Leveraging Space Technology for Agriculture and Food Security

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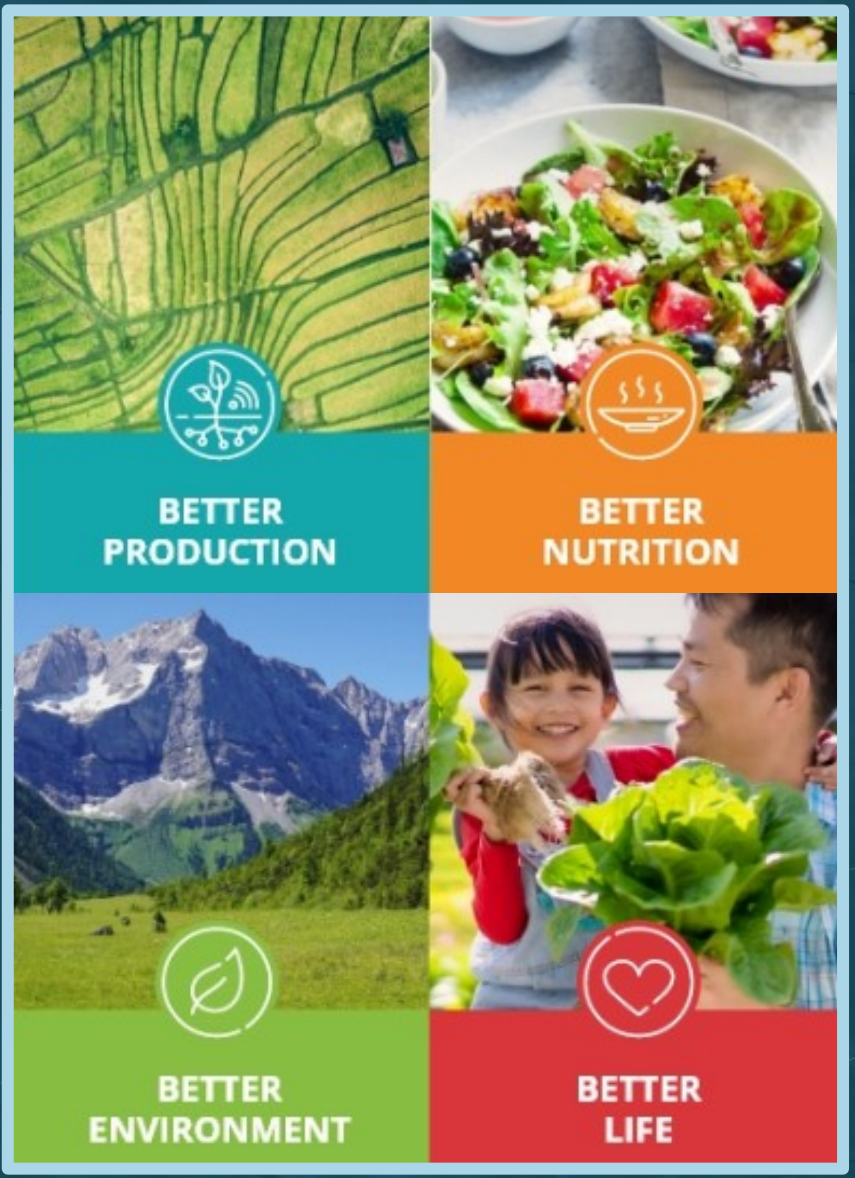
Supported by the Geospatial Unit of Land and Water Division (NSL), FAO
Matieu Henry, Technical Officer,
Dario Spiller, Remote Sensing Expert,
Jara Villanueva, Geospatial Expert

FAO’s work - a general overview

FAO plays a fundamental role in support to **food security**, **monitoring natural resource,** and **provision of information for policy relevant solutions** based on **geospatial data**, **information** and **services**.

