

Scope of Work

Drone Mapping of 7,725 Plantations in the SeGaBi Zone (Senegal, The Gambia, Guinea-Bissau)

1. Background

Shelter For Life International (SFL) is implementing an eight-year program (2017-2025) in Senegal, The Gambia, and Guinea-Bissau (sometimes referred to as (SeGaBi) in support of its theory of change).

The objective of the program is to develop and improve the cashew value chain and create linkages needed to support an integrated regional trade network for cashew trade. Linked with this, the LIFFT-Cashew worked to improve the production, processing trade of cashew nuts and kernel in local and international markets.

A key component of this initiative involves the georeferencing and mapping of cashew plantations and other agricultural assets to improve data-driven decision-making, land-use planning, and farm management.

To support this objective, accurate and standardized geospatial data is needed to assess the distribution, scale, and condition of cashew farms. This information is critical for developing localized extension services, targeting investments, improving traceability, and responding effectively to climate and market-related challenges.

Given the technical complexity of this task, the project intends to contract a qualified technical firm to conduct drone mapping of 7,725 plantations, distributed as follows:

- 2,238 plantations in Senegal
- 1,800 plantations in The Gambia
- 3,687 plantations in Guinea-Bissau

Engage a company to collect geospatial data production using advanced tools such as ArcGIS Pro, ArcGIS Online, and drone imagery platforms like DJI Terra.

This mapping initiative will serve as a foundation for building a centralized plantation database across the three countries, informing both local planning and regional agricultural strategies.

2. Objective of the Mapping

The overall objective is to **produce accurate, georeferenced high-resolution maps** of all targeted plantations, to populate the project's GIS database.

The specific objectives are as follows:

- Accurate and detailed mapping of 7,725 plantations including 3,687 plantations in Guinea Bissau, 2,238 in Senegal, and 1,800 plantations in The Gambia;
- Provide essential data for each plantation density;
- Provide production estimates;

- Count the number of plantations (Cashew Trees)
- Determine tree age
- Deliver GIS-ready outputs (shapefiles, geodatabases, orthophotos).
- Provide PDF maps and publish interactive web maps (ArcGIS Pro and ArcGIS Online).
- Provide advanced training 4 of our agents and give them a certificate in drone operation

3. Methodology

The selected service provider shall apply a structured approach across five key phases:

1. Preparation Phase

- Hold kickoff and coordination meetings with the SFL project team.
- Review the GPS lists of target plantations provided by SFL.
- Prepare field logistics and secure drone flight permits where required.

2. Drone Data Collection

- Conduct low-altitude flights over each plantation.
- Follow national aviation regulations and drone safety standards.

Note: The preferred drone is the DJI Mavic 3M, as it is specifically designed for agriculture and meets all technical requirements for this activity. If the selected company proposes an alternative drone, it must have equivalent capabilities, including multispectral imaging, high-resolution orthomosaic generation, agricultural mapping functions, and full compatibility with DJI Terra and ArcGIS Pro

3. Data Processing

- Process imagery using certified software DJI Terra, DJI Smart Farm and ArcGIS Pro
- Generate orthomosaics, vector outlines, and digital surface models using certified software DJI Terra, DJI Smart Farm and ArcGIS Pro

4. Data Analysis and Structuring

- Accurately delineate the cultivated areas using DJI Terra, DJI Smartfarm and ArcGIS Pro
- Attach standardized metadata: country, region, plantation code, area, etc.

5. Deliverables and Reporting

- Export results in multiple formats: .shp, .kml, .tif, .pdf
- Publish interactive maps on ArcGIS Online.
- Submit a technical report detailing methodology, coverage, quality control, and limitations.

- During the handover process, the selected company must deliver advanced practical training to Shelter For Life International staff on all activities performed, including Data Collection, Data Processing, Data Analysis, and the use of DJI Terra, DJI Smart Farm, and ArcGIS Pro. Full methodology explanations must be included.
- The selected company is responsible for obtaining all necessary government authorizations and permits to ensure that Shelter For Life International can legally operate the drone equipment after completion of the contracted services.

Note: All the information that will be collected **MUST** be handed over to Shelter For Life International and should not be used to shared with other parties.

4. Expected Results

By the end of the mapping, the following results are expected:

- 7,725 plantations successfully mapped in the three target countries.
- High-resolution orthophotos generated for all mapped sites.
- GIS-ready datasets integrated into the LIFFT-Cashew MIS platform.
- Technical and mapping reports delivered (one per country + one consolidated).
- Enhanced regional plantation database with detailed land cover and planting density, production and age information.

5. Requirement for qualified service providers

- The selected service should be officially registered company,
- Have relevant experience and applicable permits to operate drone in three countries and to have a qualified personnel (attach all CVs)

5. Implementation Timeline (65 Days)

Activity	Estimated Duration	Tentative Period
Mobilization and Planning	2 days	Days 1–2
Mapping in Senegal (2,238 sites)	18 days	Days 3–20
Mapping in The Gambia (1,800 sites)	10 days	Days 21–30
Mapping in Guinea-Bissau (33,687 sites)	25 days	Days 31–55
Data Processing and Final Reports	5 days	Days 56–60
Advanced Training on Full Methodology	5 days	Days 61–65

Total Duration: 65 calendar days