



ADAPTATION FUND

PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Integrated water resources management and early warning system for climate change resilience in the Lake Chad Basin
Countries:	Chad, Cameroon, Central African Rep., Niger, Nigeria
Thematic Focal Area:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	Multilateral implementing entity
Implementing Entity:	World Meteorological Organisation (WMO)
Executing Entities:	Lake Chad Basin Commission (LCBC), Global Water Partnership Central Africa (GWP-CAf)
Amount of Financing Requested:	10,620 million (in U.S Dollars Equivalent)

Project / Programme Background and Context

Shared by 5 countries classified among the poorest in the world, the Lake Chad basin, with an area of around 2,400,000 km², is one of the most threatened lake ecosystems in Africa. The lake and its basin currently provide livelihoods for a population currently estimated at 50 million people. For thousands of years, it has been the economic heart that provides life for millions of people and a focus of development, trade and cultural exchanges between the populations of the northern Sahara and those of the south. With regard to biodiversity, it offers very rich ecosystems in an arid environment and is therefore included in the Ramsar List of Wetlands of International Importance. Climate variability has strong effects on the fragile ecological balance of the Lake Chad basin, and concrete projects need to be undertaken to address the many crises that are affecting the region. Since the 1970s, the region has been suffering from the harmful effects of climate change, characterized in particular by drought combined with episodic floods, and the surface of the lake has infamously decreased by 90%, thus negatively impacting the population, the agriculture and development perspectives. According to the LCBC, out of a population of 17.4 million, 5 million are food insecure and about 11 million are requiring humanitarian assistance. As a result, in addition to the crystallization of tensions, there is widespread concern among the riparian countries that the lake could disappear, and a water transfer project from the Congo Basin is being considered. A close and rigorous hydrological monitoring is essential to better understand processes involved, avoid mal-adaptation and ensure that this measure would comply with sustainable environmental and social policies.

The current status of activities addressing climate vulnerability issues was assessed in the 5 countries based on information from the ongoing WMO hydrological survey, complemented by information from preliminary surveys conducted in the countries and documentation. The findings show that the Lake Chad basin is vulnerable to floods (river and flash floods), droughts, and sandstorms, and gaps to prevent or develop a resilience strategy are multiple. Forty-eight disasters of this nature have been recorded in the last 50 years (1970-2020), i.e. almost one event each year. All 5 countries have set up a national committee or platform coordinating disaster risk reduction activities, however the monitoring networks and Hydromet information production capacities are lacking in all the countries, noting that the situation is not homogeneous in terms of available human resources, organization and infrastructures. Niger and Chad are benefiting from capacity building activities improving their capacity in multi-hazard early warnings, through ongoing Climate Risks and Early Warning Systems (CREWS) projects. An emergency flood control project was recently developed in the Cameroonian part of the basin, including installation of a few monitoring stations that will be used in the present project. This information will be complemented by more detailed surveys to be carried out in later stages of the project, in order to build/optimize synergies.

The basin inhabitants have predominately livelihood-based economies and have developed adaptive strategies based on mobility/nomadism. Thus, they highly depend on the natural resources in the

area including fishing, livestock farming and agriculture. The basin's wetlands are thus critical for agriculture and food supply to cope with recurrent droughts. Given the low adaptive capacity, hydrometeorological hazards can translate into real disasters for the population and the local economy, and climate change is expected to continue to aggravate the situation.

To better document climate issues and propose solutions to prevent and deal with, two projects proposals had previously been developed in collaboration with the LCBC and its member countries, the [Lake Chad-HYCOS project](#) by WMO and the [Early Warning System project](#) by GWP-CAf. Upon request from the LCBC and in accordance with its Strategic Action Plan including climate issues, both institutions have been requested to help develop a combined project to relaunch Hydromet monitoring activities for improved water management and set up an Early Warning System (EWS). This collaboration between those two institutions and WMO is a powerful alliance to promote the exchange of experiences between partners to ensure that the expected results are met.

Project / Programme Objectives

The five-year project core objective is to contribute to provide practical guidelines and concrete technical solutions for climate resilience and water resource management in the Lake Chad basin. Project activities will build on existing data and lessons learned from former projects and other WMO activities such as the WMO HydroHub, the Global Hydrological Status and Outlook System (HydroSOS) as well as previous initiatives, to offer robust, innovative and sustainable solutions, both for water monitoring and for disaster risk reduction and climate change adaptation. While synergizing with other existing initiatives, the project will serve the participating countries as a demonstration of an appropriate end-to-end solution for service delivery responding to the needs of basin-wide end-users, to ensure long-term water monitoring for sustainable environmental and economic development. The main specific objectives are as follows:

- To build an effective water information system through establishing a consolidated network of national Hydromet observing systems that provide coherent and reliable data, transmitted in appropriate time to national and regional databases through appropriate channel;
- To anticipate and inform vulnerable communities on emerging risks through strengthening the technical and institutional capacities of dedicated national technical services and developing an EWS to forecast disasters, such as floods and droughts;
- To enhance hydrological products and services development through strengthening the technical and institutional capacities of the National Hydrometeorological Services (NMHSs) in the area of data collection, processing and service delivery;
- To promote and facilitate the dissemination and use of services and relevant products related to water resource management, environmental protection and protection of human life and property against water-related risks, including hydrological status and outlook, using the appropriate means including the new technologies (e.g. GSM message in local language) and with the pro-active engagement of Agencies and communities (Gender mainstreaming). Traditional authorities, which are highly respected, will be engaged to facilitate information circulation and use;
- To strengthen regional cooperation through improved knowledge management of the Lake Chad and its tributaries.

The project aims at combining regional, national and local information systems. Specific needs of countries and sub-national entities will be identified in the first phase of the project implementation.

Project / Programme Components and Financing

Each of these project components will be executed in each of the considered 5 riparian countries

Components	Expected Outcomes	Expected Concrete Outputs	(US\$)x10 ³
1. Improvement of hydrological and meteorological observing systems networks (annex2)	- Strengthened institutional capacity contributing to reduce socioeconomic and environmental risks associated with climate related hazards	1.1. Hydromet observation network (about 50 stations for surface and groundwater and agrometeorological variables) and information system, modernized/established; 1.2. Sustainable funding mechanism for water monitoring established.	2 500

2. Development of the regional hydrometeorological information system (database and data sharing mechanism)	<ul style="list-style-type: none"> - The database is accessible, with up to date information, and used and shared on a freely base by all the relevant stakeholders -HydroSOS mechanism established 	2.1. Development of a tailored regional database owned and managed by dedicated institutions 2.2. Flood and drought forecasting tools and EWS within the riparian countries and coordination at regional level are improved, HydroSOS ready for implementation	1 000
3. Identification and development of hydrometeorological products and services	<ul style="list-style-type: none"> - The needs and requirements of users of hydrometeorological products and services are well known: countries, end-users including minorities, considering gender and cultural aspects; - Strengthened technical and institutional capacities of the NMHSs to monitor and stock relevant and up-to-date data, and for development of model products 	3.1. A baseline study is completed, with concrete understanding of the knowledge and infrastructure needs on the basin, including food security and environmental services; 3.2. Development of a national EWS mechanism, with LCBC providing guidance and warning advisories at the regional level;	1 000
4. Training of project stakeholders and knowledge development	<ul style="list-style-type: none"> - Improved collaborative interactions amongst the key stakeholders - Better assessment of the current situation and the capacity needs of key stakeholder groups. 	4.1. Organizational arrangements on a national and regional level, as well as communication procedures are established 4.2. Hydromet staff is trained in installation and maintenance	1 500
5. Awareness raising with decision makers, lawmakers and water users on the importance of hydrometeorological information and services (Communication and timely diffusion of appropriate product and services to end users)	<ul style="list-style-type: none"> - Sustainability of the hydrological and meteorological monitoring activities; - Strengthened awareness to sustainable integrated approach to water resource management, including climate change issues; - Increased interest from governments and end users; - Minimized operation and maintenance cost of Hydromet monitoring; - Secured continuous and efficient use of data consistently gathered in a demand-driven way. 	5.1. Awareness raising workshops for decision makers, lawmakers and water users 5.2. The added value of adequate hydrological services is demonstrated to water users, 5.3. A communication and warning dissemination system is set up, operational and accessible to a wide audience, including vulnerable people 5.4. Warning messages are recognised and understood by users' communities in the basin, including the most vulnerable ones.	1 000
6. Contingency plans (communities' response capacity)	<ul style="list-style-type: none"> - Enhanced governance coherence at the basin level and increased adaptive capacity within the agricultural and natural resource sectors as well as disaster risk reduction. 	6.1. Development and implementation of contingency plans at regional and national levels 6.2. Medium and long-term adaptation and mitigation measures are recommended in the prioritized areas	2 000
7. Project/Programme Execution cost			855
8. Total Project/Programme Cost			9 000
9. Project/Programme Cycle Management Fee charged by the Implementing Entity			765
Amount of Financing Requested			10 620

Project Duration: 5 years (60 months)

PART II: PROJECT / PROGRAMME JUSTIFICATION

Project components

The transboundary dimension of the basin makes the regional approach essential to promote collaboration and exchanges of experience between national partners, as well as with the LCBC, which ensures, among other things, a global analysis of the impact of climate change on the entire basin. This approach is also a powerful tool for building solidarity, mutual trust and collaboration

between the different technical teams of the countries participating in the project. This practice, which should continue beyond the project, is conducive to mutual assistance among NMHSs agents for a better implementation of activities related to the knowledge and management of water resources, as well as EWS in the Lake Chad basin. It also strongly supports the exchange of current and historical data and information that underpins transparent decision-making critical to prevent conflicts in competitive usages, namely with regards to shared resources of the transboundary basin.

