

Development of Mozambique and Zimbabwe Flood and Drought Monitor

Terms of Reference

Background

Early warning systems (EWS) have received increasing international attention and are now recognized as a critical component of national disaster risk management arrangements. This in turn enables saving lives and reduces losses from disastrous hazard events such as floods and droughts. The importance of EWS for disaster risk reduction has been repeatedly highlighted in major multilateral environmental agreements and action plans such as under the United Nations (UN) Framework Convention on Climate Change (UNFCCC), the UN Convention to Combat Desertification (UNCCD), the United Nations International Strategy for Disaster Reduction (UNISDR) and the 2015 Paris Agreement.

The Sub-Saharan countries have been lagging behind in the developing of operational EWS at the national level, yet they are severely affected by El Niño and La Niña induced droughts and floods resulting in the loss of lives and properties, affecting also severely their already stressed economies. As climate change is increasing the frequency of water related hazards, the need for EWS becomes even more pressing.

This was demonstrated recently during the recent flood episode in central Mozambique and eastern Zimbabwe, where flood monitoring and early warning was found largely insufficient, resulting in an acute threat to human security. This flood risk is expected to further increase in the following decades, since it is expected that climate change will increase the frequency and intensity of cyclones in the region.

Therefore, additional efforts are required to setup adequate monitoring and early warning capacities in these two most affected countries. Particularly, novel forecasting techniques are required to provide foresight to extreme meteorological and hydrological events that are expected in the coming days, to allow for effective early warning.

The proposed flood early warning system will be able to visualize precipitation, streamflow, and other meteorological data from historical, near-real-time, and forecast datasets. The monitor will allow to identify peak streamflow, enabling authorities and local communities to closely follow and proactively act on potential flood hazards.

Main Objective

In this context, **UNESCO calls for a consultancy** to establish an operational Early Warning System for Mozambique and Zimbabwe to monitor and alert on current and forecasted flood and drought hazards in the two countries.

Expected Outcomes

1. Easy accessibility of climate and hydrological data
2. Streamflow in the countries' river systems is monitored continuously
3. Extreme meteorological and hydrological conditions are monitored and forecasted up to five days in advance to allow for early warnings

Deliverables

1. Develop an online flood and drought monitoring and early system for Zimbabwe and Mozambique

Develop a stand-alone online system for each country that allow visualization of meteorological and hydrological variables, including:

- Precipitation (mm)
- Minimum and Maximum Temperature (Degrees C),
- Wind (m/s)
- Streamflow (m³/s)
- Standardized Precipitation Index (-)
- Normalized Difference Vegetation Index (-)
- Soil moisture (%)

Deliverable 01: Report on the implementation of the flood and drought monitoring and forecasting system for Mozambique

Deliverable 02: Report on the implementation of the flood and drought monitoring and forecasting system for Zimbabwe

2. Visualization of precipitation and other meteorological station data

Integrate visualization capacity of station observations, by:

- a. Determining publicly available data sets for both countries.
- b. Including the available historical station data as an additional data layer in the online monitoring system

Deliverable 03: Report on the implementation of the visualization of precipitation and other meteorological station data.

3. Include climate change scenarios as an integral part of the national system

Integrate climate change scenarios in the online monitoring system, by:

- a. Processing the CMIP5 climate change scenarios for both countries.
- b. Incorporate at least five CMIP5 climate change scenarios, allowing to explore expected changes in temperature and precipitation under different RCP scenarios.

Deliverable 04: Final report of the implementation of the local monitoring and early warning systems, including all previous steps and including a report on the integration of climate change scenarios.

Time Frame

Duration: 5 months

Expected start date of the consultancy: August 01, 2019

Budget considerations

All costs related to the execution of this consultancy need to be included in the financial proposal. This includes working days, travel costs and accommodation costs during the needs assessment work in the targeted wards. No additional costs can be considered that are not specified in the financial proposal. The proposal should therefore present a total and final financial proposal that includes all costs necessary to execute the consultancy in its entirety.

Call for interest

To evaluate the different applications for this call for interest, the following documents are required:

- Technical proposal
- Financial proposal

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