Strengthening the sustainable management of the Senegal-Mauritania Aquifer System to ensure access to water for the populations facing climate change

TERMS OF REFERENCE

Collection of national data feeding a modern database of the Senegal-Mauritania Aquifer System (SMAS)

(Gambia, Guinea Bissau, Mauritania and Senegal)

[AC/OSS/SMAS_Elaboration de la Base de Données/250325-21]

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1. CONTEXT

The Sahara and Sahel Observatory (OSS) is an international Organization with an African vocation, created in 1992 and based in Tunis since 2000. Its members include 35 countries (28 African[1] and 7 non-African), 13 regional Organizations, UN Organizations. The OSS mission is to support its African member countries in the sustainable management of their natural resources in a particularly adverse climate change context. Its activities are primarily located in the arid, semi-arid, and dry sub-humid regions of Africa.

As part of its efforts to promote sustainable water resources management, the OSS focuses on the collaborative management of transboundary aquifers in Africa, including the Senegal-Mauritania Aquifer System (SMAS)[2], shared between Gambia, Guinea-Bissau, Mauritania and Senegal. This aquifer system is crucial for the livelihoods of local populations, particularly in arid regions where water resources are limited. However, overexploitation of the aquifers and the risk of groundwater pollution are major challenges to contend with.

In May 2020, a Regional Working Group (RWG) for transboundary cooperation on the Senegal-Mauritania Aquifer Basin (SMAB) was established. Its members are the four states sharing the basin (Gambia, Guinea-Bissau, Mauritania and Senegal), the Gambia River Basin Development Organization (OMVG)[3], the Senegal River Basin Development Organization (OMVS)[4], and the OSS, which are involved in this regional dialogue. The purpose is to strengthen transboundary cooperation between the SMAB countries and to encourage them and the Transboundary Basin Organizations (TBOs) to establish a sustainable mechanism for collaborative transboundary management of the SMAB. The regional dialogue on the SMAS is currently facilitated and supported by several international Organizations, including the Geneva Water Hub, the Secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE), and the International Groundwater Resources Assessment Centre (IGRAC).

Since its establishment, the RWG has engaged in the design of a joint program and action plan to fulfill its mission. This program was validated by the ministers of the four countries in September 2021.

The "Strengthening the Sustainable Management of the Senegal-Mauritania Aquifer System to Ensure Access to Water for the Populations Facing Climate Change - SMAS project" is part of the RWG program and will be implemented in close synergy with it. The Project Identification Form (PIF) was developed with UNEP and approved by the GEF in November 2021 following a consultation, development, and review process, followed by the development of the SMAS project document, which was approved by the GEF in June 2022. The financing agreement was signed in January 2024, marking the official launch of the project, which is funded by the GEF (Global Environment Facility) through the United Nations Environment Program (UNEP). The project was officially launched in July 2024 in Senegal.

This regional project covers all four (04) countries and aims to promote cooperation between them and to strengthen institutional capacity for the protection and sustainable management of the Senegal-Mauritania transboundary aquifer in order to improve water and food security as well as resilience to climate change. The OSS is the lead executing agency for the project and will work closely with the national agencies of the participating countries, and transboundary basin Organizations such as OMVG and OMVS.

As part of the SMAS project, a modern database integrated with a Geographic Information System (GIS) will be developed. This database will centralize and align geographic, hydrogeological, socioeconomic, environmental and climate information, enabling accurate modeling and improved management of groundwater resources, and facilitating decision-making.

[1] Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Ivory Coast, Djibouti, Egypt, Eritrea, Ethiopia, Gambia, Guinea-Bissau, Guinea Conakry, Kenya, Liberia, Libya, Mali, Morocco, Mauritania, Niger, Nigeria, Uganda, Central African Republic, Senegal, Somalia, Sudan, Chad & Tunisia

[2] Senegal-Mauritania Aquifer System: Acronym reserved for the project financed by the GEF

[3] Gambia River Basin Development Organization (OMVG)

[4] Senegal River Basin Development Organization (OMVS)

For this database to be supplied, national consultants will be recruited in the four relevant countries to collect the necessary data, ensuring its quality, consistency and compliance with the regional standards defined by the project.

