



ADAPTATION FUND

**"Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin"
(VFDM project)**

**TERMS OF REFERENCE FOR THE SELECTION OF
TECHNICIANS PARTICIPATING IN THE PROCESS OF CAPACITY
BUILDING, DATA COLLECTION AND PRODUCTION OF FLOOD
AND DROUGHT RISK MAPS IN THE VOLTA BASIN**

Executing partners

January 2021



**WORLD
METEOROLOGICAL
ORGANIZATION**



**Global Water
Partnership
West Africa**

1. Context and justification

The World Meteorological Organization (WMO), a specialized agency of the United Nations, the Volta Basin Authority (VBA) and the Global Water Partnership in West Africa (GWP-WA) are implementing the project entitled '[Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin](#)'. The project activities officially started in June 2019 and will last until mid-2023. The VFDM project is funded by the Adaptation Fund. The VFDM project implementation entails the active involvement of National agencies (National Meteorological and Hydrological Services (NMHSs), Water Resources, Country Water protection, civil protection, etc.) and WMO partners, such as CIMA Research Foundation, Italian Civil Protection Department, UNITAR/UNOSAT, IUCN and CERFE, etc.

In the framework of the VFDM project activities, it is planned to develop flood and drought risk maps in the Volta basin using new and existing information available with global agencies (from satellites and geospatial sources), national and local as well as with other projects in the region. This activity is part of the development of the VOLTALARM early warning system based on the myDEWETRA platform.

To this end, the executing partners of the project (WMO, VBA and GWP-WA) have planned to select technicians from each country in the Volta Basin, who will take part in the capacity building process, data collection and production of flood and drought risk maps for the Volta basin led by the partner CIMA.

The present terms of reference are prepared to specify the objectives, the results and the different steps of the process as well as the activities to be carried out by the technicians and the modalities of their selection.

2. Objectives of the process

The overall objective of the process is to develop flood and drought risk maps for the Volta Basin through a participatory approach, also taking into consideration hazards, existing vulnerabilities, exposure, risk, and uncertainties in relation to each country socio-economic prospects and the current and future climate scenario.

Specifically, the process aims to:

- enhance understanding of the complex risks, hazards and related vulnerabilities for floods and droughts (develop country specific layers of hazards, vulnerabilities and exposures as shown in Figure 1) using global, national and local data and information, available and identified;
- prepare new information on exposures, vulnerabilities and hazards for current and future climate scenarios;
- provide skills and knowledge for the assessing of vulnerabilities and exposures as well as understanding of the overall processes for long term sustainability;

- provide practitioners and decision-makers with information and access to risk products, tools, demonstrations and scenarios at all scales (spatial and temporal) in order to better understand the impacts, and to manage and reduce existing and emerging risk;
- support practitioners and decision-makers to maximize the available information for the development of flood and drought management plans, actions, guidelines, and policies, etc.
- encourage inclusive, collaborative, and proactive behavior in terms of prevention and management of risks, enabling sustainable development that takes risks into account.

