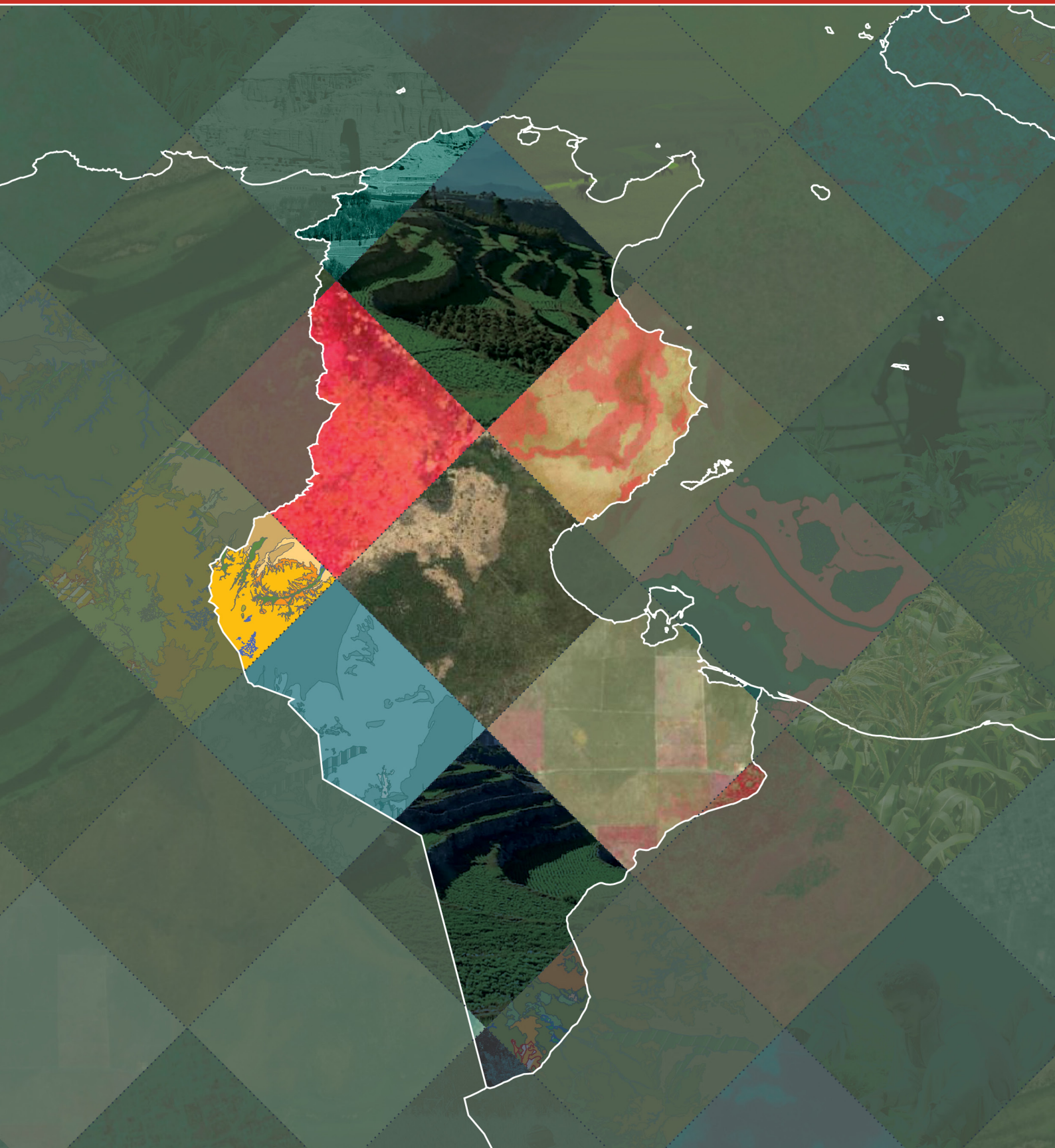




Food and Agriculture
Organization of the
United Nations

Tunisia

Land Cover Mapping Process



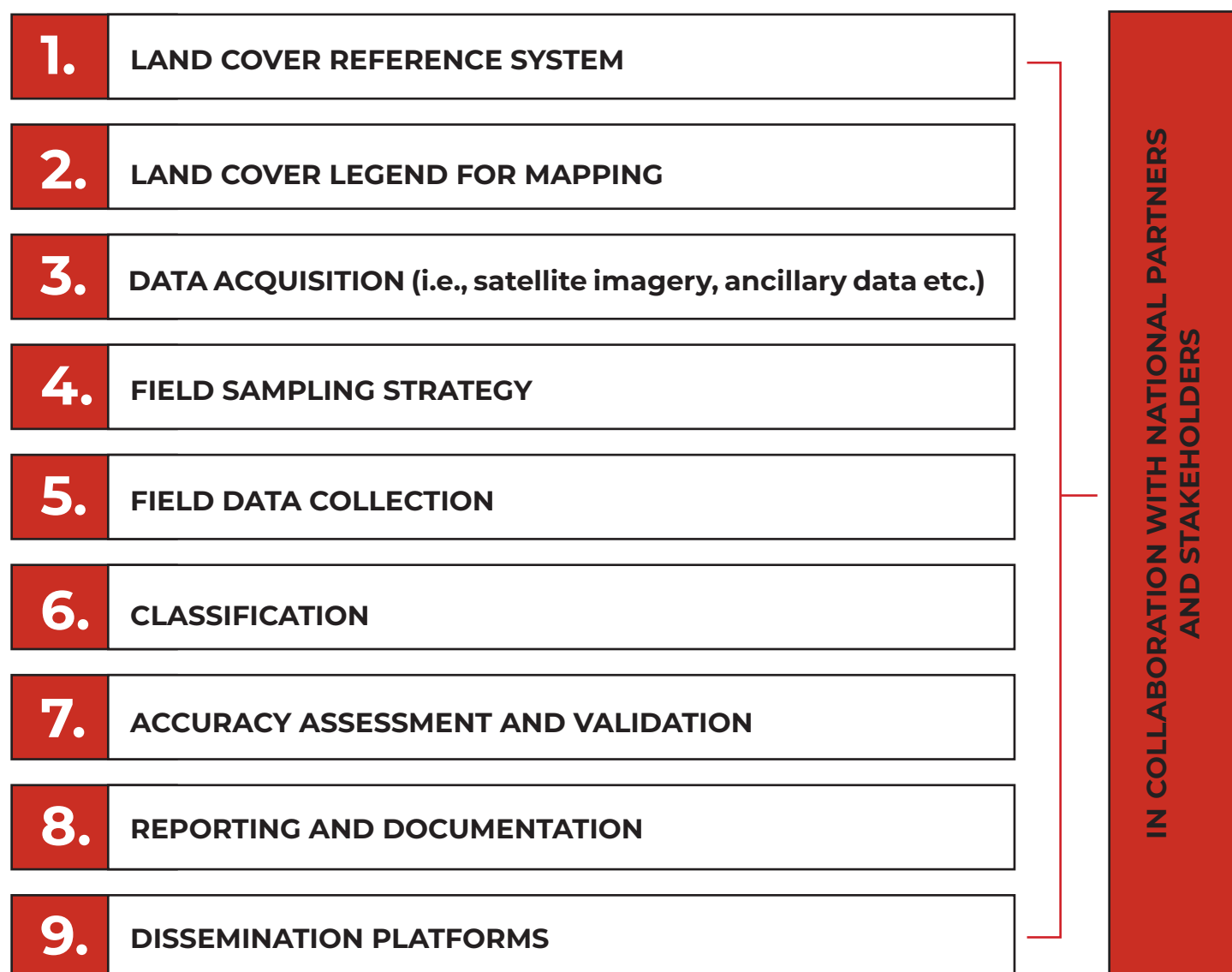
Land Cover Mapping Process - Tunisia

Land cover and land use information is a vital information for governments, agencies and institutions of a country to make informed decisions, promote sustainable development, protect the environment, food security biodiversity conservation, climate change and ensure the well-being of their citizens. It plays a critical role in shaping policies and actions that align with long-term sustainability goals.

