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TERMS OF REFERENCE (ToR)

Integrated Environmental Monitoring Programme for NMA Staff

Air, Soil and Water Quality & Biodiversity – Protocols, Techniques and Best Practices

A. BACKGROUND AND RATIONALE

The National Environmental Authority (NMA) of Suriname is the authority mandated under the Environmental Framework Act (*Milieu Raamwet*) to oversee environmental management, environmental quality monitoring, permitting, compliance, and enforcement at the national level.

As Suriname experiences increasing pressure from mining, oil and gas activities, infrastructure development, agriculture, and urbanization, the need for systematic, defensible, and standardized environmental monitoring has become critical. Effective regulation and enforcement depend on the availability of reliable data on air, soil, and water quality and biodiversity, collected using recognized protocols and interpreted in line with international best practices.

The NMA therefore seeks to establish an Environmental Monitoring Programme for its staff, focused on:

- practical monitoring skills including hands-on training in the use, calibration, operation, and maintenance of relevant monitoring equipment and sensors;
- standardized protocols and procedures in line with national and international guidelines;
- Data Quality Management throughout data collection, processing, and interpretation;
- the accurate analysis, documentation, and reporting of monitoring data;
- and regulatory application of monitoring results.

B. OBJECTIVE OF THE ASSIGNMENT

Overall Objective

To design and implement an integrated, practice-oriented monitoring programme that strengthens the capacity of NMA staff to systematically monitor air, soil, and water quality, and biodiversity using internationally recognized protocols, techniques, and best practices, in support of permitting, compliance monitoring, enforcement, and environmental rehabilitation.

C. SCOPE OF WORK

The Consultant shall develop and implement a structured monitoring programme combining:

- hands-on training of NMA staff with a strong emphasis on the operation, calibration, and maintenance of monitoring equipment;
- development and application of standard operating procedures (SOPs): for all monitoring activities, including:
  - site selection and preparation;
  - sampling techniques and frequencies;
  - equipment calibration, operation, and maintenance;
  - health, safety, and environmental precautions during fieldwork;
  - documentation requirements to ensure traceability.
- Data Collection and Field Implementation including:
  - Step-by-step description of field implementation, including roles and responsibilities of monitoring staff.
  - Use of standardized field forms and digital data collection tools where applicable.
  - Conditions under which monitoring frequency, parameters, or methods must be adjusted (e.g. exceedances of threshold values, extreme weather events, or changes in operational activities).
- Data Analysis, Interpretation, and Reporting
  - Methods for data analysis and comparison against regulatory standards, permit conditions, and baseline values.

- Interpretation of results in relation to environmental risks and compliance status.
- Reporting formats, timelines,

- and practical field-based learning aligned with Suriname's regulatory context and environmental monitoring requirements.

D. PROGRAMME DESIGN AND APPROACH

D.1 Practice-Oriented Monitoring Programme

The Consultant shall:

- Design and deliver a practice-oriented and application-driven monitoring programme, prioritizing hands-on field monitoring and real operational scenarios faced by the NMA;
- Combine short technical briefings with extensive field exercises, demonstrations, and case-based learning;
- Explicitly integrate international best practices and recognized monitoring procedures and protocols applicable to regulatory authorities;
- Ensure the programme results in practical, repeatable monitoring procedures that can be institutionalized within the NMA.

E. CORE TECHNICAL COMPONENTS

E.1 Cross-Cutting Monitoring Foundations

Applicable to air, soil, biodiversity and water:

- Integrated environmental monitoring concepts (air–soil–water-biodiversity nexus);
- Pollutant fate, transport, and exposure pathways;
- Sampling design and site selection;
- Chain of custody and sample handling;
- Data Quality Management Data integrity, traceability, and regulatory defensibility;

- Health, safety, and field ethics.

E.2 Air Quality Monitoring

Focus: noise, ambient air and Stack emissions

Protocols & Techniques

- WHO Air Quality Guidelines;
- US EPA, IFC and EU reference methods
- Passive vs active sampling techniques;
- Fixed, mobile, and indicative monitoring.