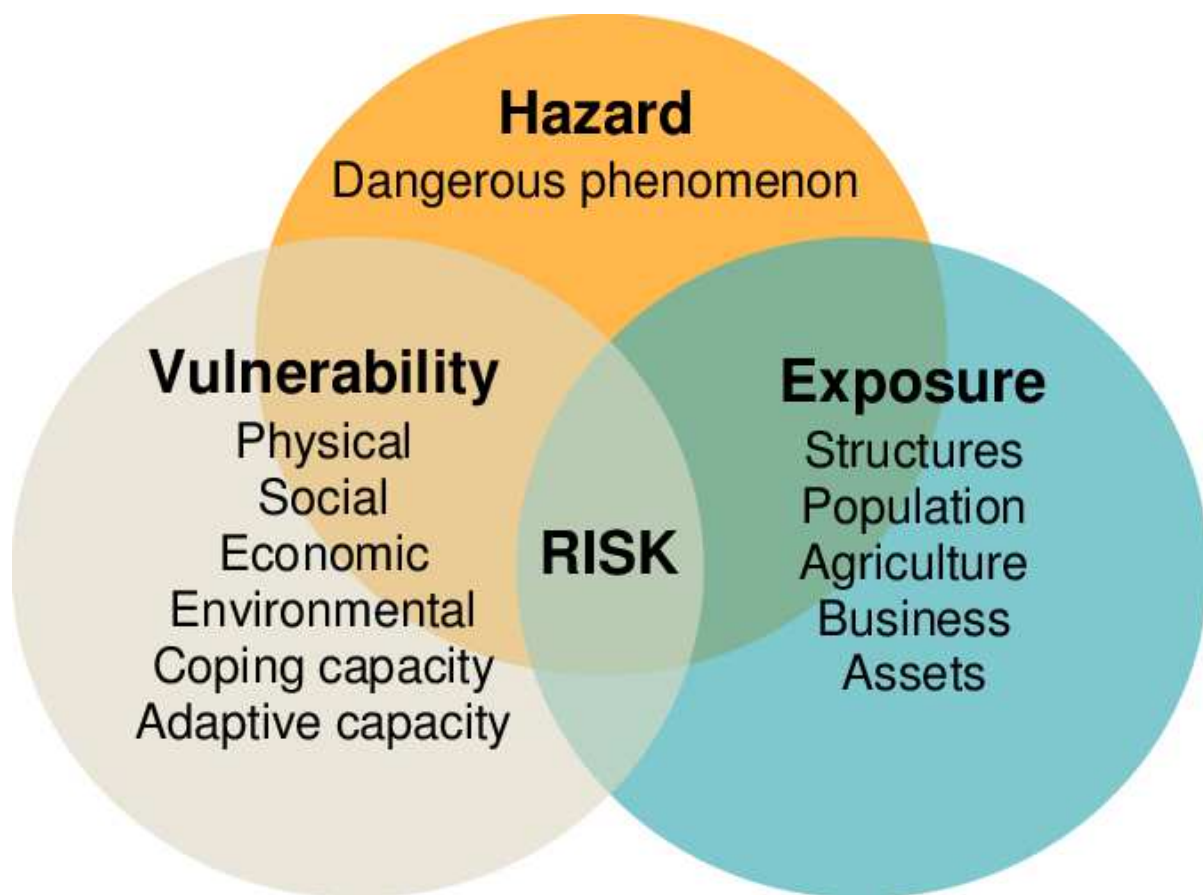


Figure 1: Hazards, Vulnerability, exposure variables

3. Tasks to be performed by the technicians

To achieve the objectives listed above, each technician will perform the following tasks:

- take ownership of the methodological approach for conducting the process of capacity building, data collection and production of flood and drought risk maps for the Volta basin;

- participate in trainings (online and face-to-face) to strengthen his/her capacities in assessing and mapping exposure and vulnerabilities as well as understanding the mapping of hazards and risks of floods and drought;
- collect data and information necessary for the production of maps of vulnerability and exposure to floods and drought for each national portion of the Volta basin;
- produce maps of vulnerability and exposure to floods and drought for each national portion of the Volta Basin;
- produce maps of floods and drought risks for the Volta basin.

4. Expected products and outcomes

The main expected products and outcomes of the process are as follows:

- the technicians have the skills and knowledge necessary to develop maps of vulnerability and exposure to floods and drought for each national portion of the basin in their respective country;
- information and data necessary for the production of maps of vulnerability and exposure to floods and drought for each national portion of the basin in their respective country are collected;
- maps of vulnerability and exposure to floods and drought are developed for each national portion of the Volta basin;
- the flood and drought risk maps are developed for each national portion of the Volta basin.

5. Methodology for conducting the process

The methodology to conduct the process revolves around the following main steps.

5.1. Online training for participating technicians

Online course modules will be developed to build the capacity of participating technicians in assessment and mapping exposure and vulnerabilities as well as understanding hazard and risks mapping. At this stage, 4 distinct modules are identified. They are:

- Introduction to Climate Risk Assessment and Mapping;
- assessment and mapping of exposure to floods and drought;
- assessment and mapping of vulnerability to floods and drought;
- hazard and risk mapping under current and future climate scenarios.

The first module will introduce the participants to risk assessment and mapping and to basic concepts on Geographical Information System for Exposure, Vulnerability and Risks Assessment. The basic course related to the risks assessment and mapping and to

Geographical Information System (GIS) will be made available in French and English on the Moodle website of the CIMA Research Foundation. The free-paced e-learning training courses, to be done according to the availability of the learner (in the form of presentation, video, documents etc.), will be validated by the National participants before the National training workshop. The basic course will provide to the participating technicians the necessary background knowledge and skills for the national training workshops.

The e-learning course program will be developed and shared with the participating technicians. The identification information of the participating technicians will be created and after the connection, the participants will be able to follow training/learning at their own pace. Remote instructors will be available to provide asynchronous response to their requests or to provide clarifications or additional information.

Once participants have completed the introductory online training module within the allocated time, there will be an assessment through an assignment or quiz for introductory course validation, which is preparatory for the participation to national training workshops.

The second, third and fourth modules will be more technical and will deepen specific subjects. They will be provided gradually during the all training process. The exposure assessment module will be used as complementary material for the first national workshop. The third and fourth modules will be provided as complementary material for the second national workshop. All the modules will help participants to apply the methodology at national scale.

Once participants have completed the initial introductory online training modules within the allocated time, there will be an assessment through an assignment or quiz for course validation. All participating technicians must pass the assignment or quiz. At the end of the online training, a certificate will be issued by the project partners to participating technicians who have obtained an average of 80/100 or more. The best technicians participating in the online courses will be invited to attend the national training workshops.

