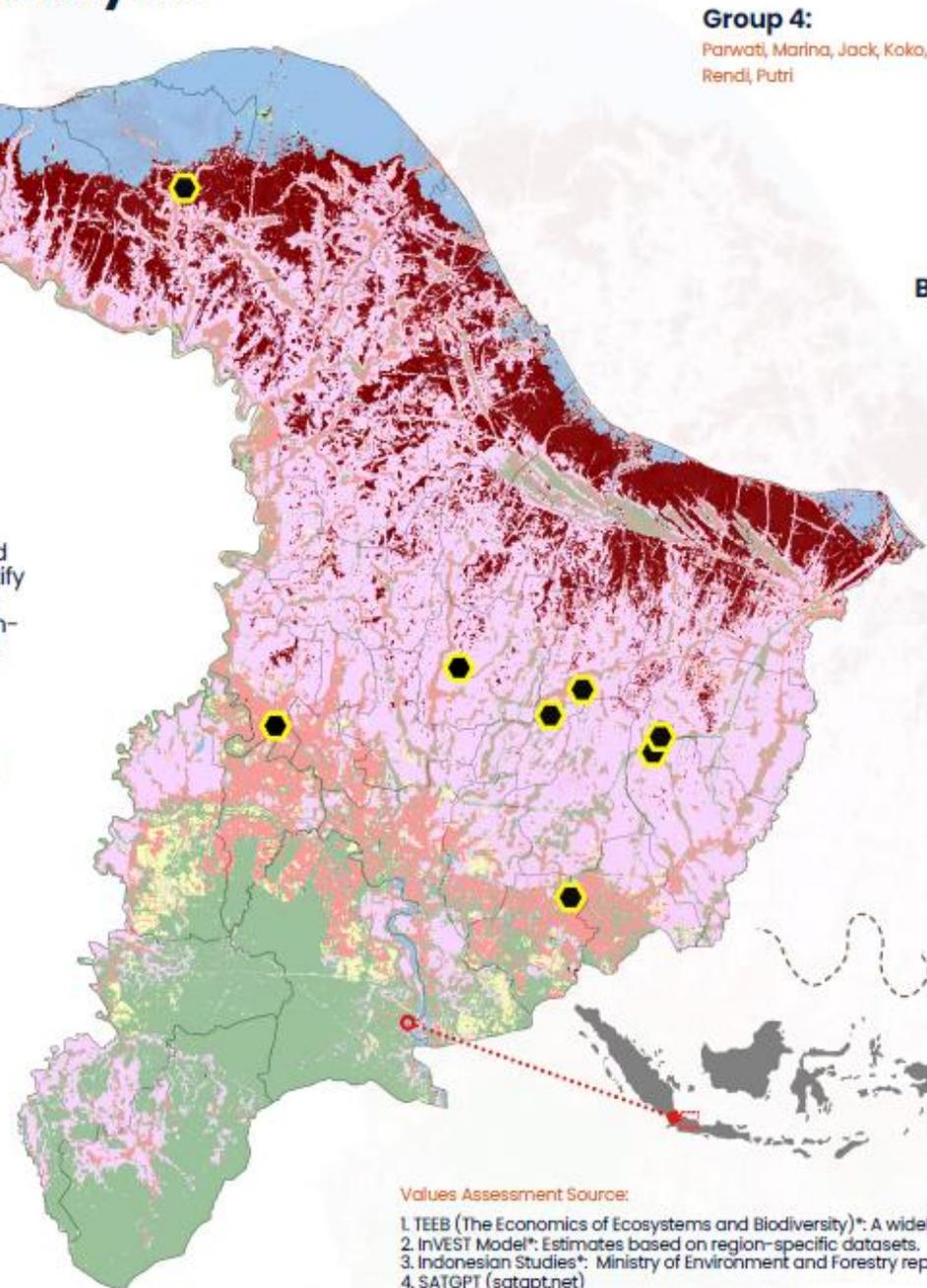
trillion

**2.3**<sub>T</sub> **362.8**<sub>B</sub> **42**<sub>B</sub> **35**<sub>B</sub> **22.8**<sub>B</sub>

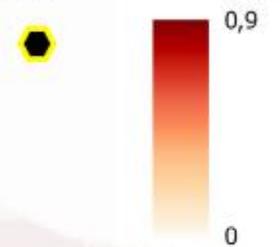
Cropland Wetland Built-up Forest Mangrove



**Group 4:**  
Parwati, Marina, Jack, Koko, Rendy, Putri



BNPB Point Floods Inundation (%)



LC	Area (ha)
Tree cover	221
Cropland	29.650
Built-up	106
Herbaceous wetland	756
Mangroves	57
Shrubland	-
Grassland	-
Bare / sparse vegetation	-
Permanent water bodies	-

**Total Inundated LC**  
**30,790** ha  
**16** %  
Inundated area in Karawang

## Introduction

Inundation is a recurrent issue in Karawang, Indonesia, causing significant socioeconomic and environmental disruptions. The region's vulnerability is heightened by its reliance on agriculture, infrastructure, and ecosystems. This study aims to quantify the extent and economic impact of the recent inundation using a geospatial analysis approach. By leveraging SATGPT, Google Earth Engine (GEE), and QGIS, we identify high-risk zones and estimate associated financial losses, contributing to better disaster risk management strategies.

## Method

The study used **SATGPT** for initial inundation mapping, **GEE** for validation, and **QGIS** for detailed spatial and economic analysis. Affected land-use categories were quantified, and economic losses were estimated using standardized valuation metrics. Results were validated with **BNPB** data and visualized via **QGISWEB**.

## Result

The inundation affected **30,790 hectares**, with cropland suffering the most significant damage. Total losses reached **Rp2,835,440,000,000**, affecting croplands, forests, wetlands, built-up areas, and mangroves. The model showed strong agreement with **BNPB** data, demonstrating its accuracy.

## Discussion

The study underscores the value of geospatial tools in disaster analysis. **Croplands were the most vulnerable, highlighting the need for improved agricultural resilience.** Ecosystem restoration, like mangroves and wetlands, could mitigate future flood risks. The methodology offers a replicable framework for inundation-prone areas.

Values Assessment Source:

1. TEEB (The Economics of Ecosystems and Biodiversity)\*: A widely used global database of ecosystem service values.
2. INVEST Model\*: Estimates based on region-specific datasets.
3. Indonesian Studies\*: Ministry of Environment and Forestry reports, Local academic studies on ecosystem services
4. SATGPT (satgpt.net)

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