2. PURPOSE OF THE CONSULTATION

The main objective of this mission is to collect, validate and structure relevant national data that will feed the SMAS regional database, ensuring their consistency and quality for effective integration.

3. RESPONSIBILITIES AND DUTIES OF THE CONSULTANT

Under the supervision of the project coordinator based at the OSS, the national consultant will work closely with the regional consultant responsible for establishing the database and will be responsible for the following services:

- Identify the types of data required for the project (hydrogeological, hydrological, environmental, socio-economic, climate) and establish a link with the SMAS project objectives;
- Collaborate with the ministries, public agencies, research institutes, universities and local Organizations to identify and access available databases;
- Collect existing data:
  - ✓ Geological and hydrogeological maps, piezometric levels, aquifer characteristics (permeability, transmissivity), borehole records;
  - ✓ Rainfall, river flows, aquifer recharge;
  - ✓ Groundwater quality (chemical composition, pollution), sensitive areas, aquifer-dependent ecosystems;
  - ✓ Water uses (agriculture, industry, domestic), demographic data, water-related economic activities;
  - ✓ Historical data and climate projections (rainfall, temperature, evapotranspiration).
    - Identify missing or obsolete data, assess their impact on the project objectives, and propose solutions to address them;
    - Convert paper data into digital formats, ensuring optimal accuracy and resolution;
- Align and validate the collected data:
  - ✓ Verify data quality, reliability and consistency;
  - ✓ Standardize formats, units, and codifications to ensure their compatibility with the regional database;
  - ✓ Perform accurate georeferencing of spatial data.
    - Organize the collected data according to the specifications defined for the regional database, integrating comprehensive metadata (source, collection method, date, accuracy);
    - Provide interim reports on the progress of the collection and report any problems encountered, while proposing adjustments if necessary;
    - Provide a consolidated and structured national database ready for integration into the Geographic Information System (GIS);
    - Prepare a final report detailing the data collected, the methods used, the gaps identified, and recommendations for future updates;
- Identify measures to improve data collection, updating and use in the long term.

4. EXPECTED RESULTS

- A consolidated and aligned national database integrating the hydrogeological, hydrological, environmental, socioeconomic and climate data required for the Senegal-Mauritania Aquifer System (SMAS);
- Well-documented metadata providing information on data origin, collection methods, dates and accuracy levels to ensure traceability and compliance with regional standards;
- An aligned data validation and structuring system ensuring standardized formats, consistent units and accurate georeferencing, fostering integration into the regional database;
- A comprehensive final report including the methodologies used, a comprehensive description of the data, observed gaps and recommendations for improving future updates.

5. METHODOLOGY

The consultant is free to choose the methodology he/she wishes to apply. However, a participatory approach is strongly recommended, actively involving national and local stakeholders, as well as close collaboration with the regional consultant responsible for setting up the database. The proposed methodology must be detailed in the tender.

6. PROFILE AND QUALIFICATIONS OF THE CONSULTANT

6.1. Training/Education

A university degree (minimum Bac+3) in hydrogeology, hydrology, water sciences, geosciences, environment or related disciplines.

6.2. Experience and skills required

At least 5 years of professional experience in the collection, management, or analysis of hydrological, hydrogeological, or environmental data;

- Good knowledge of the national water resources context and the institutions involved;
- Previous experience in similar projects, best in a transboundary or regional context;
- Proficiency in GIS tools (ArcGIS, QGIS) and knowledge of database management software (Access, PostgreSQL/PostGIS);
- Skills in digitizing and georeferencing spatial data;
- Knowledge of data validation and standardization methods;
- Excellent writing and communication skills in French and/or English, depending on the country;
- Team spirit and ability to collaborate with diverse stakeholders;
- Ability to meet deadlines and produce quality deliverables.

