TERMS OF REFERENCE

HIRING OF A TECHNICAL ANALYST FOR THE WATER RESOURCES SITUATION ROOM OF THE AMAZON REGIONAL OBSERVATORY (ARO)

I. BACKGROUND

The Amazon Basin faces significant challenges in regional action for the Integrated Management of Transboundary Water Resources (IWRM), particularly in the context of socioeconomic development, the impacts of human activities, and climate change. As a unique hydrological system that extends beyond national borders, the Amazon Basin spans eight countries—Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela. In this context, these countries recognize the need for a regional framework for IWRM to address population demands and promote sustainable development in the region.

In 1978, the eight Amazonian countries signed the Amazon Cooperation Treaty, leading to the creation of the Amazon Cooperation Treaty Organization (ACTO) and its Permanent Secretariat (PS/ACTO), establishing a regional forum for political dialogue and cooperation. Since then, ACTO has strengthened institutional coordination and promoted joint actions among its Member Countries to support the sustainable development of the Amazon.

PS/ACTO acts as a facilitator of regional cooperation, promoting knowledge exchange, joint planning, and the implementation of activities, programs, and projects aligned with the Treaty's mandates. It also fosters consensus and creates spaces for political and technical dialogue to drive strategic initiatives in the region.

In this context, ACTO has been implementing the "Amazon Project: Regional Action in the Area of Water Resources," financed by the Government of Brazil with support from the National Water and Basic Sanitation Agency (ANA), the Brazilian Cooperation Agency (ABC/MRE), the Department of South America of the Ministry of Foreign Affairs (DAS/MRE), and ACTO itself.

The project's second phase, launched in December 2016, builds upon activities from the first phase (2012-2016), which strengthened technical cooperation and coordination among ACTO Member Countries. Its aim objective is to promote the shared and sustainable management of water resources in the Amazon Basin through the establishment of hydrometeorological and water quality monitoring networks; the structuring a water resource database; the dissemination of knowledge on the Amazon's reality; and providing the technical capacity building of national water resource institutions.

Key outcomes of the Amazon Project include the development of hydrological and water quality monitoring networks, the training of technical experts from the eight countries, the creation of standardized protocols for monitoring water quantity and quality, the elaboration of the Report on the State of Water Quality in the Amazon Basin, and the establishment of the Water Resources Situation Room. Additionally, the water resources and Amazon networks modules have been integrated into the Amazon Regional Observatory (ARO/ACTO).

The Water Resources Situation Room monitors hydrological and meteorological conditions in the Amazon Basin to detect critical events and support preventing measures against droughts and floods. During extreme events, it serves as a crisis management center, facilitating coordination among national agencies (water agencies, civil defense, etc.). Integrated into the Amazon Regional Observatory, this structure receives real-time hydrological, climate, and water quality data from participating countries. Moreover, it is connected to existing situation rooms in Ecuador and Brazil (ANA and Amazonian states) and is set to expand to integrate future installations in other Amazon Basin countries.

In the context of Integrated Transboundary Water Resource Management, the Strategic Action Program (SAP) was developed under the Project for the Integrated and Sustainable

Management of Transboundary Water Resources in the Amazon River Basin Considering Climate Variability and Change (GEF Amazon Project - ACTO/UNEP/GEF). As a South-South cooperation body, ACTO led this initiative as a platform for political and technical dialogue, strengthening cooperation among Amazonian countries to promote a unified and sustainable water management approach.

Since 2021, the SAP has been implemented in the eight Amazonian countries through the Amazon Basin Project, in synergy with other regional initiatives coordinated by ACTO, as well as national programs and projects. The Amazon Basin Project is financed by the Global Environment Facility (GEF), with the United Nations Environment Programme (UNEP) as the implementing agency and PS/ACTO as the executing agency.

ACTO is also advancing the Water Resources Module 2.0, a key component of the Amazon Regional Observatory, to enhance regional monitoring, information, and water resource management capacities.

Regional Action in the Area of Water Resources (Amazon Project) and Other Initiatives

- Regional cooperation in IWRM focuses on: a) establishing regional monitoring networks and standardized hydrometric and water quality monitoring protocols; b) integrating the Water Resources Module into the Amazon Regional Observatory to provide structured data on basin conditions; c) developing the Amazonian Networks Module, which delivers real-time hydrometric data; and d) formalizing the ARO's Water Resources Situation Room, including a detailed operational handout defining its roles and scope
- ANA-Brazil conducts satellite-based hydrological monitoring through a technical cooperation agreement with the French National Research Institute for Sustainable Development (IRD) under the "HydroSat - Satellite Monitoring of Rivers and Lakes" Project, with support from ABC/MRE. This initiative incorporates space-based remote sensing for automated hydrological monitoring.
- Additionally, IRD collaborates with regional institutions under the Amazon Basin Hydrology and Geochemistry Monitoring Project (HYBAM) (www.hybam.org), which aims to enhance knowledge of the Amazon Basin's hydrology and geochemistry. This network includes hydrological monitoring, water quality assessments, and sediment transport studies.

