Terms of Reference
Junior Remote Sensing Officer for Mangrove monitoring
at Foundation for Forest Management and Production Control (SBB)

Project Title:	Strengthening and improving the existing mangrove monitoring system
Contracting Authority:	Foundation for Forest Management and Production Control (SBB)
Contract Type:	Individual Contract (IC)
Duration of Assignment:	12 months
Start Date:	March 2026

1. BACKGROUND

The Mangrove Monitoring System, set up with support of the first GCCA+ project in Suriname, achieved its main goals in establishing the national mangrove forest cover extent as well as data in support of carbon estimations and biodiversity data. Following these results, the GCCA+ phase 2 project was approved with the objective to further strengthen the Monitoring System through improved remote sensing and field data acquisition.

In the GCCA+ phase 2 project, sampling units increased from eleven (11) to seventeen (17) sampling units, ranging from degraded to pristine mangrove areas along the coast. The project will expand earlier efforts by adding sampling units on the ground, with specific attention to units in areas dominated by *Rhizophora spp.* (red mangrove). This wide range of sampling will allow for comparative studies to better understand the complex mangrove ecosystems and inform policy adjustments and improvements, that are subject to significant pressures on their mangrove extent and biodiversity.

Existing permanent sampling plots first measured in 2019, then in 2022, will be re-measured towards the end of the project as is mandatory practice for national forest inventory plots. Additional parameters will be included in the protocols for all sampling plots to broaden the understanding of the mangrove ecosystems, especially in relation to their overall health. These additional parameters will involve flora (mangrove species and other vegetation), fauna (aquatic and terrestrial key indicator species), soil (heavy metals and nutrients) as well as water quality parameters. In addition, novel methods for Suriname, to measure mangrove health will be explored, building on earlier experience. The Commewijne district will be the pilot site to develop a comprehensive Mangrove Quality Index that could classify mangrove ecosystem health.

Additional activities will focus on capacity building among national partners, including both personnel and equipment, in areas relevant to executing national forest inventory (NFI) work, subsequent data processing and remote sensing. Where possible, new technologies will be integrated within the NFMS.

Within this project, improved monitoring and classification of wetlands will also take place, of which mangroves form a key component. This is essential to ensure a comprehensive assessment of coastal ecosystems and their functions. Wetlands form the broader ecological framework of Suriname's coastal zone and provide key ecosystem services related to carbon storage, hydrological regulation and coastal protection. Improved wetland stratification, supported by integrated remote sensing and field-based data, is therefore critical to enable robust assessments of mangrove ecosystem structure, functioning and health.

The project will be executed within the National Forest Monitoring System (NFMS) (SBB, 2017)[1] structure and bolster efforts related to the NFMS by strengthening institutional capacities, partnerships between national institutions and expanding on currently available data for Suriname's mangrove forests. Embedding the mangrove monitoring system within the NFMS structure contributes to standardization of existing data, harmonization of existing information systems, and support of international reporting efforts for UNFCCC (REDD+, GHG-inventory) and CBD. In addition, the NFMS provides the mangrove monitoring system with the necessary data management and data dissemination platforms which are key to the further development and improvement of relevant policies such as the National Mangrove Strategy.

2. OBJECTIVE OF THE ASSIGNMENT

The Junior Remote Sensing Officer will contribute to the further strengthening and improving of the existing mangrove monitoring system by:

- Supporting the implementation of Outcome 1: A strengthened and integrated mangrove forest cover monitoring system within the national SLMS and NFMS, providing accurate and up-to-date maps and data on mangrove extent, species composition, and biomass to support evidence-based management and national and international reporting.
- Support the spatial aspects of Outcome 2 (An expanded and updated mangrove forest inventory database with improved data quality and representativeness, providing reliable information on biomass, structure, and health for use in national reporting, research, and management through the NFMS.) and Outcome 3 (Enhanced institutional and technical capacity of SBB and partner institutions to apply remote sensing tools and standardized monitoring protocols for mangrove and wetland forest assessment and reporting within the NFMS.).

All activities will be carried out in an inclusive and participatory manner, strengthening the national institutional capacities.

