UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Inputs to the Questionnaire on the use of space science and technology for global health
13 November 2020

1. **Please describe existing or planned formal cooperative agreements and other institutional arrangements (memorandums of understanding, letters of agreement, frameworks of collaboration, etc.) between the health sector and other sectors directly involved in space activities at the national level.**

The ESCAP secretariat is in the process of establishing a trust fund agreement with the Korea International Cooperation Agency (KOICA) to implement in partnership with the Korean National Institute for Environment Research (NIER) a project on "Building the Pan-Asia Partnership for Geospatial Air Pollution information". This project will focus on installing spectrometers in Asian countries to calibrate and validate the Geostationary Environment Monitoring Spectrometer (GEMS) data from the GEO-KOMPSAT-2 satellite launched by the Republic of Korea in February 2020. The project will also focus on building the capacity of governments to utilize this data for their air pollution monitoring programmes while promoting cooperation and dialogue on air pollution management strategies and policies.

In addition, the secretariat is developing a new project in the data and health sector. The project aims to strengthen the capacity of ASEAN member States (AMS) to use satellite-derived data and integrated geospatial information to analyze and monitor air pollution and its negative impact on people in ASEAN region. The project is developed as a joint project with the Seoul National University of Korea, National Research Institute on Environmental Research and WHO.

Through its long-standing Regional Space Applications Programme for Sustainable Development (RESAP), ESCAP has made concerted efforts to promote the application of space technology and Geographic Information Systems (GIS) for supporting disaster risk reduction and inclusive and sustainable development. RESAP serves as a mechanism for regionally coordinated actions. For example, in times of disaster and emergency, and to avoid the loss of life and minimize economic losses, ESCAP responds promptly to requests for support by disaster affected Member States. Furthermore, ESCAP gives high priority to capacity-building programmes and knowledge sharing, which are geared toward implementing the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018 – 2030) (Plan of Action). Additionally, the "Space+" initiative goes beyond the traditional space applications approaches to support implementation of the Plan of Action and will seek to: (a) leverage frontier technologies such as artificial intelligence, Internet of Things, cloud computing and Big Data; (b) engage end users in multiple areas, such as the youth or the private sector; (c) more effectively manage information through the creation of a regional or national cloud-based metadata platform; and (d) strengthen implementation through enhanced partnerships with global and regional stakeholders.

2. **Please provide recommendations regarding the establishment of a dedicated platform for effective coordination among United Nations entities, other international organizations and relevant actors on space and global health issues.**

The secretariat is establishing an Asia-Pacific Geospatial Information Platform. The initiative which spans a ten-year period through to 2030, aims to enhance sharing of satellite data and geospatial information among member States. The platform plans to provide service in the six areas such as disasters (drought and flood); natural resource management (land and water); connectivity (city); social development (health and pandemics); energy (renewable energy); and climate change (environment and air quality). Work will be carried out in partnership with the UN Global Service Center of the United Nations Office on ICT (UN OICT) in Brindisi, Italy and a proposed Asia Pacific Geospatial Data Hub of GEO.

3. **Please describe existing or planned policy-enabled environmental and governance mechanisms for removing barriers to the effective use of space-based technologies in support of global health.**

The Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030), with much foresight, included epidemics in its proposed actions. It specifically requested ESCAP and its Member States to strengthen regional cooperation in order to: 1) leverage data sharing, and promote Big Data analytics for the containment of present and future spreads of diseases and epidemics, 2) to develop capacity on mapping health risk hotspots using geospatial information and Big Data, and 3) to pay special attention to the countries that are most vulnerable to emergency health situations.

ESCAP as the RESAP and UN-GGIM-AP secretariat is promoting sharing of best practices among countries in the region through a series of webinars and virtual meetings. Furthermore, ESCAP as the RESAP secretariat, is working in pilot areas with national partners to integrate geospatial and socio-economic information and identify correlations between COVID-19 and "place, space and community" characteristics.

4. **Please describe existing or planned policies on open data-sharing and participatory approaches to developing and improving access to geospatial information relevant to global health.**

The above-mentioned Asia-Pacific Geospatial Information Platform aims to promote sharing of open and interoperable data. It encourages member States to take participatory approaches to developing and improving access to geospatial information, not only on global health but also on other sectors in the Asia Pacific region. A more open sharing of cross-country and cross-sector comparable satellite data and geospatial information, notably between space-faring data-supply countries and regional data-users in the Asia-Pacific region will deepen understanding of complex sustainable development problems and find solutions for the successful implementation of the SDGs.

The secretariat is working on an initiative entitled "One Data-One Map-One Platform" based on building in partnership with governments an innovative cloud system that utilizes frontier

technologies, and integrates big Earth Data to support monitoring and decision-making for the SDGs.

The ESCAP "OneData-OneMap-OnePlatform" initiative encourages Member States to build a system ('OnePlatform') that utilizes the frontier technologies and integrates with Big Earth Data ('OneMap') to support local SDGs monitoring and decision-making. Given the unstructured characteristics of Big Earth Data, common data formats for cross-sectoral geospatial data sharing are needed so that Big Earth Data can facilitate and support the SDG indicators. In this way, Member States and stakeholders will be able to explore the possibilities for effective country-level SDGs assessment and monitoring. ESCAP is currently piloting the approach in selected cities in Thailand and Indonesia.

Geospatial data should be accessible, available, actionable, affordable to benefit people and inform practices, processes and policies. ESCAP's approach to reviewing and sharing good practices for the upcoming ESCAP publication *Geospatial Practices for Sustainable Development in Asia and the Pacific 2020: A Compendium* includes the following: the practices in the region, the people behind them and benefitting from them, the processes behind the implementation, and the subsequent or enabling policy elements. The skills capacity of people is critical for the effective implementation of policies, calling for well-trained professionals who made these practices possible, who were trained to provide future sustainability and can implement and understanding geospatial applications. Indeed, the processes behind the implementation of geospatial applications do not occur overnight, especially as they are based on individual country and community needs, bridge sectoral silos, and provide space for co-learning, thereby co-creating new ways of integrating, using and sharing information.

