ADAPTATION FUND

Version 5: September 18, 2017

# PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

## PART I: PROJECT/PROGRAMME INFORMATION

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| Title of Project/Programme: | Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin |
| Countries: | Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo |
| Thematic Focal Area: | Disaster risk reduction and early warning systems |
| Type of Implementing Entity: | Multilateral Implementing Entities (MIE) |
| Implementing Entity: | World Meteorological Organization (WMO) |
| Executing Entities: | World Meteorological Organization (WMO), Volta Basin Authority (VBA) and Global Water Partnership West Africa (GWP-WAF) |
| Amount of Financing Requested: | 7 920 000 USD (in U.S Dollars Equivalent) |

### Project / Programme Background and Context:

With a total population over 14 million living on the Volta Basin, integrated management of water resources and measures to reduce natural risks related to flood and drought, are essential for socio-economic and environmental development of the six West African riparian countries, hence on their pursuit of the Sustainable Development Goals. Transboundary coordination, exchange of knowledge and mutualisation of technical infrastructures are therefore becoming a challenge as growing population and impact of climate change add increasing pressure on natural resources. Key affected stakeholders are mainly people working in the agricultural sector: around 68% of the 24 million people living in the basin are largely dependent on agriculture, which is mainly rain-fed, poorly mechanized and consists of small family farms particularly vulnerable to climate related impacts, especially risks of drought and floods. Moreover, people affected by poverty tend to move to urban areas and, due to the lack of land-use planning and alternatives, mostly live in areas prone to risks such as valley floors and slopes, particularly vulnerable to floods and landslides).

The geographic setting of the Volta Basin, covering an area of about 400 000 km2 and extending from semi-arid to sub-humid areas, is highly vulnerable to meteorological and hydrological events. Over the last 20 years, almost two million people have been affected by floods in the Volta basin. Moreover, climate predictions foresee on an annual mean a reduction of precipitation and an increase of temperature. This will modify the current distribution of water resources over the different climatic zones, therefore aggravating an already existing situation of conflict between the competing uses. If drought increase is evident, more severe and frequent pattern of floods are also predicted, due to dry and eroded soil conditions exacerbating the surface runoff during the scarce, nevertheless intense, rainfall events. Overall, dry seasons are expected to be longer and drier, while rain seasons are going to be shorter but characterized by more intense precipitation events. Combined with the socio-economic context (majority of people depending on rain-fed agricultural production and internal migration towards urban centres, currently not tailored to absorb additional people), this will translate in a hampered food security situation, loss of income and livelihood for farmers and increase of people living in informal settlements located in flood prone areas of urban centres.

In 2016, assessment of capacity building needs on the six riparian countries and the Volta Basin was performed by national experts in a consultative process with the main relevant stakeholders to form the basis for integrated flood management projects[1]. The main conclusions of these participative consultations highlighted major priorities to build on the current context and to prepare the region to future economic and environmental changes, such as integration of disaster risk reduction in the national management frameworks, enhancement of synergy and coordination mechanisms at regional level to

[1] (2016): Evaluation des besoins de renforcement des capacités. Préparation des projets de gestion intégrée des inondations pour le Bénin, Burkina Faso, Côte d'Ivoire, Ghana, Mali et Togo et le bassin de la Volta en Afrique de l'Ouest. Series of seven reports GWP West Africa.

foster integrated flood and drought management, availability of standardised data, especially real time data, coordination of information channels and procedures developed for end-to-end early warning systems, as well as increase knowledge of communities on risks, early warning systems and strategies to manage disaster risks and their involvement into flood preparedness and contingency plans.

## Project / Programme Objectives:

The main objective of the Flood and Drought Volta programme is to assist the six countries in **the implementation of coordinated and joint measures to improve** their existing management plans at regional, national and local level and to build on the lessons learned from the past and current projects related to **disaster risk reduction and climate adaptation**. The six riparian countries will therefore benefit not only from a **basin-wide transboundary management framework to ensure long-term environmental and economic development, as well as concrete solutions** to alleviate a potential increase of vulnerability and to build an effective network of actors. As droughts and floods are a common feature in the Volta basin region, integrated water resources management and development of early warning systems must be implemented to increase resilience to floods and droughts and ensure socio-economic sustainable development. Equilibrated management of the water resources will be sought to make better use of the water surplus during floods to be stored in view of drought events. Furthermore, at local scale, agricultural production will be tailored to these challenges with provision of knowledge and early warnings that will enable farmers to adapt their production methods.
To respond to the needs expressed in 2016 by a large number of stakeholders, the programme will include **the selection and implementation of appropriate End-to-End Early Warning Systems for Floods and Drought allowing to integrate short-term to seasonal indicators into the long-term management framework**. The system will embed both hazards that will be forecasted using different methodologies (indicators using different criteria to assess risk; hydrological and hydraulic models informing on threshold level; maps showing levels of risk through color-coding). As per the dissemination of warnings, existing systems (e.g. on White Volta and Oti basin) will be implemented within a common platform . The system will be built on the basis of open-source codes and free technologies, future integration of modules covering additional natural and health hazards will be foreseen to allow its upgrading towards a Multi Hazard Early Warning System.