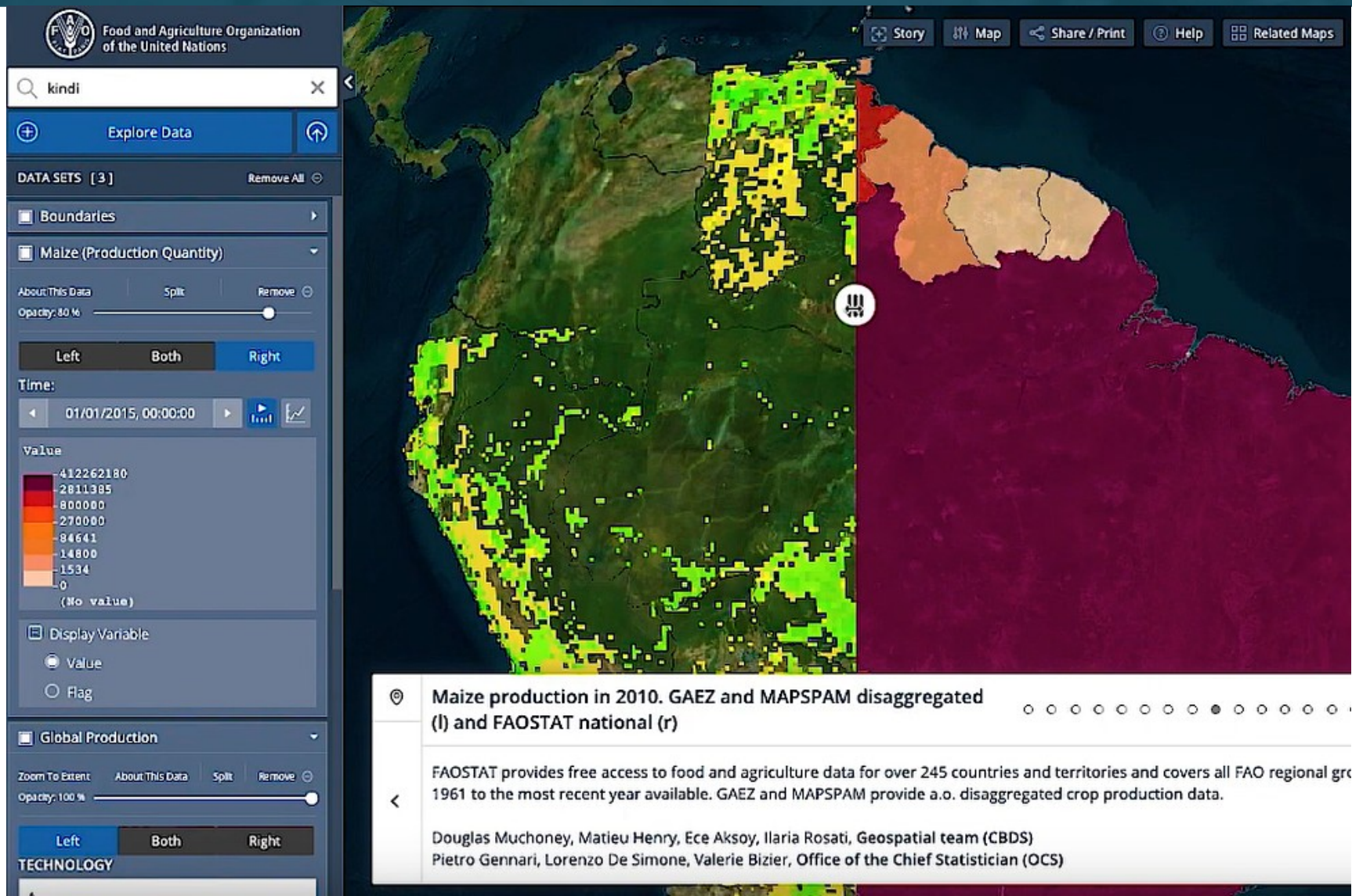
FAO supports development plans, growth strategies and decision-making processes in member states through the transformation to **MORE *efficient***, ***inclusive***, ***resilient*** and ***sustainable*** agri-food systems for **better production**, **better nutrition**, a **better environment**, and a **better life**, *leaving no one behind*.



