Annex I

RESPONSE FOR SOLUTIONS: "Space2030" Agenda Mid-term Review

For Member States and permanent observer organizations with COPUOS

NOTE BY SECRETARIAT: the following template is designed to allow Member States of the United Nations and permanent observer organizations with COPUOS to provide standardized responses to any of the 4 Overarching Objectives, and showcase their space solutions

Space solution: Leveraging space technology for agricultural development and food security

Overarching objective [1-4]	Action 1.2.
	Action 1.3.
	Action 1.5.
	Action 1.7
	Action 1.8
	Action 2.8
	Action 3.6
	Action 4.10
Country/Observer Organization	Global
Project partners	UNOOSA
Short Project summary and goals	The publication "Leveraging Space Technology for Agricultural Development and Food Security" was produced by FAO and UNOOSA in response to the ongoing dialogue within the Committee on the Peaceful Uses of Outer Space (COPUOS). It underscores the transformative potential of space technologies in enhancing agricultural productivity and ensuring food security amid global challenges. The document advocates for collaborative approaches that integrate advanced technologies while addressing associated risks, particularly space debris. It is structured into three segments: the upstream segment focuses on developing vital space infrastructure, highlighting pivotal Earth observation missions like Landsat and Copernicus, which provide crucial data for precision farming; the midstream segment addresses the importance of data management and spatial data infrastructure (SDI), emphasizing frameworks like the UN-IGIF for improving data accessibility and quality; finally, the downstream segment discusses practical applications of satellite data in agriculture monitoring and management, showcasing platforms such as the FAO Hand-in-Hand Geospatial Platform to facilitate information exchange. This publication aims to foster partnerships between the agricultural and space sectors, further promoting sustainable development in alignment with the 2030 Agenda. This publication serves as a vital resource for stakeholders looking to harness space technologies for sustainable agricultural practices and enhanced food security globally.
Relevant SDGs	SDG 2 SDG 17

Space/Satellite solution:	Documentation of background, status, and potential future development for sustainable space applications in support to agriculture and food security
Project impact	• Increased awareness about the need to better connect the space and agricultural sector • Improved consideration of agricultural needs in space applications
Reference	UNOOSA and FAO. 2025. Leveraging space technology for agricultural development and food security. Vienna. https://doi.org/10.4060/cd3989en

Space solution: SEPAL Cloud Computing Platform

Overarching objective [1-4]	Action 1.6.
	Action 2.1.
	Action 2.2.
	Action 2.3.
	Action 2.4.
	Action 3.1.
	Action 3.4.
	Action 4.10
Country/Observer Organization	Global
Project partners	Norway's International Climate and Forest Initiative (NICFI), Global Forest Observations Initiative (GFOI), UN-REDD Programme
Short Project summary and goals	SEPAL (System for Earth Observation Data Access, Processing & Analysis for Land Monitoring) is a cloud-based geospatial platform developed by the Food and Agriculture Organization (FAO) to support countries in monitoring forests, land use, and climate impacts. It provides powerful remote sensing tools for analyzing satellite imagery without requiring high-end local computing resources. SEPAL integrates Google Earth Engine (GEE) and Amazon Web Services (AWS) to process and visualize high-resolution data from satellites such as Landsat, Sentinel, and MODIS. The platform is crucial for countries engaged in REDD+ (Reducing Emissions from Deforestation and Forest Degradation), enabling them to track deforestation, estimate carbon stocks, and generate land-use change reports. Designed for both beginners and advanced users, SEPAL offers an intuitive web interface and Jupyter Notebooks for more complex geospatial analyses. It supports machine learning applications, cloud computing, and time-series analysis, making it a valuable tool for climate resilience, sustainable land management, and disaster response. By providing free and accessible satellite-based monitoring, SEPAL enhances the ability of governments, researchers, and conservationists to make data-driven decisions for sustainable agriculture, forest conservation, and environmental protection worldwide.
Relevant SDGs	SDG 2 SDG 13 SDG 15
Space/Satellite solution:	Cloud computing environment
	SEPAL integrates multiple satellite sources for almost real-time and historical analysis for forest monitoring, land cover changes, and disaster assessment.

	SEPAL provides a cloud computing environment to undertake time-series analysis. SEPAL empowers governments, researchers, and conservationists to make data-driven decisions for sustainable land and resource management based on satellite-based data.
Project impact	Increased technical capacity to use satellite dataset for environmental, forestry, agricultural assessment
	Enhanced access to space-based data and products and better understanding of the status of natural resources for sustainable development
	Increased access to remote sensing and cloud computing technologies to all countries including developing countries
Reference	https://sepal.io/

Space solution: Agro-Informatics Platform in support to FAO Hand-in-Hand Geospatial initiative

