



**Subject: Consultant on hydrological forecasting services in the Great Horn of Africa region. PROJECT UNDRR-AUC III - "Programme for a continental coordination, early warning and action system in Africa – Phase 3."**

**CUP B27F23000040005**

**BACKGROUND AND CONTEXT**

IGAD Climate Prediction and Applications Centre (ICPAC) is the Regional Climate Centre for Eastern Africa providing climate services to 11 countries. ICPAC is a specialized institution of IGAD with the mission of fostering climate services and knowledge to enhance community resilience for prosperity in the region. The Disaster Risk Management (DRM) programme at ICPAC intends to award a service contract for individual consultancy of a full-stack geo-developer to join the agile team within the Disaster Operations Centre (DOC). The Disaster Operations Centre is a newly set-up state-of-the-art space tasked with routinely monitoring multiple disasters across the region to provide comprehensive and integrated early warning information that supports relevant actors anticipate and deliver early action thereby averting or mitigating the impacts of disasters on the lives and livelihoods of the people in the region.

Funded by the Italian Ministry of Foreign Affairs and International Cooperation and the Agency for International Cooperation (AICS), the Program for a continental coordination, early warning and action system in Africa is implemented by the United Nations Office for Disaster Risk Reduction (UNDRR) and CIMA Research Foundation. The program is dedicated to strengthening continent-wide risk management, focusing on the development of a warning system and information exchange. In addition, a UNDRR project has recently started, entitled "Strengthening Disaster Risk Governance and Recovery Capacities: Towards actionable impact-based early warning in Africa: integrating exposure and vulnerability into early warning systems – a pilot study in the IGAD region". Such a project, referred to as EWS4IGAD, will be a collaboration of CIMA Foundation with the United Nations University - Institute for Environment and Human Security (UNU-EHS, Germany), the IGAD Climate Prediction & Applications Centre (ICPAC, Kenya), and the Regional Centre for Mapping of Resources for Development (RCMRD, Kenya). This project will co-design and co-develop a sound approach and methodology for impact-based early warning systems (EWS) that incorporates data on exposure and vulnerability in existing early warning approaches and decision support systems (DSS) tools piloted in the IGAD region

In this framework, in collaboration with ICPAC and with the aim of strengthening hydrological forecasting capabilities in in the Greater Horn of Africa (GHA) region, CIMA Foundation has implemented and operationalized the FloodPROOFS East Africa (FPEA) impact-based hydrological forecasting chain (Alfieri et al., 2023).

The system is based on the open source FloodPROOFS (FP) framework (<https://github.com/c-hydro>) that allows to operationally manage all the steps of a flood forecasting chain: from the download and preprocessing of the meteorological forcings, to the hydrological modelling with the fully distributed hydrological model Continuum (Silvestro et al., 2013) for developing region-

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[www.cimafoundation.org](http://www.cimafoundation.org)

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wide discharge and inundation forecasts 5 days in advance, coupled with a risk assessment framework to evaluate the potential impacts of floods on people, livelihoods and infrastructures.

After two years of operation, FPEA is in the process of being transferred for operational runs and maintenance at ICPAC, and visualized through ICPAC's online platform East Africa Hazards Watch (EAHW). The EAHW is an online web platform that supports tracking extreme events such as drought, cyclones, pests (desert locust), heavy rainfall, floods or crop failures, which are increasing in frequency and intensity due to climate change in East Africa. The East Africa Hazards Watch aggregates risk information from different specialized systems and presents them in one platform. The main goal of the system is to collect, store, and analyze risk data from different sources and present it in a color-coded system indicating a different level of alert and urgency. This public regional multi-hazards watch system aims at providing decision ready information based on forecasting and monitoring components, to support transnational coordination and early action across borders.

The consultant will work closely with thematic experts, climate scientists and the communication team at ICPAC as well as the users in the region to develop custom features and visualization techniques to support policy makers and other stakeholders to make informed decisions.

The service will be entrusted pursuant to Article 50 paragraph 1 letter b) of Italian Legislative Decree 36/2023 et seq. and pursuant to paragraph 4 of Article 13 of Italian Legislative Decree 36/2023 and paragraph 2 letter a) of Article 7 of Italian Ministerial Decree 192/2017 et seq.