Integrated solution using geospatial technology

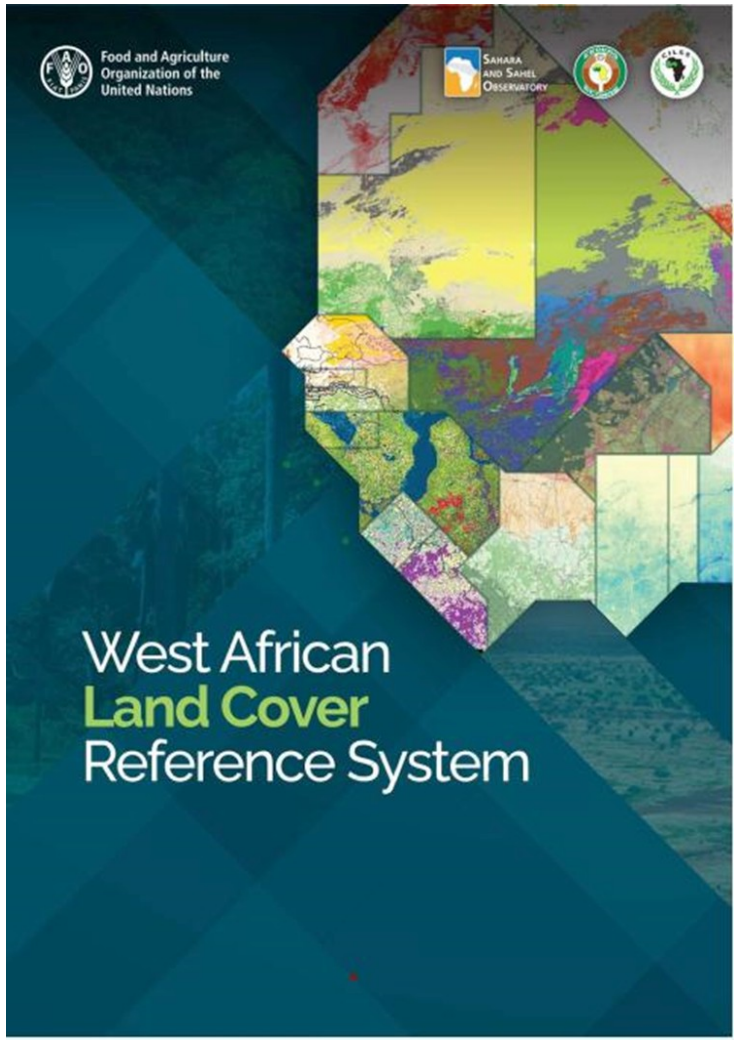
Hand-in-Hand (HIH) Geospatial platform

The Hand-in-Hand (HIH) Initiative supports the implementation programmes to accelerate agrifood systems transformations by eradicating poverty (SDG1), ending hunger and malnutrition (SDG2), and reducing inequalities (SDG10), using geospatial modeling and a partnership-building approach.