7. EXPECTED DELIVERABLES AND PAYMENT TERMS

7.1. Duration of the assignment

The duration of the assignment is estimated at 90 calendar days.

7.2. Deliverables

• **Deliverable 1:** Inception report, including a detailed work plan, a precise timeline and initial guidelines for data collection. This report is due **fefteen** (15) days from the date of signature of the contract and after the scoping meeting.

• **Deliverable 2:** Interim report, accompanied by a national database, integrating the data required by the SMAS and ready for integration into the SMAS regional database. It will be supported by Metadata Documentation, providing information on the origin, collection methods and data accuracy levels. This deliverable is due **sixty** (60) days after contract signing.

• **Deliverable 3:** Final report, detailing the methodologies, data collected, identified gaps and recommendations for future updates. This deliverable is due **thirty** (30) days after the validation of deliverables 2. This report is accompanied by the consolidated national database.

Table 1 - **List of deliverables and deadlines**

Deliverable	Delivery dates
D1 : Inception report, including a detailed work plan, a precise timetable and initial guidelines for data collection.	**Fefteen (7)** days after the scoping meeting
D2 : Consolidated national database, integrating the data required for SMAS and metadata documentation.	**Sixty (30)** days after the contract is signed
D3 : Final report, detailing methodologies, data collected, gaps identified and recommendations for future updates. This report is accompanied by the consolidated national database.	**Thirty (30) days** after the deliverables **2** are validated
Total	

7.3. Payment Terms

The consultant will receive a maximum lump sum of USD 6,000 for the entire assignment. Payments will be made in two installments, as follows:

Table 2 - Payment terms

Installments	Conditions de paiements	Montant
Installment 1	D1: Inception report, including a detailed work plan, a precise timetable and initial guidelines for data collection.	**Fifteen (15)** days from the date of signature of the contract and after the scoping meeting has been held
Installment 2	D2: Interim report, accompanied by a national database, including the data required for the SMAS and documentation of the metadata	**Sixty (60)** days after signing the contract
Installment 3	D3: Final report, detailing methodologies, data collected, gaps identified and recommendations for future updates. This report is accompanied by the consolidated national database	**Thirty (30)** days after validation of deliverables 2

PN: Deadlines observed for validation are not considered

8. PRESENTATION OF THE FILE

8.1. Technical proposal

- A technical proposal of no more than 5 pages justifying their qualification to deliver, satisfactorily and on time, high quality services at the end of the consultancy requested, the proposal of a succinct methodology explaining the approach, the way in which the consultancy will be carried out as well as a work plan including the various deliverables whose completion will be linked to the payment terms;
- A Curriculum Vitae setting out the level of training required and the expert's experience in consultancy or similar fields (in accordance with the standard OSS CV template which can be downloaded from the following link: [**OSS CV template**]);
- A table detailing the references relevant to the proposed expert's mission;
- Other references considered useful;
- Duly completed model declaration on honour (Annex 3).

8.2. Financial offer

The financial offer must include the following documents:

- A financial bid submission form in accordance with the form in appendix 1;
- A breakdown of the fixed price in accordance with the form in appendix 2 (expressed in USD), indicating all the costs of the assignment, broken down into reimbursable expenses.

9. SELECTION PROCESS

The selection of bids will comprise two stages: A first stage relating to the evaluation of the technical offers followed by a second stage relating to the evaluation of the financial offer.

9.1. Technical proposal

CVs will be evaluated and compared separately and independently of any financial considerations. **It will be scored out of 100 points on the basis of the criteria set out in the table below.**

To be eligible, the candidate's technical offer must obtain a minimum score of 70 out of 100.