Practical Skills

- Use and calibration of air monitoring equipment;
- Field measurements and logging;
- Interpretation of monitoring results against applicable guideline and regulatory values, supported by the use of appropriate data analysis and visualization software (e.g. trend analysis, exceedance detection, statistical evaluation, and spatial analysis), to ensure consistent, transparent, and defensible interpretation of monitoring outcomes.

- **Application of best practices in cases of non-compliance**, including:

  - verification and validation of monitoring data to confirm exceedances;
  - identification of potential sources and causes of non-compliance;
  - risk-based assessment of the severity and environmental significance of exceedances;
  - definition and implementation of corrective and preventive actions by the regulated entity;
  - enhanced or follow-up monitoring where required;

  clear documentation, reporting, and communication of non-compliance in accordance with regulatory procedures.
  - Use of air quality data in inspections, permits, and enforcement.

E.3 Soil Quality Monitoring

Protocols & Techniques

- ISO / EU / US EPA soil sampling standards;
- Sampling strategies for contaminated and baseline sites;
- Depth profiling and composite sampling;
- Soil screening vs laboratory confirmation.

Parameters

- physical, chemical, nutrients, heavy metals, organic contaminants and specific contaminants;
- Site-specific contaminants (e.g. mining residues, oil residues).

Regulatory Application

- Risk-based interpretation;
- Trigger values for remediation;
- Use of soil data in land-use decisions and enforcement.

E.4 Water Quality Monitoring

Protocols & Techniques

- Ambient water quality standards (US EPA);
- IFC Water discharge standards;
- WHO Drinking Water Guidelines;
- ISO / US EPA surface and groundwater sampling protocols as well IFC discharge standards;
- Grab vs composite sampling;
- Calibration equipment protocols;
- In-situ measurements vs laboratory analysis.

Parameters

- Physical, physico-chemical (pH, turbidity, conductivity etc.);
- Nutrients;
- Heavy metals and ions;
- Organic contaminants
- Microbiological parameters;
- Selected biological indicators where relevant.

Regulatory Application

- Compliance monitoring for permits;
- Incident response and pollution investigations;
- Interpretation for public health and Biodiversity monitoring methods protection.

E.5 Biodiversity monitoring

Protocols & Techniques

- National and international biodiversity monitoring guidelines;
- Standardized field survey methods for terrestrial and aquatic ecosystems;
- Species identification techniques (visual surveys, camera traps, acoustic monitoring);
- Habitat mapping and land-use classification (including GIS and remote sensing where applicable);
- Seasonal and temporal monitoring approaches (baseline, operational, and post-impact);
- Data recording, validation, and management protocols.

Parameters

- Species presence/absence and species richness;
- Abundance and population density of key species;
- Indicator, endemic, protected, and invasive species;
- Habitat type, extent, and condition;
- Ecosystem structure and function;
- Selected aquatic and terrestrial biological indicators

Regulatory Application

- Compliance monitoring with permit conditions and biodiversity management plans;
- Support for conservation planning and mitigation measures;
- Interpretation of results for ecosystem integrity and biodiversity protection.

F. FIELD-BASED PRACTICAL TRAINING

The Consultant shall conduct structured field exercises, including:

- Air monitoring campaigns;
- Soil sampling at representative sites;
- Surface water and groundwater sampling;
- Biodiversity monitoring methods;
- Field QA/QC procedures;
- Data recording, analysis, interpretation validation, and reporting.

Exercises shall reflect real enforcement, inspection, and incident-response scenarios faced by the NMA.

G. DEVELOPMENT OF MONITORING PROTOCOLS

A key output of the assignment shall be the co-development with NMA staff of:

- Draft Standard Operating Procedures (SOPs) for air, soil, biodiversity and water monitoring;
- Field checklists and inspection templates;
- Data reporting formats suitable for regulatory use.