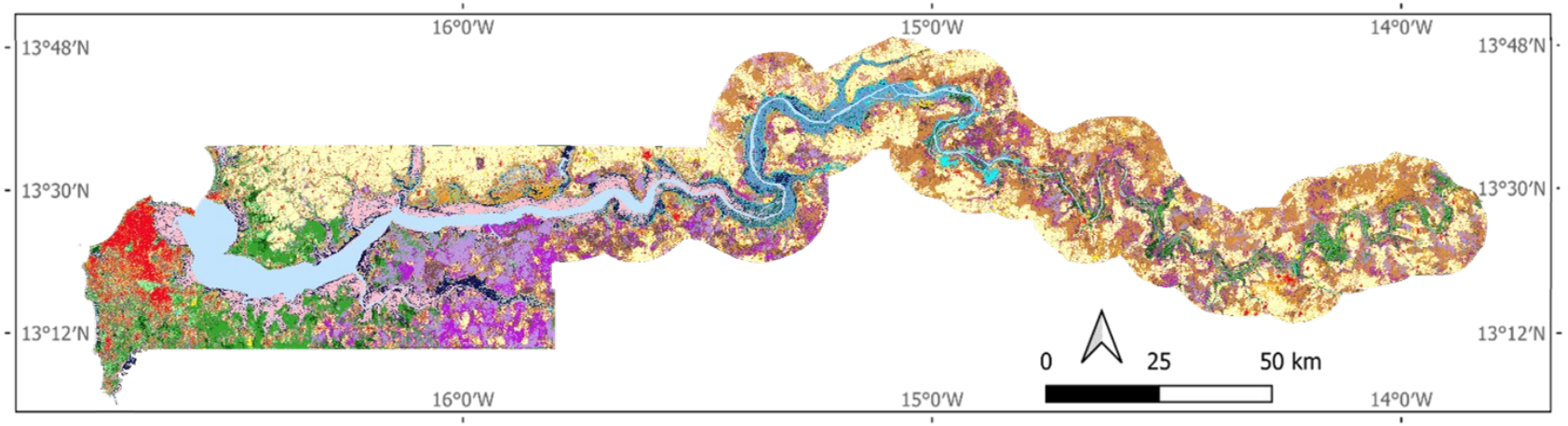


Example of integrated solutions

Regional classification system supporting national land cover mapping



2023 Land Cover Map of Gambia



The West African Land Cover Reference System serves as a reference framework in support of land cover monitoring for various national and/or regional efforts, such as the monitoring of land, forests, crops, greenhouse gases, biodiversity and many others. In addition to providing a strong foundation for the harmonization and integration of land cover information from West African nations and organizations, the system helps to connect land cover information from different sources and make it interoperable based on the latest international standard on land cover (ISO 19144-2).

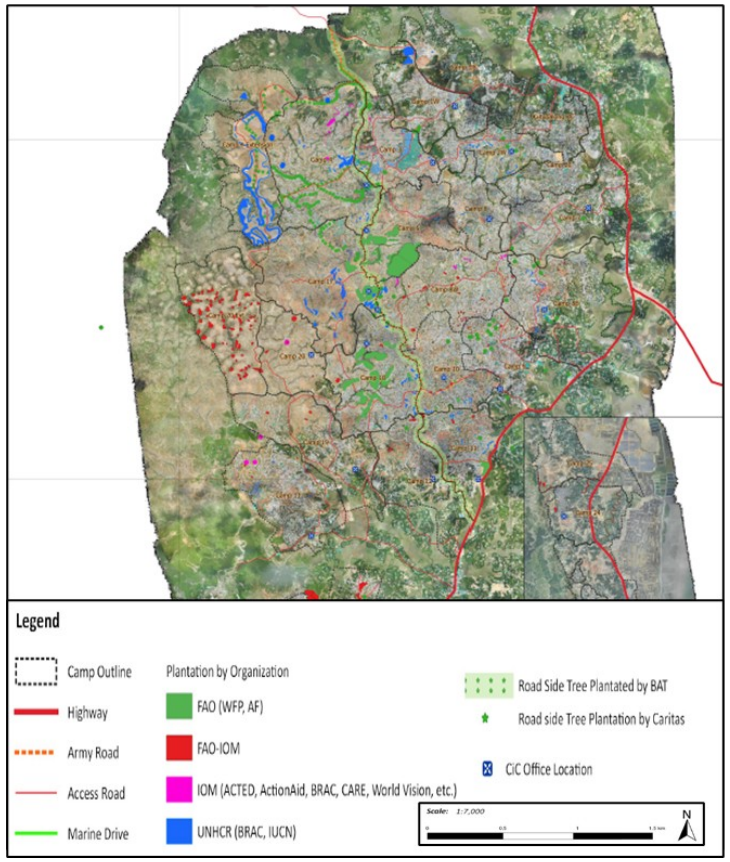
Example of integrated solutions

Restoration monitoring through integrated approach using geospatial data and methods

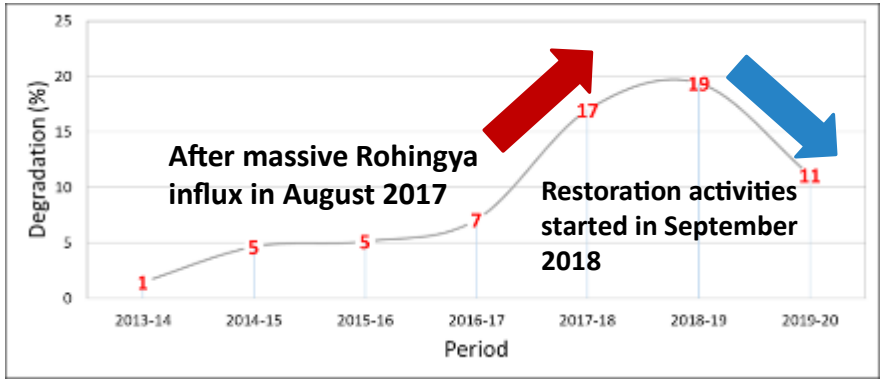
Food and Agriculture Organization of the United Nations | IOM UN MIGRATION | UNHCR The UN Refugee Agency

Bangladesh Rohingya Refugee Crisis – Cox's Bazar District

Plantation by Organizations



Spatially information from geospatial assessments integrated with technical guidelines for sustainable land management and an adaptive management strategy was critical in enabling a collaborative, multi-disciplinary and evidence-based approach to successfully restoring degraded landscapes in a displacement setting.



