Challenges and opportunities for youth to achieve SPACE+ goals using GEMS data in the Asia Pacific region

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I. Space+ for our Earth and future

II. Asia-Pacific Plan of Action on Space Applications for Sustainable Development

III. Geospatial practices for sustainable development in South-East Asia 2022: A Compendium

IV. Panel Discussion
I. Space+ for our Earth and future
Transcend traditional space applications and make geospatial information accessible, available, affordable and actionable.

It seeks to: (a) leverage innovative digital applications; (b) engage with end-users and the youth; (c) effectively manage geoinformation, and (d) strengthen the partnership

Implemented by operational projects:

(a) Virtual satellite constellation for disaster risk management,
(b) AI-driven geospatial information analysis and web-based decision support system for flood/drought/wildfire hotspots and risk maps
(c) Engagement of the youth and end-users
Key information about the Conference

- To be hosted by the Government of Indonesia in Jakarta, 26 October
- Led by BRIN – National Research and Innovation Agency of Indonesia
- Expected outcomes
  - Jakarta Ministerial Declaration on Space+ for our Earth and future
  - Regional cooperation initiatives by member States
- Modality
  - Hybrid: Jakarta and online
  - Back-to-back with an ad hoc session of the ICC on RESAP, 24-25 October 2022
- Side event
  - Launch of the Compendium 2022: Geospatial practices in Southeast Asia
Other preparations

- Invitation letters to the MC-4 dispatched, by 20 August 2022 addressed to Seats of Governments

- Conference documents available by 17 Sept in English and 28 Sept in other languages

- Regular website updates

https://unescap.org/events/2022/fourth-ministerial-conference-space-applications-sustainable-development-asia-and
II. Asia-Pacific Plan of Action on Space Applications for Sustainable Development
Regional Space Plan of Action: from paper to actions for SDGs

188 Actions for 37 Targets of 14 SDGs + SFDRR

Capacity building and technical support is the priority requested by member States
Satellite imagery for disaster management

- On average, the secretariat provides over 50 reports and 150 GB of satellite imagery and products to member States for early warning, response and damage assessment through the RESAP network and collaboration with the UN Satellite Centre.
- Member States shared free of charge; the value is equivalent to 1-1.2 Million USD.
- GISTDA contributed over 30 GB data from 2020-2022.
- A concept paper for a virtual satellite constellation for pre-disaster data and information sharing under development.
Capacity Building: from the classroom to the field

- ESCAP secretariat has organized 40 physical and online thematic trainings during 2018-2022, attended by over 1,300 participants (38% are female).
- Some delivered in collaboration with CSSTEAP and ARTSA.
- A series of Youth Fora on Innovative Geospatial Information Applications will be organized by Indonesia in 2023-2024.
- Crop/drought monitoring under Regional Drought Mechanism in Lower Mekong Basin, with support of China and Thailand.
ESCAP is working with the National Institute of Environment Research of the Republic of Korea (NIER) to use the Geostationary Environment Monitoring Spectrometer (GEMS), launched in Feb. 2020, for air pollution monitoring in 13 Asian countries.

KOICA providing Pandora instruments to several Asia Pacific countries

Thematic training to officials from space and environment authorities:

- JUN 2022: 13 participants from 5 countries (Indonesia, Mongolia, the Philippines, Thailand and Viet Nam)
- AUG 2022: 23 participants from 7 countries (Cambodia, Lao PRD, Indonesia, the Philippines, Mongolia, Thailand and Viet Nam)
Resilient agriculture in the Lower Mekong Basin

- Develop a crop monitoring system combing ground-based information with satellite data.
- Tailored operational tools and a portal will be provided by China and Thailand.
- Knowledge and experiences will be shared with other ASEAN member countries.
- Collaborate with Asia-RiCe funded by Japan.
Integrating spatio-temporal information for SDGs

One Data
- Land Department Division
- Health Ministry
- Statistical Bureau
- Space Agency
- Local government

One Map
- Land Use
- COVID-19 cases
- Population
- Satellite Image
- Ground data

One Platform

Three pilot cities Songkhla, Bandung and Makassar of Indonesia and Thailand is taking actions for operation, with the support of GISTDA and BRIN.
Series of webinars and training on building a geospatial information platform has been organized, with the support from GISTDA, ARTSA, ACCIMT, and BRIN, from May 2020 to February 2022, and stakeholders from over 30 countries.

Support countries in using geospatial data to analyze correlations between the COVID-19 pandemic and socio-economic sectors, and to identify risk hotspot areas by assessing risk drivers, such as high population density, mobility, poor sanitation, low connectivity, and low awareness.
Mapping flood and wildfire risk through AI

**Flood Hotspot Mapping Tool (FHMT) Launch - Q3 2022**
The FHMT will generate flood hotspot maps for significant floods from 1984 till present
- Replicable tool that will use optical and SAR imagery to map hotspots
- Free to use data
- Ability to map new floods (nowcast) and add them to hotspot

**Fire Hotspot Mapping Tool (FHMTO) - Q4 2022**
The FHMT will use AI models to generate pre, now and post fire risk maps at the city, district, and river basin level
- 30-meter base resolution
- Integration with open socioeconomic data sets to compute risk
- Free to use and download data
- Region/country specific analysis
Innovative tools for plastic pollution monitoring

Remote sensing
Crowdsourced data from ground
Mobile phone

Drone
Space station
Satellite
Time lapse camera

RIVER

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III. Geospatial practices for sustainable development in South-East Asia 2022: A Compendium
Compendium 2022 for Southeast Asia will be launched during the 4\textsuperscript{th} Ministerial Conference in Jakarta, Indonesia, on 26 October 2022.
Chapter 1. Introduction and regional context of space applications for sustainable development

Chapter 2. Space applications in South-East Asia: Subregional and national initiatives

Chapter 3. Best practices and lessons learned from supporting the Regional Road Map in South-East Asia

Chapter 4. Trends and evolving subregional needs and solutions

Chapter 5. Policy recommendations
Geospatial practices for sustainable development in South-East Asia 2022: A Compendium

- 91 examples so far (country inputs and online research), with more being added in.
- Even examples across all thematic areas, including the addition of 2 more areas (SPACE + and COVID-19).

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IV. Panel Discussion
Panel Discussion

Panelists

- Ms. Gay Jane Perez, Deputy Director General, PhilSA
- Ms. Sarantuya Ganjuur, Director, IRIMHE
- Mr. Chandath Him, Ministry of Environment, Cambodia
- Mr. Matthew Perkins, Economic Affair Officer, ESCAP EDD
- Ms. Linh Do Thi Thuy, Data Analysis Engineer, MONRE

Questions

- What are the current space technologies being used at your organization for the purposes of air pollution management and monitoring?
- What technical and/or non-technical techniques and practices are of interest to you for the improvement of air pollution at your institution? (i.e. specific type of AI technologies, actions, legislations, etc.)
- How does the GEMS satellite provide unique opportunities for the improvement of air pollution management and monitoring in the Asia Pacific region and what challenges against it do you foresee in the future?
- How could UN ESCAP support more in building capacity of young scientists in the Asia Pacific region to adopt innovative technologies such as those mentioned in the “SPACE+ for our Earth and the Future” concept?
Thank you

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