



WMO



IGAD



EC

Intergovernmental Authority on Development (IGAD) – Hydrological Cycle
Observing System (HYCOS) Project – IGAD-HYCOS

DESIGNING A STRATEGIC AND OPTIMUM OBSERVATION NETWORK FOR IGAD-HYCOS

TERMS OF REFERENCE

1. Background

The IGAD-HYCOS project, promoted by IGAD, is one component of the Inland Water Resources Management Programme (INWRMP). The project is aimed at establishing a “*Regional water management information systems and strengthened observation networks*” within the broader framework of the Inland Water Resources Management Programme (INWRMP).

The IGAD-HYCOS project will be implemented as a two Phase project entitled “Implementation of the IGAD HYCOS”. The implementation period for Phase I (preparatory phase) of the project is twelve months and it commenced in June 2011.

The preparatory phase of the “Implementation of IGAD-HYCOS” will focus on revision of the project document and preparatory activities for the implementation phase (Phase II). It will involve extensive country consultations with all relevant stakeholders. The revision of the document is necessary because the existing project document was compiled in 2003 (with preliminary budget estimates) keeping in view the then state of hydrological networks in the Region. As per the original proposal only, Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan and Uganda – Members of IGAD - were included as the participating countries in the project. Now, at the request of East Africa Community (EAC) and considering the new political changes in the Region, the scope of the project has been extended to cover additional countries including Burundi, Rwanda and South Sudan. The revised draft project document will be aligned with the new on the ground realities to ensure successful implementation of the project.

Presently, within the IGAD region, most of the National Hydrological Services (NHS) are not strong and don't have sufficient technical and institutional capacity to collect, store and disseminate timely and accurate hydrological information to enable the efficient and economic management of their national water resources. There is need for support to the NHS to strengthen their capacity to better fulfil their responsibilities, by improving the availability, accuracy, and dissemination of water resources data and information. This will be achieved through the development and implementation of appropriate national water resources information systems which will facilitate the use of the data and information in support of sustainable socio-economic development.

The IGAD-HYCOS project, therefore, is designed to promote sustainable and integrated water resources development and management in the IGAD region through enhancement of regional cooperation and collaboration in the collection, analysis, dissemination and exchange of hydrological and hydro-meteorological data and information for water resources assessment, monitoring and management. For that purpose the project aims at providing

adequate infrastructure for hydrological observation and adequate regional cooperation in information exchange among the IGAD countries. The project is expected to provide the IGAD region with a hydrologic information system that will feed into a regional water information system, and will assist participating countries in developing their national capacities for more efficient, cost-effective and sustainable water management. To achieve this task there is a need to design a modern strategic and optimum monitoring network for data collection and dissemination.

2. Purpose

The first step in designing a complete Hydrological Information System is the establishment of an effective operational hydrometeorological network. The primary objective of a hydro-meteorological observation network is to provide hydrological and meteorological data for the generation of information in support of decision making in regard to the overall water resources planning and development of sustainable water resources systems. These include water resources assessment, management of risks associated with hydro-climatic extremes, development of dams for irrigation and water supply, and design of other hydraulic structures for water drainage and sanitation. Further, the importance of considering climate change, that requires long-term hydro-meteorological records, has increased in all the above water related planning and control activities over the recent years.

In this instance, a primary focus of the observation network will be fulfilling the country needs in support of the implementation of the Inland Water Resources Management Programme (INWRMP). Noting this however, countries will need to identify the combined regional and national priorities for water resources information.

The IGAD-HYCOS will need to establish and maintain optimum networks of integrated meteorological and hydrological observation systems, in order to fully understand and provide coverage for the highly random hydro-meteorological cycle (spatially and temporally).

The services of a qualified and highly competent consultant will be required to assist the Project Manager in designing the Strategic and Optimum Observation Network for IGAD-HYCOS. The purpose of these Terms of Reference is to guide the Consultant in the process of designing the required observation network in the IGAD Region, and any special cases that merit consideration for inclusion in the HYCOS network. This will be carried out in consultation with the Member States guided by the following strategic objectives:

- Hydrological monitoring for basin-wide water resource assessment and planning (in support of the Inland Water Resources Management Programme (INWRMP)).
- The proposed network must meet the complex needs for holistic management of water including the design of sustainable water structures and reduction of water related problems such as floods, droughts and water quality, in view of a changing climate.
- Water quality and pollution monitoring and control
- Monitoring to support environmental and ecological management
- Groundwater monitoring and management
- The emerging and future needs (e.g., climate change adaptations)

- Optimum use of both existing sites/instrumentation and state-of-the-art observing systems/instruments which integrate automatic multi-parameter sampling at high frequency and rapid data transmission (real-time) to the Regional Data Center (RDC).

The hydrologic network under the IGAD-HYCOS project will be designed on the basis of a, country assisted, indepth assessment of the present status of the network, of the equipment in place, the available and foreseeable technical skills, overall regional and national relevance of sites and the emerging and future needs (e.g., climate change adaptations).