The Volta programme has the ambition to provide the first large scale and transboundary implementation of Integrated Flood and Drought Management strategies by empowering the National Meteorological and Hydrological Services (NMHS) and other competent authorities of the six riparian countries with robust and innovative solutions for disaster risk reduction and climate adaptation, including green solutions and gender sensitive participative approaches. Existing national hydrological modelling systems, decision support and early warning platform will be integrated into the transboundary Early Warning System.

The programme will tackle climate adaptation issues, ensuring transversal solutions from governance to technical and decision making. It will develop the underlying capacity of national and regional institutions to maintain long-term sustainability and to scale up the results. It will support stakeholders at all levels by providing **policy and management guidance and by sharing scientific information, knowledge and best practices for Integrated Disaster Risk Reduction and Climate Adaptation**. One main purpose will be to support the implementation of the MoU between VBA and the six riparian countries to promote data sharing, which is currently not sufficiently structured and demand-driven.

## Project / Programme Components and Financing:

| Project/Programme Components | Expected Outcomes | Expected Outputs | Countries | Amount (US$) |
|---|---|---|---|---|
| 1. Develop capacity and establishing frameworks at the local, national and regional levels to ensure risk informed decision-making | Improved climate and risk informed decision-making , including vulnerable stakeholders | 1.1. Improved knowledge of risks, climate change impacts and risk management capacities through knowledge sharing and participatory mechanisms<br>1.2. Bridging the gap towards integration of knowledge into future scenarios (economic, urban, climate, etc.)<br>1.3. Risk management strategies in short, medium and long-term to be integrated into development plans (economic, social, environmental aspects) | Volta Basin in West Africa (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo) | 1 500 000 |

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| 2. Develop concrete adaptation and environmentally friendly mitigation actions with an integrated approach | Development of water management plans and upgraded at the basin, sub-basin and urban levels to include climate change adaptation and flood and drought risk mitigation strategies at the local, national and regional levels | 2.1. Improved flood and drought forecasting instruments and EWS and coordination at the transboundary level to reduce disaster risks in vulnerable communities<br>2.2. Development of medium and long-term adaptation and mitigation measures (structural and non-structural) in prioritized areas and updates based on lessons learned and monitoring instruments<br>2.3. Strengthened awareness of vulnerable people on hydro-meteorological risks, prevention, preparedness, response and mitigation strategies through education programs using participative solutions | Volta Basin in West Africa (Benin, Burkina Faso, Côte d'Ivoire , Ghana, Mali, and Togo) | 4 000 000 |
| 3. Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and transboundary levels | Enhanced capacity and coordination mechanisms between institutions and communities to adapt to climate-induced risks | 3.1. Planning tools and operational mechanisms improved and tested to ensure effective preparation and response to floods and drought<br>3.2. Local, national and regional institutions (including meteorological and hydrological sectors) are trained on risk management and have a clear comprehension of their role and coordination mechanisms<br>3.3. A collaborative process is developed to ensure those instruments and strategies are accepted by local communities and adapted to context | Volta Basin in West Africa (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo) | 1 000 000 |
| 6. Project/Programme Execution cost | | | | 750 000 |
| 7. Total Project/Programme Cost | | | | 6 500 000 |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity | | | | 670 000 |
| **Amount of Financing Requested** | | | | 7 920 000 |

**Project Duration:** 4 years

## PART II: PROJECT / PROGRAMME JUSTIFICATION

The approach at the scale of hydrological basin ensures that the existing knowledge benefits from a global and unified framework and that further improvements can be easily integrated into a common structure. It provides a powerful tool to foster collaboration and exchanges of experiences to national partners, and to the Volta basin Authority, as any action on the basin at short (due to crisis events) or longer term (due to climate change impact) influences the future socio-economic development of the six countries. The 3 components of the programme target 3 thematic areas identified by the partner countries in their recent needs assessment: 1) risk informed decision making from local to regional level, 2) development of integrated risk reduction and adaptation measures, 3) policy coordination and community capacity building at transboundary level.