Conceptual Framework for the Consolidation of the IWRM Platform (Water Resources Module 2.0)

The ACTO, through the ARO and with financial support from ANA Brazil, established the first version of the Water Resources Module. Currently, with support from the SAP and the World Bank, efforts are underway to update, improve, and expand this module, aiming to develop it into ACTO's IWRM Platform (Water Resources Module 2.0).

From both a conceptual and operational perspective, this platform is being developed in different phases. In its first phase, led by the PAE, the term "platform" has been defined as a set of processes in which activities are systematically carried out to generate products based on inputs provided by MC-ACTO members and other relevant stakeholders. These products must accurately represent the reality of water resources in the Amazon region across time and space, supporting decision-making by national water resources managers as well as the ACTO Permanent Secretariat. The IWRM Platform is structured within a macro-organizational IWRM framework, which consists of seven key processes: 1) Monitoring of laboratory intercalibration procedures; 2) Water quality monitoring; 3) Water quantity monitoring; 4) RCDE monitoring; 5) Regional data and information management; 6) Monitoring of pilot project interventions; y 7) Education, communication, and social participation. These processes will be overseen by a Technical Monitoring Group (GTA acronym in Spanish), composed of technical officials designated by the ACTO/MC technical staff. Each process will also include a set of activities designed within the framework of organizational process management.

Each process will also include a set of activities designed within the framework of organizational process management. The methodological approach follows sequential steps, starting with a mapping of each process's reality, followed by an analysis based on data and information collected in the initial stage. These data will then be adapted to an indicator system to assess progress against the initial baseline. Additionally, gaps, limitations, progress, and lessons learned will be identified to develop a set of improvements with targets and indicators for the next cycle. Initially, the duration of each cycle will vary depending on specific contexts, but over time, the GTA is expected to enhance standardization in implementation. The ultimate goal is to continuously refine the accuracy and coherence of regional models and scenarios, strengthening indices such as TWAP and SDG 6 while optimizing the implementation of IP/IWRM.

II. GENERAL OBJECTIVE OF THE CONTRACT

The Water Resources Technical Analyst will have the overall responsibility to provide specialized technical assistance in the Situation Room of ARO at ACTO headquarters, within the Amazon Networks Module. This role will focus on monitoring meteorological, hydrological, water quality, sediment transport, groundwater, and other physical processes to be implemented. Additionally, the analyst will support the development of the Integrated Water Resources Management (IWRM) Platform (Water Resources Module 2.0), ensuring the continuous availability of requested data and information, along with their respective analysis.

The analyst will collaborate with other thematic and technological specialists from ARO-ACTO, ACTO's technical team, and ACTO's projects.

SPECIFIC OBJECTIVES, ACTIVITIES, and PRODUCTS

Specific objectives 1. Consolidate and provide technical support to the Situation Room of ARO at ACTO.
Specific objectives 2. Consolidate the Networks Module with a focus on the integrated monitoring of physical processes at the Amazon basin level.
Specific objectives 3. Assist in the development of the IWRM Platform - Water Resources Module 2.0 and its services.

III. ACTIVITIES AND OUTCOMES BY SPECIFIC OBJECTIVE

Outcome 1: Working Plan

Within the first 30 days after signing the contract, the Analyst will present a detailed Work Plan in a virtual meeting, outlining the activities and methodology to achieve the previously described specific objectives. The key activities to be developed are as follows:

1. Development of an Operations Manual for the ARO Situation Room and other technical and operational instruments to guide its functioning.
2. Preparation of a plan for the installation and support in the operation of Situation Rooms at the national level for the 8 MC.
3. Development of a plan to establish a network of Virtual Stations (IRD methodology), with periodic feeding into the integrated database of the Networks Module.
4. Creation of a proposal for a Performance and Error Manager for PCDs to assist the MC in monitoring data quality: error detection and correction, generation of quality indicators, and data standardization.
5. Development of a Manual for the purchase and donation of PCDs, specifying minimum technical requirements, maintenance counterparts, and ensuring compliance with national public investment regulations.
6. Drafting of hydrometeorological bulletins and proposals for new products for the PS/ACTO/ARO Situation Room.
7. Based on the ARO database, presentation of a Reporting Plan for updating meteorological, hydrological, water quality, sediment transport, and groundwater data, including the necessary coordination with the MC.
8. Development of a coordination plan with other related institutions to ensure the fulfillment of the overall objective.

Specific objectives 1. Consolidate and provide technical support to the ARO Situation Room at ACTO.

Activities

1. Keep the ACTO Situation Room operational, as well as the Amazon Network Modules and the IWRM Platform of the ARO.
2. Conduct a comparative analysis of the instruments (regulatory, technical, regulations, and existing proposals) used by the MC in their situation rooms, data centers, or others.
3. Explore the organizational and functional structures with which the MC situation rooms operate.