Technological advancements have significantly heightened the value of land cover (LC) information. However, this progress has also widened the user base, posing challenges for harmonization and uniform utilization. The constant generation of new LC data and diverse classification schemes has led to inconsistencies, hindered interoperability, and limited practical application due to traditional vague classifications. Hence, there is a critical necessity to create reliable, standardized LC data and legends using geospatial tools and applications. This approach is crucial to effectively address global, regional, and national environmental monitoring needs and challenges.

The Food and Agriculture of the United Nations (FAO) is involved in developing and enhancing all aspects of land cover and its applications. FAO offers land cover services at global, regional, and national levels following international standards and using the latest state of art technology innovation. This includes **land cover legend registry**, **land cover ontology** and **classification systems**, essential to consistency across systems and disciplines for sharing; development of methodologies for operational rapid assessment of land cover and its changes at national, regional and global scale; and helping member countries to meet their need for up-to-date, consistent and detailed land cover and land use information. FAO Tunisia is working closely with the national partners to ensure the sustainability of the system to support ongoing projects.

The following are the proposed steps for the land cover production chain for Tunisia.



1. LAND COVER REFERENCE SYSTEM

The initial stage in land cover production involves establishing a land cover reference system conforming to international standards. This is a system which contains all the land features in the region / country / area of interest. The system is designed to be flexible enough to adapt and evolve with the needs.

2. LAND COVER LEGEND

The second step is the identification of the land cover legend (classes) based on the reference system. Legends (land cover classes) in the reference system are expandable, therefore based on the objective of the mapping and considering the available data, legends (land cover classes) can be identified.

3. DATA ACQUISITION (i.e., satellite imagery, ancillary data etc.)

The third step is to acquire all the available remote sensing data (satellite imagery) and all existing / available ancillary data.

The selection of the data source will depend on the spatial resolution required and the availability of the data.

4. FIELD SAMPLING STRATEGY

The fourth step is to develop field sampling strategy for the data collection within the area of interest. Establishing effective collaboration with countries is key during this phase, involving the utilization of field enumerators and ground truth points.

5. FIELD DATA COLLECTION

The fifth step is collecting data from the ground or using online platforms based on a sampling strategy. This can be done using Collect Earth Online or other platforms (e.g., Qfield).

6. CLASSIFICATION

Once the preprocessed satellite imagery is available, various classification techniques can be used to classify land cover using training data. These techniques include supervised and unsupervised classification, object-based image analysis, and machine learning algorithms.

7. ACCURACY ASSESSMENT AND VALIDATION

An assessment to evaluate the accuracy of the land cover mapping results is typically performed. This involves comparing the classified image to ground truthed data, such as field surveys or existing land use maps, to calculate the overall accuracy and user and producer accuracies for each land cover class.

8. REPORT AND DOCUMENTATION

Documentation and reporting of each step is very important in the land cover production process. These documentations including concept notes, proceedings of the trainings, detail document on the national land cover reference system, photokeys for the legends, land cover methodology, land cover maps, datasets and databases and others.

9. DISSEMINATION PLATFORMS

A data dissemination platform is a system or infrastructure designed to efficiently and effectively distribute and share data with a wider audience, typically via the internet or other digital means. It serves as a centralized hub or online space where data providers can publish, organize, and make their data accessible to users, who can then access, analyze, visualize, or download the data based on their needs. A country specific dissemination can be developed to ensure the data accessibility and availability to national stakeholders.

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OTHER PLATFORM LINKS

Collect Earth Online
<https://app.collect.earth/>

SEPAL
<https://sepal.io/>

Hand in Hand Geospatial
<https://data.apps.fao.org/?lang=en>

Land Cover Legend Registry,
<https://data.apps.fao.org/lclr-tool/en/>

FAO Agro-Informatic Data Catalogue
<https://data.apps.fao.org/catalog/>

Google Earth Engine
<https://earthengine.google.com/>

Land characterization system software
<https://www.fao.org/geospatial/resources/tools/land-characterization-system-software/en/>



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