The development and implementation of concrete solutions for End-to-end Early Warning System for floods and droughts at the scale of the Volta watershed is the key component of the programme (component 2.1). Due to the inadequate sharing of information for forecasting and responding to natural disasters, the system will cover the global chain from vulnerability and risk mapping to forecasting, warning dissemination and decision making, making use of existing ongoing projects (such as CREW in Ghana, project SAP in Benin, SAP-IC/CONEDD in Burkina Faso, etc.) and concentrating on the most vulnerable river courses, on flash floods (benefiting from WMO successful implementation of the Flash Flood Guidance System - FFGS, implemented since 2009 in more than 50 countries using remote sensing, meteorological observation networks and soil moisture data) and coastal areas. It will stay opened to additional features, thereby integrating other natural hazards, such as fire and erosion, and also linking with agricultural and health components, ensuring that wetlands and other areas of global importance for ecosystems will be protected and integrated among the adaptation strategies (component

2.2). In line with the Environment and Social Policy of the Adaptation Fund and its principles, the ecosystem approach is fundamental in the concept of IFM supported by WMO and GWP and it will be one of the major aspects considered when developing medium and long-term adaptation measures. This will be achieved by taking into account the existing guidance material developed by the Associated Programme on Flood Management (APFM) with its partners based on the IFM concept (e.g. IFM Tool Series and WWF Flood Green Guide). Awareness on prevention, preparedness and response (component 2.3) will mostly involve national agencies, Civil Protection, NGOs, to develop education programs using participative solutions.

National policies, regulatory instruments, coordination institutions for risk reduction and climate change impacts are already in place at the level of each individual country but an integrated approach at the scale of the watershed will allow to evaluate the impact of individual measures on the whole water cycle and on the related agricultural development (component 1).

Hydro-meteorological Early Warning System provide successful results when the transfer of information is suited to the needs of the services in charge of action in the field; therefore calling for their contribution to the development of the visualization interfaces and the selection of the decision criteria (component 3). The benefits of Early Warning and risk reduction measures (at short and long term) are greatly increased with community preparedness. Training and awareness sessions at local level will ensure that highly technical knowledge is conveyed to the population, especially the most vulnerable groups.

New solutions will be implemented to improve risk reduction and climate change adaptation and special attention will be given to their promotion through Community of Users, guidance material, decision-support games, online training, social networks and crowdsourcing. All these solutions will need to be tailored according to the local needs and capacities, factoring social and cultural issues. The End-to-End Early Warning Systems will be tested with additional climate projections to study the impact of future scenarios on spatial and urban planning and their consequences on the socio-economic development. The programme will use the methodology developed by WWF and USAID in the Flood Green Guide to reduce flood risk and to help selecting the best (results and cost efficiency) combination of structural and non–structural methods, including natural and nature-based flood solutions. Special sessions on urban development will be developed, WMO will also test the methodology proposed in the forthcoming training manual for mainstreaming gender in Flood management, and its facilitator guide to support trainers. On-line learning and training, the participation to Community of Practice on Flood Management and End-to-End Early Warning Systems, as well as “living lab” will be part of the methods used to create a larger participation of all concerned parties.

The basin scale approach is a suitable way to identify and implement cost-effective measures. By involving the six-countries, previous knowledge and funding, as well as current projects, can be considered to ensure minimum overlap and transfer of methodologies from one area to the other. The development and maintenance of the End-to-End Early Warning System and all related functionalities can be mutualized and shared depending on the individual needs and uses. The developed methodologies can be tested at larger scale within the basin, or easily adapted to similar types of environments, therefore creating a community of users. Jointly considering climate change perspectives will also foster the integration of risk and climate approaches.