5.2. First national training workshop on exposure assessment for participating technicians (2-3 days)

After successfully completing the introductory e-learning course, the eight (8) to ten (10) professional technicians from each of the six (6) countries will be invited to participate in the face-to-face national training workshop. This training of trainers will essentially consist to develop their practical knowledge and skills for producing maps files (shapefiles) presenting exposures for any region. The participants will be requested to participate to a virtual online preparatory meeting 2-3 weeks before the workshop; this meeting will be dedicated to introduce the required datasets for the exposure assessment. Online learning module 2 will be made available to all participants as reference material for offline work. An example of demonstration will be provided by the facilitating entities and a shapefile map of a specific area will be developed during the workshop. Each participating technician will be assigned a specific region / area and it will be his/her responsibility to produce the exposure maps for that specific region / area of the country.

The national training workshop will be conducted in each country and will last for 2-3 days. A detailed concept note with other materials will be prepared and shared with stakeholders at the time of organization of the National training workshop.

This national training workshop will also allow to identify missing data and information to produce vulnerability and exposure maps in each country.

If the Covid19 situation does not allow a face-to-face workshop to be held, CIMA and WMO will run the training courses remotely by virtual connection.

5.3. Collection of information and data necessary for the production of vulnerability and exposure maps

Based on the missing data and information identified during the national training workshop, the project will provide resources support to the participating technicians trained to collect them in the field. The participating national technicians trained on a pilot region or with a demonstration, must collect the necessary national data and information on vulnerabilities and exposure variables and produce a form file / map (according to the training provided) for the region assigned to them during the national training workshop.

Each participating technician will have e-learning modules 2 and 3 as reference material as well as the list of data needed to produce vulnerability and exposure maps.

This activity will be conducted also after the second national training workshop (paragraph 5.4).

5.4. Second national training workshop on vulnerability and impact assessment for participating technicians

The second national training workshop will be organized approximately 45 days after the conclusion of the first national workshop and it will have the following 2 purposes:

- a. verify the progress and finalize the production of shapefiles / maps for exposures layer;
- b. Introduce the methodology for vulnerability and impact assessment and provide the necessary support to the participating national technicians for its application on their national portion of the Volta basin and under current climate scenario.

The methodology for vulnerability and impact assessment will rely on scenario-based approach (assigned return period for hazard mapping) and will be also presented using e-learning material from module 3 and 4. During the period between the two national workshops and also after the second national workshop, remote technical assistance will be provided to the participating national technicians.

If the Covid19 situation does not allow a face-to-face workshop to be held, CIMA and the WMO will run the training courses remotely by virtual connection.

5.5. Development of hazard and risk maps

Once exposures, vulnerabilities and impact are assessed for a given scenario, risks maps will be generalized for any possible scenario for floods and drought with a probabilistic approach using open access models available nationally or with the CIMA Research Foundation Continuum model. Risks maps will be produced as a combination of exposures, vulnerabilities and hazards according to the methodology for conducting the activity.

The approach will be jointly discussed at the national level with stakeholders and risk maps will be assessed for current and future climate scenarios.

A virtual workshop will be organized to present the results of the risk maps to national authorities. The project team will also take advantage of other workshops planned in the countries or at the regional level to present the risk maps to the national authorities.

Once participants have completed the online training and the national training workshops and risk maps are developed, there will be an assessment through an online assignment or quiz for the validation of all training process. A certificate will be issued by the CIMA Foundation to participating technicians who have validated the trainings.

5.6. Integration of risk maps in the VOLTALARM EWS and Sustainability

The risk maps developed will be integrated into the VOLTALARM EWS and will be used for impact-based forecasting and early warning generation and dissemination. The e-learning course and workshop materials will be made available to each country stakeholders and VBA for regularly updating the risk maps. Later, the National stakeholders will be able to use the same approach or methodology to extend the risk maps to the entire six country (develop risk maps for the region outside the Volta Basin) using funds from other projects or national investments.

6. Selection criteria for technicians

Any technician candidate to be selected to take part in this process must be a national of the riparian States of the Volta Basin (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo). He / She must be a professional from a national agency involved in the forecasting and management of floods and drought risks: hydrology, meteorology, civil protection, disaster risk management and emergency relief, water resources management, geography, research, municipalities / communes etc.

He / She must have knowledge and proven experience in the use of geographic information system tools (ArcGis, QGis). He / She must have experience and basic knowledge in risk assessment and mapping, exposure and vulnerability assessment, hazard, and risk modeling. The technician should have knowledge on existing databases on exposure, vulnerability and hazards available in the country as well as basic knowledge of his/her own country's disaster risk management system.

The selection of technicians will take into consideration gender as well as professional level on issues related to floods and drought and in general to disasters (senior, middle and junior managers).

The technician must have a personal laptop computer to perform the requested tasks or activities.

8. Methods of selecting the technician

Interested persons are requested to submit their files including:

- a copy of the valid identity document;
- a copy of the Certificate or diploma to justify their highest academic level;
- a detailed curriculum vitae highlighting experiences in connection with the development of maps, specifying the names and contact details of three reference persons.

Applications from women are particularly encouraged.

Applications must be sent no later than February 19~~3~~, 2021 at 5 p.m. Burkina Faso Local Time to the email addresses:

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| <ul style="list-style-type: none">- VBA: secretariat@abv.int- GWP-WA: gwp.westafrica@gwpao.org- WMO: support@vfdm.info |
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