Overarching objective [1-4]	Action 1.7
	Action 2.2.
	Action 2.3.
	Action 2.4.
	Action 2.7.
	Action 2.8.
	Action 3.6.
	Action 4.10
Country/Observer Organization	Global
Project partners	Several hundreds
Short Project summary and goals	The Agro-informatics Platform, led by the Digital FAO and Agro-informatics Division's Agro-informatics team, is a digital public good that helps analyze and compare data on food and agriculture to reduce poverty, hunger and increase economic development. Building on the first and still growing success of the flagship FAO Hand-in-Hand Geospatial platform, the technical arm of FAO Hand-in-Hand Initiative, FAO's expanded Agro-informatics Platform (AP) aims to showcase through more digital capabilities and developments all the new possibilities that are opening now to enable more targeted interventions on the ground. Besides data and geospatial, more elements have now been incorporated, with more content in terms of knowledge, information as well as new techniques, including Artificial Intelligence (AI) and Machine Learning (ML).
Relevant SDGs	SDG 2 SDG 17
Space/Satellite solution:	The Agro-informatics Platform by FAO leverages space and satellite technologies to enhance agricultural data management and analysis. It utilizes satellite imagery, remote sensing, and geographic information systems (GIS) to transform data into actionable insights. This platform

	supports more accurate and targeted agricultural interventions, helping to reduce hunger and poverty through integrated, data-driven solutions
Project impact	• Sharing freely accessible remote sensing data, products, and metadata • Allowing simple data processing and statistical analysis
Reference	https://data.apps.fao.org/?lang=en

Space solution: Geospatial applications in emergency impact assessment

Overarching objective [1-4]	Action 2.5
	Action 3.4
	Action 4.10
Country/Observer Organization	Global
Project partners	World Food Programme
Short Project summary and goals	The increasing frequency and intensity of natural hazards including floods, droughts, volcanic eruptions, earthquakes, dust storms and wildfires, as well as human-induced crises, including violence and conflicts, oil spills, dam failures, toxic wastes, industrial pollution, transport accidents, factory explosions, fires and chemical spills have devastating effects on food security and represent a substantial risk to sustainable agriculture and the livelihoods of people around the world. Thus, much attention has been given to reducing the likelihood of a hazard occurring as well as disaster risk, mitigating impacts and establishing early action and response, quickly and efficiently.
Relevant SDGs	SDG 2 SDG 13
Space/Satellite solution:	Utilizing satellites to monitor environmental changes, detect hazards, assess damage, support response and recovery. Enhance use of early warning systems for flood prediction, drought monitoring, as well as other natural hazards, shocks and conflicts. Integration of remote sensing, field data and cloud computing for predictive modelling, impact assessment and rapid decision-making
Project impact	Increased awareness about advancement in satellite monitoring, geospatial analysis, challenges and opportunities for disaster risk assessment. Supporting governments, policymakers and organisation to develop risk-informed decision-making processes for disaster preparedness and response. Promote guidelines for rapid response using space-based technology and emergency management tools. Strengthens capacity-building programs to equip nations with knowledge and tools for resilience.
Reference	Ikram, Q.D., Mushtaq, F., Ghosh, A., Jalal, R., Tattaris, M., Vollrath,A., Dadhich, G., Spiller, D., Farren, K., Marsland, N., Gauny, J., Amparore, A., Schumann,G., Franceschini, G., PouemeDjueyep, G., Muchoney, D., Aksoy, E. & Henry, M.2024. *Geospatial applications in emergency impact assessment.* Second edition. Rome, FAO.
	https://openknowledge.fao.org/items/6daedc52-b0d5-46c5-9434-3b5d14cbc5b4

Space solution: International standards for land cover land use

Overarching objective [1-4]	Action 1.6.
	Action 1.7.
	Action 1.8.
	Action 2.1.
	Action 2.2.
	Action 2.3.
	Action 2.4.
Country/Observer Organization	Global
Project partners	International Standard Organization (ISO)
Short Project summary and goals	International standards on land cover and land use play a crucial role in promoting consistent, interoperable, and actionable data for sustainable development. By providing harmonized classification systems, methodologies, and data-sharing protocols, these standards enable all Member States to generate, analyze, and compare geospatial information effectively. This is particularly vital for addressing global challenges such as climate change, disaster risk reduction, food security, and urban planning. By integrating standardized land cover and land use data into space solutions, stakeholders can leverage satellite-based technologies for Earth observation, resource management, and sustainable development initiatives. Implementation of land cover land use standards is supported by software, training materials and technical documentation.
Relevant SDGs	SDG 2 SDG 13
Space/Satellite solution:	Utilizing satellites to monitor environmental changes, detect hazards, assess damage, support response and recovery. Enhance use of early warning systems for flood prediction, drought monitoring, as well as other natural hazards, shocks and conflicts. Integration of remote sensing, field data and cloud computing for predictive modelling, impact assessment and rapid decision-making
Project impact	Leveraging standardized satellite data applications across multiple sectors. Enhanced technical capacities to innovate in earth observation and land monitoring. Improved cost-effective and efficient processes for land monitoring systems.
Reference	https://data.apps.fao.org/lclr-tool/en/
	https://openknowledge.fao.org/items/3bc88d42-2a37-4aaa-88e0-58ff45f2c4d7 O' Brien C.D., Di Gregorio, A., Mushtaq, F., Henry, M., Tchana, E., Mosca, N., Blonda, P., Hill, C., Latham, J. and Muchoney, D. 2021. Register implementation for land cover legends. Rome, FAO and UoS and STIIMA-CNR.