The programme builds on a number of risk reduction masterplans, such as the Volta Basin Strategic Action Programme, development strategies and adaptation measures that have been listed in the Second edition of the Disaster risk management Program published by the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank in 2009. Four of the six Volta Basin countries (Burkina Faso, Ghana, Mali and Togo) are identified as major priorities due to their vulnerability to natural hazards and low resilience to climatic events and variability. Even though considerable funding has already been (or is being) attributed to the six countries, a large coordination effort, joint methodologies and shared tools are necessary to ensure that the results and outputs of the national projects are integrated at transboundary level. The programme offers also an opportunity to explore how coordination efforts will be beneficial to the concerned institutions, such as the integrated programmatic approach proposed for the National Council for Emergency Relief and rehabilitation (CONASUR) and the National Council on Environmental and Sustainable Development (SP/CONEDD) in Burkina Faso. In Ghana, the National Disaster Management Organization (NADMO) will be able to implement new solutions from national to local level through the involvement of the Zonal offices.

Long term maintenance of the tools and methodologies will be sought through commitment of the countries in order to provide sufficient resources for the sustainability of the new system. Capacity building at the national and local level will be key to ensure long term commitment in the countries. This

will be ensured through a wide curriculum of trainings covering aspects such as end-to-end early warning systems for flood management, integrated drought management, hydrological status and outlooks, community based flood management, roving seminars for farmers on agro-meteorology. In Burkina Faso, relationships will be built with the Institut Supérieur d'Etudes de Protection Civile (ISEPC) to mainstream technical results into training and operational actions. The aim of the programme is not only to provide technical support and new decision aid tools to operational centres but also to foster exchanges, to create groups of users and form trainers.

WMO build on lasting collaborations with the Volta basin countries, as the pilot project AOC-HYCOS and the subsequent Volta-HYCOS programme endorsed 15 years ago by the six countries. Through the coordination of GWP-WAF, the involvement of vulnerable groups, will be facilitated on issues related to gender mainstreaming and community based management. The detailed programme activities, the share of duties and responsabilities and the financial issues will be discussed with representatives of VBA, the Country Water Partnerships, NMHSs and national disaster management authorities during the Workshop organized by GWP with the support of VBA between October 30 and November 3, 2017 in Ouagadougou. The country-driven needs assessments conducted in 2016 by GWP is an important step into strengthening regional cooperation strategies while supporting national priorities. In addition to this strong network already established, representatives from sectorial groups will be also consulted in the preparation phase, together with civil society organizations and institutional representatives at each administrative level on issues including disaster management and civil protection, water resources management, environmental protection and agriculture.

Even though the national policies must be accounted for, VBA will extend its operational activities and become a valuable support to maintain the programme results on the longer term, therefore strengthening the Volta basin Strategic Action Programme (SAP). Major institutions in charge of coordination and civil defence activities from national to local level will be integrated while detailing the programme components and they will be participating to the training and operational activities, such as for example NADMO and the Water Resource Commission in Ghana, and the General Directorate of Water Resources (DGRE), the Permanent Secretariat of the Action Plan for Integrated Water Resources Management (SP-PAGIRE), CONASUR and CONEDD in Burkina Faso, and the similar institutions in the four other countries of the basin. By involving the NMHSs and the country partners of GWP-WAF, the programme activities aim at covering the whole spectrum of capacities.

The six countries of the Volta basin count a large number of stakeholders and institutions that will contribute to the development of technologies and trainings proposed in the Programme. Risk mapping, risk prevention measures and nature-based solutions, Early Warning System designed to integrate further natural and agricultural hazards, enhanced community (particularly vulnerable groups such as women) preparedness to risk and climate change impact will provide economic, environmental and social benefits. Linking with similar initiatives in the Economic Community of West African States (ECOWAS), and especially its Coordination Unit for Water Ressources, is also one of the goals of the programme.

The programme components will take into account the results (resources, infrastructures and services) obtained by past and on-going projects to ensure mutualisation of knowledge and to avoid overlap of funding. Different ways are already planned to widen the dissemination of the programme outputs to a larger circle of institutions and communities, including consultative and participatory meetings with local communities, policy makers, expert groups, advisory committees and other relevant stakeholders (NGOs). Workshops will be organized at different stages of the programme gathering key representatives and international partners of ongoing and past projects to ensure the exchange of information, collection of feedback and coordination of activities.This task is a major challenge as some projects are relatively ancient and their integration into the new technologies must be assessed. Funding is provided by UNDP, World Bank and other Development Banks, GEF, FAO, WWF, national development agencies (AFD, DANIDA), the European Commission, the Consultative Group on International Agricultural Research (CGIAR), the International Water Management Institute (IWMI), the Red Cross. These programmes and projects will be screened for duplication and synergies: the new White Volta Warning and Flood Forecasting System developed in Ghana, the GEF Flood and Drought Management Tools project, the WMO-GWP Integrated Drought Management Programme West Africa (IDMP WAF), CREWS-Burkina Faso, AMCOW-GWP Water, Climate and Development Programme (WACDEP), the GLOWA Volta Project, the CGIAR challenge program on water and food, the future ADAPT-WAP project submitted by the Sahara and Sahel Observatory.