### **SCOPE OF THE POSITION**

The scope of work are:

- 1) Dedicated support to all phases needed to complete the transfer of the FloodPROOFS East Africa operational system and products to ICPAC and EAHW, as well as for new system releases following implementation of new products and updates.
- 2) Develop a Flood Watch system with optimized features close to that of the Drought Watch system (<https://droughtwatch.icpac.net/>). The enhanced East Africa Flood Watch will be a public online system that routinely present floods forecasts information from ICPAC-MIKE Hydro systems, FloodPROOFS East Africa, GeoFSM and other models over the region.
- 3) Automate selected workflows of data processing chains and reporting
- 4) Flood watch system to have the functionalities similar to drought watch system
- 5) Integration of the flood watch warning/products in to the ICPAC East Africa Hazards watch system.
- 6) Technical support to the IGAD flood monitoring activities.



## **QUALIFICATIONS/REQUIREMENTS**

### **Education:**

- ✓ University degree in Computer Science, Geo-Informatics, Computer Engineering, IT or other relevant field,
- ✓ Minimum of two (2) years of relevant experience in geo-applications design and development.

### **Technical qualifications:**

- ✓ Experience working with scripting languages (especially Python) to automate geo-processing/large data workflows
- ✓ Demonstrate knowledge of web technologies, such as HTML, CSS and JavaScript
- ✓ Experience with application containerization (Docker) and deployment on cloud infrastructure
- ✓ Experience working on a variety of software development projects and developing front-end web solutions
- ✓ Proven experience (deployed projects, Github code) with designing and developing production ready scalable geospatial web applications with open- source industry standard technologies such as Node.js, React, Mapbox GL, Leaflet, Carto, python, Geoserver, Mapserver, GDAL,
- ✓ Sound knowledge of SQL and PostGIS spatial database;
- ✓ Experience developing REST API and a good understanding of microservices architecture
- ✓ Advanced knowledge of OGC geospatial standards like WMS, WFS, WCS, WPS, Simple Features for SQL
- ✓ Experience working with Go Language is an advantage
- ✓ Experience handling and analyzing Earth Observation data in different data formats is desirable
- ✓ Candidates should demonstrate their qualifications and proficiency in web application development and geo-application development (provide links to at least 2 samples of previous work and/or Github code)

## **OVERVIEW OF THE ASSIGNMENT**

- Position: IT Consultant;
- Location: ICPAC Headquarter (Nairobi, Kenya);
- Duration: 3 months (October, November, December 2024);
- Expected starting date: 2-4 weeks after completion of the selection procedure;
- Reporting and responding to: CIMA Foundation;
- Contract: Consultancy position;
- Compensation range: gross amount from 10.000,00 USD.



Interested candidates should submit their CV and its own economic quote prepared on the attached template to the email [selezioni@cimafoundation.org](mailto:selezioni@cimafoundation.org) (cover letter and reference letters can be attached) within 18.09.2024 at 5:00 p.m. CEST. The subject of the email should be: **Consultant on hydrological forecasting services in the Great Horn of Africa region.**

The successful candidates, after CV evaluation, will be contacted for an online interview. The award will be done, following the comparison of the quotes received and the analysis of the CVs by the technicians supporting the RUP, based on the cost-effectiveness and the proposed Cvs, for the CIMA Foundation.

The Consultant must have a status of self-employed/legal entity. It will be his/her sole responsibility to comply with all legal requirements for self-employment as well as to cover all related taxes and charges.

The Consultant must not be in any situation of conflict of interest or professional conflict of interest.

Any questions related to this call can be directed in English via email at: Lorenzo Alfieri ([lorenzo.alfieri@cimafoundation.org](mailto:lorenzo.alfieri@cimafoundation.org)). All clarification questions and the responses provided will be shared with all possible candidates on the website of CIMA Foundation/Open calls/Vacancies.

Savona, September 06, 2024

Managing Director

Luisa Michela Colla

A handwritten signature in black ink, appearing to read "Luisa Michela Colla".

*Privacy: with this document, CIMA Foundation is authorized to process the personal data of the subjects involved in the relationship referred to in the object, exclusively for the purpose of carrying out administrative procedures, pursuant to EU Reg. 2016/679 and D.Lgs 101/2018. In compliance with the principle of minimization of processing, the data will be collected and stored by the CIMA Foundation, preferably in digital format, through systems owned or placed under its control. The maximum data retention time will not exceed the time necessary for the performance of administrative functions. The provision of data is mandatory. The data controller is CIMA Foundation. For any need, you can contact the Data Protection Officer at the address: [dpo@cimafoundation.org](mailto:dpo@cimafoundation.org)*