The six components of the project focus on three main areas: (i) strengthening and updating an operational and reliable system for collecting, transmitting, processing and archiving data water resources. These data will be both quantitative and quality aspect of surface and groundwater resources, complemented by agrometeorological data. Data will be collected and managed in a timely manner to meet the needs of end users throughout the basin. This component will be supported by WMO-HydroHub, adopting appropriate innovative technologies and multipurpose monitoring stations. Stations will be designed to be compliant with WMO-WIGOS and if appropriate the Global Basic Observing Network (GBON). (ii) Capacity building will help ensuring full ownership of new generation Hydromet tools and equipment by the various actors. It will also integrate organisational and financial aspects putting a focus on the training of female and young professionals. (iii) Development and dissemination of products taking into account different needs and opportunities of men and women, to best reach different social categories and reduce inequalities, to allow facing climate hazards and promoting better resilience to climate change. The products and services developed will be adjusted to the needs of end users in order to better contribute to decision-making and ensure the sustainability of project achievements, at both national and regional levels. The project will particularly develop and implement, through participatory approach, contingency plans at the regional and national level, to improve the communities' response capacity towards climate hazards.

Cost effectiveness of the proposed project

According to a [World Bank study](#), investment in hydrometeorological infrastructure and services lead to cost-benefit ratios ranging from 1-4 to 1-36 for developing countries. The investment would therefore greatly benefit the basin population, providing the basis for a sustainable development. Moreover, outcomes of this project should be the basis for other initiatives since the established information system is key for all further development planning. The scale of the basin allows the project to reach its goals in five countries within five years. In addition, a regional unified network system will enable participating countries to benefit not only from a basin-wide transboundary management framework, but also from the sharing of experiences and a network of actors for concrete solutions to reduce economic losses linked to climate-related hazards and negative impacts on livelihoods. It will increase communities' resilience to climate change. In addition to its importance in terms of cooperation and mediation, the LCBC will ensure the consolidation of the project's outcomes in order to ensure their sustainability, serving as a regional Center of expertise continuously supporting national entities. More details will be provided in the concept note.

Consistency with sub-national, national, regional and international strategies

The project proposal is in line with the LCBC's strategic action plan developed in a mutual agreement with its member countries, based on their priorities, including national climate change adaptation plans. As such, the project will be built on existing initiatives at the national, regional and international levels (cf list in annex). This project will furthermore synergize with all other ongoing and planned initiatives in collaboration with other partners including AMCOMET, ECOWAS and ECCAS, the African Development Bank and the World Bank GFDRR, etc., as well as the "Vision 2025 of the Lake Chad Basin" and the 2012 Lake Chad Water Charter, among others.

Consultative process

The LCBC and its Technical Committee of Experts, as well as NMHSs and the beneficiary countries Adaptation Fund (AF) Designated Authorities were all consulted for this pre-concept, and their views integrated into the proposal. In accordance with this, a tailored and modern user requirement process will be put in place, considering minorities, gender and cultural aspects. This will ensure that the project meets the needs and requirements of countries, as well as those of end users of hydrometeorological products and services. This participatory process will be led by the LCBC Executive Secretariat involving stakeholder platforms agreed in the Water Charter (Development Partners, Media, Research/Academic), with focus on civil society organizations representing women, marginalized ethnic groups and vulnerable populations. The activities supported by social science

experts will also capitalize on the role of traditional rulers and civil administrators. Additionally, close cooperation will be guaranteed with major development projects in the Lake Chad basin to make sure the project is delivering necessary tailored, sustainable products and synergies.

Economic, social and environmental benefits

The basin population is composed mainly of vulnerable groups, as most of them live in rural areas with a subsistence-based economy. A strong emphasis on subsistence farmers and women will thus be ensured throughout the project. The project will integrate smallholder farmers and farming communities in the process of water resources management, thus increasing their resilience to climate change effects. Furthermore, ensuring the full and effective participation of women in decision-making processes enables them to contribute as agents of change in all circumstances, with climate change-related actions subsequently benefiting from the insights, knowledge and other resources that they bring to bear in crafting effective and sustainable solutions for adapting to and mitigating climate change impacts. The project is expected to be a category C according to the Adaptation Fund's classification and should not have any negative effect on the environment or society. Detailed necessary studies will be conducted in the next phases of the development process ensuring screening of the Adaptation Fund's Environmental and Social policies and principles.