The total budget of the Volta programme is estimated to USD 7.92 million to support implementation over the six riparian countries. Funding for project management is evaluated to USD 750,000. Additional funding of USD 670,000 is included to cover the expenses of the Implementing entity.

## PART III: IMPLEMENTATION ARRANGEMENTS

At the regional transboundary level, two organizations to the side of WMO, selected as Executing Entities, will fulfill the coordination and relationships with the institutions and stakeholders on the basin:

- The Volta Basin Authority (VBA) will be the focal point for data sharing and dissemination through its Observatory, transboundary coordination and links with the national structures
- The Global Water Partnership West Africa (GWP-WAF) will ensure an integration of communities and local stakeholders, while connecting with national policy makers.

At national level, WMO count on the support of the Permanent Representatives and their Hydrological Advisers of the National Hydrometeorological Services (NMHSs), forming a network of technical assistance to disseminate the programme results towards the related Ministries in charge of Water Resources, Hydraulics, Environment and Civil Defense, and international level within the 191 WMO member countries and territories. The NMHSs can be envisaged as focal points for the technical activities. The network of GWP country partners (in the order of several dozen related to the programme activities) will disseminate and mainstream the programme results at local level. Additional national entities, such as FNEC in Benin, will be invited to join the advisory programme committee. In the future, FNEC could finance national projects for the additional themes identified during or after the completion of the proposed Volta programme in order to gain long term sustainability of the programme outputs.

WMO, as Implementing and Executing Entity, will be involved at several levels into the programme activities and supervision, allowing to benefit from international as well local presence:

- The WMO Field Office for North, Central and West Africa, will coordinate with national authorities, especially their NMHSs.
- The Technical Support Unit (TSU) of the Associated Programme on Flood Management (APFM) and the Integrated Drought Management Programme (IDMP), both hosted in the Climate and Water Department of WMO, will ensure as Executing Entity close contact with both regional Executing Entities (VBA and GWP-WAF).
- Other WMO teams in the Climate and Water Department, especially the Global Framework for Climate Services (GFCS), Climate Prediction and Adaptation Branch, Flash Flood Guidance System, HydroHub project, will contribute to the activities and extend the reach of the programme.

## PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

**A. Record of endorsement on behalf of the government**[2] *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project/programme. Add more lines as necessary. The endorsement letters should be attached as annexes to the project/programme proposal.*

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| République du **Bénin** - Mr Euloge LIMA, Point focal de la CCNUCC, Ministère du cadre de vie et du développement durable | Date: July 26, 2017 |
| **Burkina Faso** – Mr Ambroise KAFANDO, Adaptation Fund National Designated Authority, Director General of Cooperation, Ministry of Economy, Finance and development | Date: July 21, 2017 |
| République de **Côte d'Ivoire** – Mr Jean Douglas ANAMAN, Head of Adaptation Unit at National Climate Change Programme, Ministry of Urban Sanitation, Environment and Sustainable Development | Date: July 17, 2017 |
| **Ghana** – Mr Fredua AGYEMAN – Director (Environment), Ministry of Environment, Science, Technology & Innovation | Date: August 18, 2017 |
| République du **Mali** – Mr Boureïma CAMARA, Director General, Environment and Sustainable Development Agency, Ministère de l'environnement, de l'assainissement et du développement durable | Date: September 4, 2017 |
| République du **Togo** – Mr Essobiyou Thiyu KOHOGA, Director of Environment, Ministry of Environment and Forest Resources | Date: July 25, 2017 |

Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programs proposed by the implementing entities.

**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

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| I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme. | |
| Mary Power, Director, Development and Regional Activities Department, WMO<br><br>*Signature*.....<br>Implementing Entity Coordinator | |
| Date: August 7, 2017 | Tel. and Email: +41 22 730 8003<br>MPower@wmo.int |
| Project Contact Person: Jean-Paul Gaudechoux and Giacomo Teruggi | |
| Tel. And Email: +41 79 514 4261; +41 22 730 8354<br>jpgaudechoux@wmo.int; gteruggi@wmo.int | |