H. EXPECTED OUTPUTS AND DELIVERABLES

The Consultant team shall deliver:

1. An inception report including workplan, methodology and curriculum outline;
2. Integrated Monitoring Training Curriculum (air, soil, biodiversity, water);
3. Practical field training sessions completed with NMA staff;
4. Draft SOPs and field protocols for NMA monitoring activities;
5. Training and assessment materials;
6. Structured monitoring programme; A Final Technical Report with recommendations for institutionalizing the monitoring programme within the NMA.

I. PAYMENT SCHEDULE (INDICATIVE)

Remuneration will be output-based, with payments disbursed upon the formal review and approval of deliverables by the Director of the NMA:

Deliverable	**Payment (%)**
1. **Inception Report:** Detailed work plan, methodology, and curriculum outline.	20%
2. Draft SOPs & Training Materials: Initial draft of monitoring protocols and modules.	30%
3. Completion of Field Training: Successful delivery of all practical field exercises.	20%

4. Final Technical Report: Comprehensive report including finalized SOPs.	20%

J. DURATION

The assignment is expected to last 10–12 weeks, including:

- Training delivery;
- Field exercises with field checklists and inspection templates;
- SOP development;
- Mid term reporting;
- Final reporting.

K. REQUIRED EXPERTISE

The Consultant/Team shall demonstrate:

- Expertise in regulatory environmental monitoring;
- Proven experience with air, soil, biodiversity and water monitoring protocols;
- Familiarity with WHO, World Bank EHS, ISO, EU, and US EPA standards;
- Experience training regulatory authorities.

L. INSTITUTIONAL ARRANGEMENTS

- Oversight by the Director of the NMA;
- Designated NMA focal point for coordination;
- All outputs become property of the NMA.

M. SUSTAINABILITY AND INSTITUTIONALIZATION

This programme shall enable the NMA to:

- Operate a standardized national environmental monitoring system;

- Strengthen enforcement and environmental compliance monitoring;
- Support evidence-based permitting and rehabilitation;
- Reduce long-term dependence on external consultants.

N. SELECTION CRITERIA

Proposals will be evaluated based on the following weighted criteria:

- **Relevant Experience (30%):** Technical expertise in environmental monitoring and compliance.
- **Methodology and Approach (20%):** Quality of the training design and practical application.
- **Team Qualifications (20%):** Relevant academic credentials and instructional experience.
- **Financial Proposal (30%):** Competitive and transparent cost structure.

O. APPLICATION PROCESS

The Consultant must submit:

1. Technical Proposal

- Indicating the consultant's understanding of the TOR and a description of how he/she proposes to carry out the tasks and achieve the deliverables;
- Statement of why the consultant considers her/him suitable for this consultancy;
- CV's of the consultant as per attached Personal History Form, indicating all past experience, as well as the contact details (email and telephone number) of the consultant and at least three (3) professional references.

2. Financial Proposal

- Applicants are instructed to submit their financial proposals in Suriname Dollars (SRD) for this consultancy. Selected candidate who submitted a US Dollar quotation will be paid in SRD at the prevailing UNORE rate at time of payment. For reference please see link below: https://treasury.un.org/operationalrates/OperationalRates.php#S

- Financial proposals must indicate an all-inclusive daily fee. The daily fee in the financial proposal must consider the various expenses the applicant expects to incur during contract, including: the daily professional fee, communications, utilities and consumables, life, health and any other insurance; and any other relevant expenses, related to the performance of services under the contract.

P. SUBMISSION AND OPENING OF PROPOSALS

All proposals must be submitted to the email address: info-EMSAGS@nimos.org , with the subject reading as follows**: "Application for Integrated Environmental Monitoring Programme – NMA Staff".**

- Submission Deadline: Friday, April 17, 2026, 15:00h Suriname Time.
- Please ensure that the Application letter, CV's, Technical Proposal and Financial Proposal are submitted as **SEPARATE FILES** in one email.
- Any proposal that arrives after the deadline for submission shall not be considered.