Federal Government of Somalia
Somalia National Bureau of Statistics (SNBS)

Terms of Reference for GIS consultant – Agriculture Census Preparation

Project: Somali Integrated Statistics and Economic Planning Capacity Building Project
Financing: World Bank
Implementing Agency: Somalia National Bureau of Statistics (SNBS)
Duty Station: Mogadishu, Somalia (with travel to Federal Member States as required)
Contract Duration: 12 months
Reports To: Director General, SNBS
Technical Coordination: Production Statistics Directorate and Agriculture Census Technical Team
Reference number: SO-SNBS-528773-CS-INDV

1. Background

Agriculture is at the heart of Somalia's economy and central to the livelihoods of its people. The sector is highly diverse, combining rainfed crop production, irrigated farming along the Juba and Shabelle Rivers, extensive pastoral and livestock systems, and coastal agricultural and fisheries activities supported by Africa's longest coastline, stretching more than 3,300 kilometers. Livestock—especially camels, cattle, goats, and sheep—provides the main source of income for rural households and contributes significantly to national exports. Meanwhile, farmers using irrigation help grow food that play essential support local trade.

Although it does matter, Somalia has never conducted an agricultural census. Decades of conflict, coupled with very weak systems and inadequate financing for the statistics work, along with harsh climatic conditions, resulted in large data gaps in agricultural statistics. We still understand very little about crop performance, the number of animals, land users, water establishments, farm types, and herd mobility. Lacking such hard data, planning is a bit difficult: feeding people remains volatile, response to weather shocks becomes tougher, and increasing agri-investment can be akin to venturing into speculation.

To address these challenges, the SNBS- supported through financing and technical assistance provided by the World Bank Somalia Integrated Statistics and Economic Planning Capacity Building Project-is preparing to conduct the country's first ever Agriculture Census. It will be

implemented using FAO's WCA 2020/2030 methodology and is expected to create Somalia's first-ever comprehensive and current dataset on agriculture.

From the data collected provides clear detail on farming and animals, water usage for crops, mobility of pastorlists, land utilization for grazing, fishing, and also labor in agriculture. This data assists the government of Somalia, along with private enterprises, to develop improved policies and increase the food supply, while at the same time coping with climate change, in addition to allocating appropriate funds for agriculture and rural development and pastoralist livelihoods improvement. With a task as large as this, the SNBS requires sound expertise such that the count makes sense on paper and functions in real life, matching Somalia's diversified farming areas—whether green river belts, arid grazing lands, herding paths, or seaside spots. While precision is important, approaches should be suitable for the tough conditions encountered; whether tracking a mobile herdsman or farms close to rural area, each zone will pose its unique challenges. To get proper results, methods cannot be one-size-fits-all but should adapt based on terrain, accessibility, and culture in general. From set up to actual data collection, each step depends upon well-trained personnel who can understand numbers and rural realities. Since environments are sharply different across regions, flexibility outpaces rigid plans at counting agriculture and livestock across the nation.

2. Objective

The purpose of this position is to provide expertise and assistance in GIS, maps, or satellite data so SNBS can build the spatial parts of the farm census correctly.

The GIS Expert will lead the creation of agricultural sample frames, produce high quality agricultural and pastoral maps, support EA boundary development, contribute to sampling design, build digital map tools for field teams, and develop SNBS staff capacity in GIS and spatial analysis.

3. Scope of Work

The GIS Expert will be cooperating with SNBS technical teams and the Agriculture Statistics Consultant and PIU to complete the following tasks:

3.1 Development of the Master Agricultural Frane

- Collect, harmonize, and analyze available geospatial data that is relevant to agriculture (e.g., land cover, settlements, water sources, road networks, vegetation indices).
- Use satellite imagery, remote sensing techniques, and classification methods to identify and outline agricultural lands, irrigated areas, rangelands, grazing regions, and corridors for pastoral movement.
- Identify map layers that serve for sample grouping and selection—national coverage with SNBS cartography rules matching

3.2 Enumeration Area (EA) Mapping and Boundary Support

- Working closely with SNBS, adjust and confirm EA boundaries that will be utilized for the agricultural sampling frame and enumeration area.
- Ensuring that EA boundaries are determined by agriculture, livestock, differences in agro ecological zones, and being operationally feasible.
- Prepare maps for EA that are to be used for field planning, logistics, and for supervising and controlling quality.