5. **Please describe existing or planned efforts related to the geotagging of all assets relevant to health systems, including health information systems.**

ESCAP is integrating geospatial information for finding correlations between COVID-19 and socioeconomic sectors, as well as identifying "hotspot" areas in vulnerable countries. This includes identifying the characteristics of risk hotspots such as high population density, mobility, poor sanitation, low connectivity, and awareness by conducting GIS analysis on relevant data, for example, census and household surveys, population mobility, sanitation, internet access. This allows us to map and target the communities most in need and at risk and identify correlations with policy impacts.

6. **Please describe existing or planned intersectoral coordination and cooperation for effective international, regional, national and subnational capacity-building activities relevant to the application of space science and technology in the field of global health.**

As response to the COVID-19 breakout, ESCAP organized two webinars, with stakeholders from more than 30 countries to share good practices and cross-cutting approaches in integrating geospatial information into COVID-19 response, and explore how to strengthen regional collaboration to develop capacity to map health risk hotspots and mitigate potential risks using geospatial information and big data. Various member States in Southeast Asia requested ESCAP to take further actions including sharing good experiences and operational tools through regional

and subregional training, and specific capacity building events to support other countries in using satellite imagery to analyze the impact of COVID-19, developing a data hub for determining potential risk of COVID-19 across the country focusing on methodology development, and comprehensive COVID-19 situation map focusing on tracking confirmed cases movements and preventing further infections.

In this regard, ESCAP is collaborating with the Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand. to develop operational procedures and training materials on integrating georeferenced data regarding the pandemic to comprehensive data hub and to support the policy makers to understand the pandemic situation and for evidence-based action.

7. **Please describe existing or planned mechanisms to engage educational institutions and other capacity-building mechanisms in motivating young health professionals to acquire skills and abilities required to efficiently use advantages provided by space technology, science and applications at an early stage in their careers.**

ESCAP is collaborating with the Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand to develop an operational platform and sample dashboard to support the policymakers, on data integration and analysis for the COVID-19 situation, in central government agencies and provincial disease control centers. Additionally, ESCAP and GISTDA will organize two online training workshops for government officials from ASEAN countries on geospatial information applications for COVID-19 response and impact analysis.

8. **Please describe existing or planned mechanisms to better integrate space-derived data and information into decision-making processes related to global health, and to harmonize and share such data.**

The Regional Space Applications Programme for Sustainable Development (RESAP), ESCAP serves as a framework for collaboration and mechanism to support countries in better integrating space-derived data into decision-making processes to global health and nearly all other sectors. The ESCAP “OneData-OneMap-OnePlatform" initiative encourages Member States to build a system (‘OnePlatform’) that utilizes the frontier technologies and integrates with Big Earth Data (‘OneMap’) to support local SDGs monitoring and decision-making, with a focus on the locally identified priority needs. Given the unstructured characteristics of Big Earth Data, common data format technologies for cross-sectoral geospatial data sharing can be implemented so that Big Earth Data can facilitate and support the SDG indicators. ESCAP is currently piloting the approach in selected cities in Thailand and Indonesia with an updated focus on health and pandemic preparedness and response.

9. **Please describe how space technology and applications are integrated into health-related emergency planning and management and disaster management plans.**

The ESCAP “OneData-OneMap-OnePlatform" initiative encourages Member States to build a system (‘OnePlatform’) that utilizes the frontier technologies and integrates with Big Earth Data

('OneMap') to support local SDGs monitoring and decision-making, with a focus on the locally identified priority needs. The data from this single platform, will help support emergency planning and management and disaster management plans. ESCAP is currently piloting the approach in selected cities in Thailand and Indonesia with an updated focus on health and pandemic preparedness and response.

10. Please describe key activities, reference documents and plans relevant to the topic "Space for global health".

The Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018–2030), with much foresight, included epidemics in its proposed actions. It specifically requested ESCAP and its Member States to strengthen regional cooperation in order to: 1) leverage data sharing, and promote Big Data analytics for the containment of present and future spreads of diseases and epidemics, 2) to develop capacity on mapping health risk hotspots using geospatial information and Big Data, and 3) to pay special attention to the countries that are most vulnerable to emergency health situations.

Governments are using geospatial data and space applications to support monitoring, response, and preparation for the COVID-19 pandemic. Public and private sectors have collaborated to develop platforms and publish information products, such as web maps of confirmed infections and deaths, maps of critical infrastructure and supplies, and available routes for medical staff, among others.
A sample of country initiatives from Asia and the Pacific:

a. Thailand: lockdown measure impacts and COVID-19 iMAP dashboard
b. Indonesia: Heatmaps of vulnerability levels
c. India: Bhuvan-COVID-19
d. Fiji: dashboard and managing disasters during COVID-19
e. Malaysia: WebGIS dashboard
f. China: health QR codes
g. Philippines: campaign supports innovative apps
h. The Republic of Korea: private sector role's in developing vital platforms

(See www.unescap.org/publications/geospatial-practices-sustainable-development-asia-and-pacific-2020-compendium for the details of each example in Chapter 6)

11. Please provide an overview of existing and planned practices and initiatives in the current uses of space (technology, applications, practices and initiatives) in support of global health and identify gaps, if any, in the following areas:

(a) Telemedicine and tele-health;
(b) Tele-epidemiology and environmental health;
(c) Space life sciences;
(d) Disaster and health emergency management;
(e) Other.

See our inputs to Question 10.