4. Assist in analyzing the current state of the MC situation rooms and propose a schematic and flow diagram for articulating the ACTO Situation Room, including needs for updating and modernizing the national and subnational situation rooms (subnational focused on MAP municipalities).
5. Support the implementation of monitoring protocols defined by the Amazon Network of Water Authorities (RADA).
6. Assist in implementing the alert system in the cities of the Madeira, Alto Purús, and Alto Juruá rivers, within the framework of the GEF Amazon Basin Project.
7. Analyze the hydrological data of the monitoring station network, as per the scope of the Amazon Network module.
8. Collaborate with countries on the performance of PCDs and the reporting of data from the stations.

Potential Products: the Technical Analyst will present progress reports to the coordination and technical team of the ARO, as well as their articulation with the Situation Rooms of the Member Countries through the following activities:

1. Comparative matrix and analysis of the instruments (regulatory, technical, regulations, proposals) used by the ACTO/MC.
2. Proposal of a schematic and step-by-step diagram for articulating the ACTO Situation Room with the national and subnational situation rooms.
3. Technical progress reports on the established and interoperated situation rooms with the Integrated Water Resources Monitoring System, including needs for updating and modernizing.
4. Requested databases.
5. Situation Room bulletins.
6. Development of other products previously agreed upon with technical specialists and the ARO coordination.

Specific objectives 2. Consolidate the Networks Module with a focus on the integrated monitoring of physical processes at the Amazon basin level.

Activities

1. Coordinate with the technical team and ARO coordination to ensure the continuous update of the Amazon Network Module 2.0, including: 1) official data from the member countries; 2) data from collaborating entities, as well as the inclusion of databases from virtual stations, meteorological stations, groundwater data, and others.
2. Provide inputs for the ToRs of the companies updating the Amazon Network Module v2.0, including aspects of interoperability with ARO and ACTO, as well as other related developments (hydrometeorological monitoring, sediment monitoring, groundwater data, etc.).
3. Coordinate and assist ARO specialists in the requirements of the companies for the update of the Amazon Network Module.
4. Prepare periodic reports on the data flow of the Amazon Network Module and describe actions for its improvement.
5. Conduct analysis of existing or external data on processes relevant to the Amazon Basin, based on the concept of the Amazon Network Module 2.0.
6. Collaborate in research required for hydrometeorological monitoring within ARO and ACTO.

Potential Products:

1 Progress reports on the interoperability of the Hydrometeorological Network with the Situation Rooms in the MC.
2 Overview of updated monitoring and integration of information and data into the ARO.

3 Reports on drought and flood monitoring in the Amazon Basin and other physical processes.
4 Available databases.
5 Other products previously agreed upon with technical specialists and the ARO coordination.

Specific objectives 3. Assist in the development of the IWRM Platform/ Water Resources Module 2.0 and.

Activities

1. Ensure the continuous update of the required information on the IWRM Platform.
2. Provide the necessary aggregated data for the operation of the IWRM Platform.
3. Provide input for the ToRs of the company that will update the Water Resources Module 2.0, which will become the IWRM Platform.

Potential Products:

I. Regional Integrated Information Platform on IWRM operational and integrated into the ARO/Water Resources Module v2.0.
II. Integrated Water Resources System is available on the ARO with indicators and variables to monitor the status and trends of the Amazon Basin.
III. Other products previously agreed upon with technical specialists and the ARO coordination.

Final General Activities:

- Address any request related to the focus of this ToR by the technical team and the ARO Coordinator.
- Perform activities in coordination with teams from different projects within ACTO.
- Comply with any request from PS/ACTO related to the situation room and the hydrometeorological monitoring of the Amazon Network Modules and Water Resources.

Qualifications and Professional Experience:

- First Degree in Water Resources, Meteorology, Geographical or Earth Sciences, Civil Engineering, Exact Sciences, or related fields.
- Master's degree in water resources-related subjects.
- At least 5 years of experience in meteorological, hydrological data analysis, or physical process analysis. Experience working with public entities from any of the 8 Member Countries of ACTO will be considered a valuable asset.
- Proficiency in database management.
- Experience in implementing or managing data management platforms, observatories, and/or situation rooms.
- Experience in managing transboundary water resources.
- Familiarity with Geographic Information Systems applied to water resources.
- Experience in preparing hydrometeorological and hydrological bulletins and reports on water resources, monitoring, and physical processes at different scales in a basin.
- Knowledge in developing and implementing tools and methodologies for hydrological monitoring.
- Knowledge of programming (R, Python) for analyzing and modeling hydrological data.
- Communication skills to interact with various audiences (government institutions, international and cooperation organizations, NGOs, etc.).

- Ability to communicate orally and in writing in at least two of the four official languages of ACTO (Spanish, English, Portuguese, and Dutch).
- A master's degree in water resources-related fields and experience in scientific publications will be considered an asset.

IV. CONTRACTING CONDITIONS

- **Type of contract and modality:** CLT (Consolidation of Labor Laws), fixed amount.
- **Remuneration:** R$15,000.00 + transportation and food stamps, health and dental benefits, and personal accident life insurance.
- **Starting date:** April 2025.
- **Location:** The activities of the technical analyst will be carried out at the PS/ACTO headquarters in Brasília (DF).