For the finalisation of the IGAD-HYCOS network a regional technical workshop will be held to complete the design process and agree on the final numbers and locations of monitoring stations in each country. This will form the basis of further financial analysis, development of site specifications and field surveys for installations.

3. Scope of Work

The consultant, in collaboration and close coordination with the Project Manager and the National Focal Points, shall carry out the following activities:

- a) Consult the necessary relevant IGAD-HYCOS documents, including but not limited to, the old Project document (2003 version), IGAD/EU Financing Agreement, WMO/EU Contribution Agreement, as well as the completed Questionnaires received from the countries;
- b) Establish good working relationships with all IGAD-HYCOS countries;
- c) Assess the stations identified by the countries and make proposals for the optimum network in line with the strategic objectives outlined above;
- d) Visit some IGAD_HYCOS countries to collect data and discuss the regional network requirements in order to establish their specific concerns, as necessary. Assess the status of the existing hydro-meteorological networks. In each visited country, have technical discussion with national experts, to establish the viability of the proposed network sites, telemetry options and security of equipment and sites;
- e) Through the discussions with experts in the IGAD-HYCOS countries, engage with key stakeholders including heads of Hydrological Services (National Focal Points), representatives of River Basin Authorities etc. The discussion should include clarification of Regional and National roles, logistics for network repairs and maintenance, the RDC, data exchange, data management, capacity building, operational costs, security, long-term sustainability;
- f) Review relevant components of the ongoing and planned activities in various river basins for the purposes of drawing synergies with complementary and compatible activities in the area of hydrological nformation systems and data collection;
- g) Collect any other relevant information that will assist in the design of the optimum network;
- h) Prepare a comprehensive draft report and proposal for a state-of-the-art IGAD-HYCOS hydro-meteorological network for each country/region, using a Geographical Information

System (GIS) tool, which will primarily aim at upgrading/rehabilitating existing stations, ensuring cost effectiveness and trans-boundary needs are met where necessary;

- i) The Draft Report will include a list of recommended equipments to be installed in each station and the technical specification for equipment, for tendering process; data collection platforms (DCPs), sensors, telemetry, training, spares, warranty, Installation requirements, including inbuilt equipment security.
- j) Draft lay out for one major selected station with cost estimate for construction of the civil work.
- k) Facilitate Regional workshop to agree on the proposed network.

4. Deliverables and Outputs

The Consultant shall submit to the Project Management Unit (PMU) three hard and soft copies of the following deliverables:

- Draft detailed Report on proposed optimal network for review.
- Map showing existing and proposed optimum HYCOS network for the IGAD-HYCOS Region.
- Final Report after the Regional workshop

5. Qualifications

To fulfil the requirements of the above scope of work, the Consultant should have the following qualifications:

- a) Extensive experience in Water Resources Management, minimum 10 years
- b) Knowledge of Integrated Water Resources Management, preference will be given to firms and individuals with IGAD Region experience
- c) Knowledge of Hydrological observation networks design and instrumentation
- d) University degree or equivalent in the relevant field
- e) GIS competency

6. Selection Criteria

The most suitable applicant will be selected on the basis of an evaluation of the applicants against the following criteria:

- a) Qualifications
- b) Experience in Hydrological data collection and Information Systems
- c) Experience in Water Resources Management
- d) Experience in Network design
- e) Quality of the proposal for work

- f) Knowledge of the IGAD-HYCOS countries and their hydrology
- g) High level communication skills
- h) The cost estimate for doing the job
- i) Availability to commence duties

7. Time Frame

The expected time frame for the Consultant to complete these activities is 3 months.

8. Financial Arrangements

A contract in the form of a Special Service Agreement (SSA) for 30 days work with the WMO will be offered to the consultant to finish the tasks in a three month period. The level of the payment will be based on the qualifications and experience of the successful applicant.

9. Procedures for Applying

Interested experts who have the qualification to do the job are encouraged to submit the following document to the Project Management Unit (PMU):

- a) An up-dated and recent C.V. addressing the selection criteria above
- b) A detailed proposal for the workplan indicating the work to be done for achieving the task, main points to be discussed with the countries and to also be addressed in your report, plan for visiting countries, the structure of your final report.
- c) An estimate of the proposed financial costs for the activities highlighting separately, the consultancy professional fee (Lump sum) and expected cost of at least four missions to visit four countries in the region, each for four days.

The above documentation should be submitted by e-mail to the Project Management Unit (PMU) at pmunairobi@wmo.int and copied to mtawfik@wmo.int

The closing date for receiving applications is **17 December 2011.**

IMPORTANT NOTICE:

1. ONLY APPLICATIONS RECEIVED BY E-MAIL WILL BE CONSIDERED (HAND DELIVERY OR POST THE APPLICATIONS WILL NOT BE ACCEPTED)
2. APPLICATIONS SENT OR RECEIVED AFTER THE DEADLINE WILL NOT BE CONSIDERED