3.3 Geospatial Support for Sampling and Census Design

- Provision of spatial analysis and inputs to sampling design, which will cover area measurements, agricultural zone delineation, and stratification layers.
- Provide field teams with intuitive digital maps integrated into tablets.

3.4 Digital Maps, GPS Tools, and CAPI Integration

- Empower enumerators to use geospatial tools and ensure data collection is accurate locations.
- Support the integration of geospatial navigation tools by SNBS in the digital data collection system (e.g., Survey Solutions, CSPro, Kobo)
- Offline use of maps in the field must be optimized due to the limited connectivity in rural and nomadic areas of Somalia.

3.5 Support to Pilot Census Activities

- All geospatial materials required for the pilot census are prepared including agricultural master sample frame maps, EA maps, and field navigation tools.
- Field teams are trained on GPS usage, EA verification, and geospatial protocols.
- Pilot mapping results are analyzed and recommendations are given to strengthen the final census mapping approach.

3.6 Capacity Building

- Training on GIS software (ArcGIS, QGIS), remote sensing workflows, spatial data management, and map production will be conducted for SNBS staff in a hands on manner.
- The development of user friendly manuals, standard operating procedures (SOPs), and documentation will be the main way to make GIS work alive after assignment.

3.7 Reporting and Technical Communication

- Regular progress updates, technical briefs, and documentation will be prepared for SNBS management, and the project implement unit.
- All the GIS processes, datasets, and decisions will be well documented and shared with SNBS.

4. Deliverables

4.1. Inception Report

- Work plan, methodology, timeline, data needs, and GIS workflow are all included.

4.2. Agricultural Sample Frame Spatial Layers

- Classification of agricultural land
- Areas with irrigation and close to rivers
- Herding and grazing land
- Sea and Ocean Fishing Zones Identification
- Fish Markets Identification

4.3. Updated and Finalized EA Maps

- A detailed delineation of data collection zones for agricultural census purposes across the nation
- Maps for supervisors and enumerators prepared

4.4. GIS Inputs for Sampling Design

- Stratification maps
- Spatial calculations and area measurements
- Sampling frame visualizations

4.5. Digital Field Map Packages

- Navigation layers compatible with offline CAPI
- GPS field reference tools

4.6. Pilot Census Mapping and Validation Report

- Easly findings EAs
- Clearly verified boundary
- Listing and documenting lessons learned and adjustments

4.7. GIS Training Materials and Support Documentation

- Training curriculum presentations
- Process Documentation and Standard Operating Procedures (SOPs) and workflows
- GIS guides and technical reference manuals

4.8. Final GIS Technical Report

- Summary of methods, datasets produced, classification approaches, and recommendations for full census rollout.

5. Qualifications

- Master’s degree in GIS, Geomatics, Remote Sensing, Geography, or a related field.
- A minimum of 8 years of experience in GIS or remote sensing is required.

- ArcGIS, QGIS, and Earth Engine skills are desired; satellite image analysis and mapping relevant to census.
- Fluent English language, both writing and speaking
- Experience in spatial classification and land cover mapping and land use.
- Experience to train and mentor national staff.
- Knowledge of Somalia's geography and agricultural systems desirable.

6. Institutional Arrangements

- The direct supervision of the consultant will be the responsibility of the Director General of SNBS.
- The Professional support will come from the Production Statistics Directorate, the GIS Section, and the Agriculture Census Technical Team.
- Constantly the consultant will be in cooperation with the Project Implementation Unit (PIU), which includes the Agriculture Statistics Consultant, ICT/Survey Solutions team, and other technical staff.
- The PIU will facilitate the planning, monitoring and alignment of all the project components across the board.
- Office space, datasets, GIS software, logistical support, and administrative coordination will all be provided by SNBS.

7. Duty Station

- Mogadishu is the primary duty station.

8. Duration

- The assignment is for 12 months coinciding with the Agriculture Census preparation calendar.

9. Payment

- World Bank's procurement and financial guidelines will apply; payments will be made only after the submission and acceptance of the deliverables.