Rubrique	Points
General qualifications / University degree (minimum Bac+3) in hydrogeology, hydrology, water sciences, geosciences, environment or related disciplines	15
Work methodology: clear and coherent approach, structuring of stages, suitability in terms of deadlines and specific project objectives.	20
Experience in collecting, managing or analysing hydrological, hydrogeological or environmental data	30
Good knowledge of the national context in terms of water resources and the institutions involved; Previous experience in similar projects, ideally in a cross-border or regional context	30
Proficiency in GIS tools and knowledge of database management software	5
Total	**100**

9.2. Financial offer

The financial evaluation will concern only the bids of tenderers pre-qualified after the technical evaluation.

The financial offer scores (Nf) will be calculated as follows: Nf = 100 x Fm/F, where:

- Nf: Bidder's financial score
- Fm: Lowest financial proposal of the technically successful bids
- F: Tenderer's financial proposal

9.3. Final evaluation

Tenders will be ranked according to their overall score (NG) in accordance with the following formula: NG = [Nt x (70%)] + [Nf x (30%)]

- - NG: Overall score
- - Nt : Technical score
- - Nf: Financial score

The tender with the highest overall score (NG) will be selected.

10. SUBMISSION PROCEDURES AND DEADLINE

Tenders must be sent by e-mail to the following address: procurement@oss.org.tn mentioning the reference**: "National Consultant in data collection contributing to [AC/OSS/SMAS_Elaboration de la Base de Données/250325-21]"** in the subject line.

The deadline for receipt of tenders is April 2, 2025 at 23:59 (Tunis time) and 22:59 (GMT).

Annex 1 - Financial proposal submission form

Tender addressed to (procurement and disposal entity):	
Date of financial offer:	
Procurement reference number:	
Subject of the procurement:	

The total price of our offer is: _

We confirm that the prices indicated in our financial offer are fixed and firm for the period of validity and will not be subject to any revision or variation.

Financial offer authorised by:

Signature: _____ **Name** _____

Position: _____ **Date:** _____

Authorised for and on behalf of:

The consultant : _____

Signature and stamp of the consultant's legal representative

Annex 2 - Breakdown of lump sum price

[Complete this form with details of all your costs and submit it as part of your financial proposal. Your costs must be presented in USD]

Procurement reference number:

FEES				
Name and position of exper	**Quantity of input**	**Unit of input**	**Rate**	**Total price**
TOTAL				

REIMBURSABLE COSTS AND MISCELLANEOUS				
Description of cost	**Quantity**	**Unit of measure**	**Unit price**	**Total price**
TOTAL :				

LUMP SUM IN USD: _____

Breakdown of fixed price authorised by:

Signature : _____ Name : _____

Position : _____ Date : _____

Authorised for and on behalf of: *(J/M/A)*

The Consultant : _

Signature and stamp of representative

Annex 3 - Model declaration of honour

Subject of the call for tenders:

I, the undersigned (full name): .....

Nationality: .....

Acting in the capacity of: .....

Company name: ....

Address: .....

Registered in the Commercial Register under n° .....the .....at.....

Fiscal number: .....

- **I declare on my honour:**
  1. I have never been in receivership and have never been the subject of any legal proceedings on any grounds whatsoever,
  2. I undertake not to resort, either personally or through an intermediary, to practices that could be described as embezzlement, fraud or corruption in the various procedures for the award, management and performance of this contract,
  3. in the event that my tender is selected, to respect the procedures in force at the OSS and the obligation of reserve and professional secrecy for all facts and/or information that I may come to know,

- **Certify** the accuracy of the information contained in this declaration on my honour and in the documents provided in my tender.
- **Certify** that I am not related to any person receiving any remuneration whatsoever from the OSS
- **Acknowledge** that I am aware that any inaccuracies or errors and any shortcomings that may be found in the content of my offer, as well as any failure to comply with the conditions of participation, will result in my application being rejected.

Done at.....the.....

Signature and stamp of the consultant's legal representative.