[1] SBB, 2017. NFMS roadmap- Status and Plans for Suriname's National Forest Monitoring System

3. SCOPE OF WORK

Key functions, responsibilities and tasks for the remote sensing officer are as follows:

1. Technical support for the work done by the SLMS-team.
   Specifically, the following products need to be delivered:
   - Mangrove Monitoring System updated, and integrated within the NFMS;
   - Updated Mangrove Forest cover map for the years 2023 and 2025 and related statistical data; Updated deforestation maps for the year 2025 and related statistical data;
   - Updated Post deforestation, including in the mangrove forest, for the year 2025 and related statistical data;
   - Updated National LULC for 2025 including mangrove forest cover.
2. Contribute to a sub-study identifying and implementing Remote sensing methodology for updating the mangrove biomass maps for 2025.
3. Support the implementation of other forest cover monitoring initiatives such as the Land Use Land Cover monitoring using the LUA app.
4. Support in organizing, quality-controlling, and documenting Remote Sensing processes and outputs.
5. Support the preparation of technical reports, maps, figures, and tables for internal and external use.
6. Contribute to the implementation of the National Forest Inventory within the mangrove forest and support in all spatial analysis that needs to be done.
7. Support to national forest reporting, including the mangrove forests.
8. Present the SLMS, NFMS and its ETF component on national/ international platforms.
9. Support the overall implementation of the mangrove monitoring project.
10. Support technical developments within the RS/ GIS component of the NFMS.

4. INSTITUTIONAL ARRANGEMENT

The Junior Remote Sensing officer will work within the NFMS-unit under the guidance of the Senior Remote Sensing Expert, at the Department of Research and Development within the Foundation for Forest Management and Production Control (SBB). The junior remote sensing officer will submit monthly reports on the work done in line with the work plan to the Project Manager. The final report submitted by the junior remote sensing officer will also encompass the status of the mangrove forest in Suriname. Where necessary, the Junior Remote Sensing Officer will work closely with the partner institutions to strengthen the synergies and alignment in activities. These institutions are: CELOS (co-lead of mangrove NFI, wetland mapping, biomass analysis), NCD (MUMA authority, fauna data), NZCS (fauna expertise), BBS (flora and vegetation expertise)

5. REPORTING REQUIREMENTS

All Monthly reports should be submitted in Microsoft Word to the Project Manager. This includes progress on all activities within the Scope of Work and explicitly on the following outputs including the relevant documentation:

- Reports and data ready to be published through Gonini and kopi on improved mangrove forest and forest cover monitoring system including up to date data on the mangrove forest and forest cover extent for the years 2023 and 2025.
- Reports on the expansion of mangrove forest inventory database including changes in existing SU's.
- Reports on the Improved institutional capacity in mangrove forest monitoring.
- Status of improved research using new tools for mangrove forest, including mangrove in the NFMS.
- Status updated wetland map of the coastal area is available.
- Report about contribution in carrying on the sub-study related to the changes in mangrove cover.
- Report about contribution in evaluating and improving the existing protocols (e.g. wetland classification, NFI protocol).
- Processed Data and analysis for the implementation of new technology in mangrove forest monitoring.
- Training report about contribution in Remote sensing and GIS processing for mangrove forest monitoring.

6. QUALIFICATIONS, EXPERIENCE AND KNOWLEDGE

The candidate most suited to complete this consultation should have:

- A BSc. degree in environmental sciences, forestry, natural resource management or other related fields;
- Experience of at least 3 years working with Remote Sensing data or GIS. This includes amongst others: experience with image processing, classification algorithms, Qa/Qc procedures, and production of forest cover maps.
- Experience and knowledge of Suriname's National Forest Monitoring System
- Experience with mangrove TLS data processing and collection
- Experience with carrying out field work in the mangrove forest or other forest types; A very good understanding of the mangrove forest ecosystem can be equivalent to the above.
- Experience working with QGIS, ArcGIS, R, IDRISI TAIGA, or other related software.
- Have strong analytical skills and can work very accurately;
- Proficiency in at least English and Dutch. Knowledge of other languages e.g. Sranan Tongo is an asset.
- Excellent writing, reporting, and presenting skills.

Other skills:

- Proficiency with Microsoft Office