Challenges: Strategic space missions planning for agriculture

Space segment / Upstream Segment

Increasing number of redundant space missions

Midstream Segment

Spatial and temporal gaps in data acquisition

User segment / Downstream Segment

Few agriculture-specific satellite missions

Challenges : Global adoption of standardized geospatial information

Space segment / Upstream Segment

Midstream Segment

User segment / Downstream Segment

- Space data cost and access restrictions
- Data format Interoperability and quality
- Non-harmonized reference systems and incompatible scales
- Lack of adoption of existing standards for spatial data

Challenges: Standardized framework for user-driven agriculture applications

Space segment / Upstream Segment

Midstream Segment

User segment / Downstream Segment

Underutilized available data for agriculture product development

Information gaps in agricultural monitoring platforms

Redundancy in global and national agricultural monitoring solutions and platforms

Lack of user-driven standard framework for satellite development for agriculture

Space technology for agrifood security

FAO, in collaboration with UNOOSA, aims to develop a publication to further leverage space technology for agriculture development and food security.

This initiative goal is to:

1. **analyze the current state** of space technology for agriculture applications
2. **identify gaps** in the space technology value chain for agriculture applications
3. **provide recommendations** to strengthen the peaceful use of space technology for agriculture

What are the benefits of the initiative?

Space segment / Upstream Segment

Support space sustainability by reducing redundant missions through a solution-driven space operational framework for agriculture applications

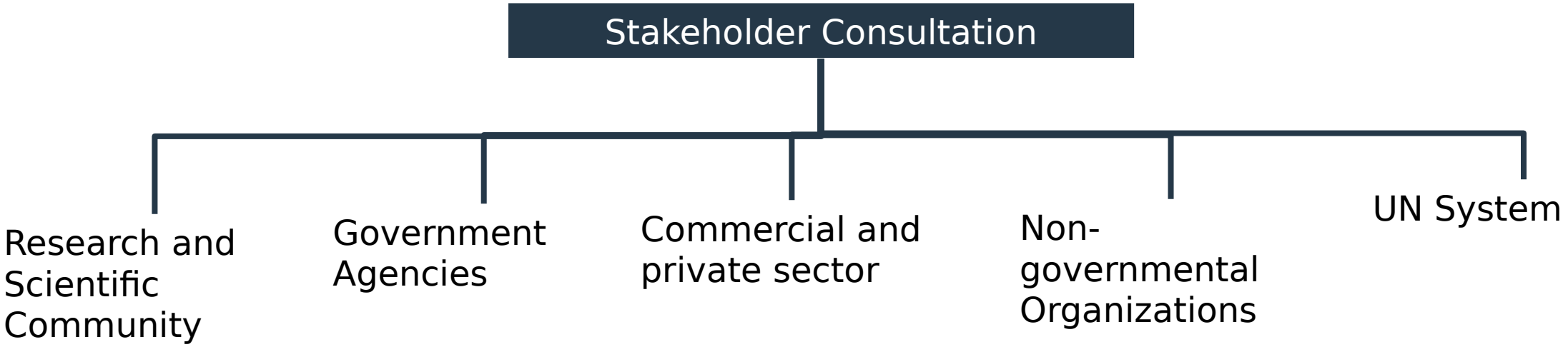
Midstream Segment

Increased collaboration for global interoperability of spatial data infrastructure for agricultural applications

User segment / Downstream Segment

Enhanced technology adoption for information gap filling in agricultural monitoring

Ongoing Activities:



Thank you for your attention!

Geospatial Unit, Land and Water Division (NSL), FAO

Matieu Henry, Technical Officer (matieu.henry@fao.org)
Dario Spiller, Remote Sensing Expert (dario.spiller@fao.org)
Jara Villanueva, Geospatial Expert (jara.villanueva@fao.org)