Leveraging achievements from other funding sources

A number of initiatives are underway or planned in the Lake Chad Basin (most of which addressing either a sectoral monitoring or pilot sites), but no mechanisms have been put in place to ensure efficient, sustainable knowledge for sound water resources management, disaster risk reduction or the organization of actions between technical services and decision-making institutions to mitigate their impacts (see annex 1). This project has been designed to build on, synergise and complement results of activities of those projects financed by the Africa Development bank (PRESIBALT), the World Bank (PULCI), CREWS Niger and Chad, PROLAC and the German Cooperation (Adaptation to Climate Change). A joint meeting to clarify the collaborative framework will be organized with all partners and key players will be invited to steering committees. A complete inventory of current and developing projects will be carried out at the next stage of the project development process.

Justification for funding requested

The international disaster database [EM-DAT](#) Shows that over the last 5 decades, around 50 natural disasters linked to hydroclimatic events occurred in the Lake Chad basin, affecting more than 30 million people in total, including nearly four thousand death; damage is estimated in dozens of billions of dollars. Based on current experience, the improvement of multi-hazard warning systems would have contributed to a considerable reduction in these losses. In addition, the climatic deterioration over the period led to the gradual drying up of the Lake, with huge consequences on ecosystems and economy. The proposed project with an estimated total budget of **\$10.62 M** aims to contribute to adaptation strategies, through investment in a combination of infrastructures and non-structural measures to improve preparedness, build awareness of best practices and behavior change among practitioners, policy makers and communities. In addition, the project will commit the LCBC and participating countries to support and sustain, in the long term, the actions undertaken in the development of its activities, both within countries and at the regional level.

PART III: IMPLEMENTATION ARRANGEMENTS

The Adaptation Fund will provide resources to WMO as the implementing entity to effectively mobilize LCBC as the Project Executing Agency. LCBC will coordinate the development of project activities through a Project Management Unit (PMU) to be set up including 2 to 3 temporary staff to be appointed. A Steering Committee will be set up to oversee and validate the project implementation and keep in line with countries' needs. It will be composed of a representative from each participating country including representative of NMHSs and the National Designated Authorities of AF in the countries, representatives of the LCBC, WMO, technical partners and donors. National technical services, in particular the NMHSs and the Civil Protection Services, will ensure the effective implementation of activities, with the assistance of the technical partners, including in particular GWP-CAf and WMO technical units on climate, water and weather. Each country's NMHS will be engaged to be at the forefront of project development. Finally, local communities will play a key role in ensuring the ownership of the project, its efficiency and that the data is gathered and processed in a demand-driven way.

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

A. Record of endorsement on behalf of the government¹ *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.*

<p>Mrs. Halima Bawa-Bwari Director, Department of Climate Change, Abuja, Nigeria Federal Ministry of Environment</p>	<p>January 14th 2021</p>
<p>Dr. Kamaye Maazou Secrétaire Exécutif du Conseil National de l'Environnement pour un Développement Durable BP 10193, Niamey, Niger</p>	<p>December 24th 2020</p>
<p>Mr. Michel Dimbele Kombe Chargé d'Etudes en matière de Mobilisation de Fonds Innovants liés aux Changements Climatiques Coordination Nationale Climat Ministère de l'Environnement et du Développement Durable Bangui, Central Africa Republic</p>	<p>December 24th 2020</p>
<p>M. Theophile Herve ABA'A ATEBA, Industrial chemist and Environmental Engineer Head of Unit for Project and Cooperation Ministry of Environment, Protection of Nature and P.O Box 320, Yaoundé, Cameroon</p>	<p>August 20th 2020</p>
<p>Mrs. Fatime Ousmane Geographer and Environmentalist Ministry of Environment, Water and Fisheries Ndjamena, Chad</p>	<p>December 8th 2020</p>

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*

¹ Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

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 (*Contribution Prévüe Déterminée au niveau National (CPDN) de la République du Tchad (Septembre 2015); Cameroon's National Adaptation Plan (June, 2015); Contribution Prévüe Déterminée au niveau National (CPDN) de la République Centrafricaine (Septembre 2015); Programme d'Action national pour le changement climatique (PANA), Niger (Juil. 2006); National Adaptation Strategy and Plan of Action (NASPA) on climate change for Nigeria, (November 2011)*) 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.



Jean-Paul Gaudechoux
Head
Regional Strategic Division
Member Services and Development Department
Implementing Entity Coordinator

Date: 18 January 2021

Tel. and Email: +41 79 514 4261
jpgaudechoux@wmo.int

Project Contact Person:
Dominique Berod
Acting Head, Earth System Monitoring Division

Tel. and email: +41 22 730 8330
dberod@wmo.int