Independent Final Evaluation of the VFDM project ‘‘Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin”

Final Evaluation Report

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Abbreviation	Meaning
AF	Adaptation Fund
BF	Burkina Faso
E2E	End to End
EE	Project Executive Entity
EWS	Early Warning System
E2E EWS	End to End EWS
FE	Final Evaluation
GWP-WA	Global Water Partnership West Africa
IE	Project Implementing Entity
IT	Information Technology
KPI	Key Performance Indicators
PC	Principal Consultant
NHMS	National Hydrometeorological Services
PAC	Project Technical Advisory Committee
SDG	Sustainable Development Goals
UNEG	United Nations Evaluation Group
VFDM	Volta Flood and Drought Management
VCER	vulnerabilities, capacities, exposures and risks
VBA	Volta Basin Authority
WMO	World Meteorological Organization

Contents

1 Executive Summary

1.1 Final Evaluation

The objective of the present Final Evaluation (FE) is to analyse, present and discuss the overall progress towards the achievement of the VFDM project objectives and outcomes as specified in the project proposal document. It assesses the overall project impact and sustainability mechanism at transboundary, national, and local levels to identify good practices, lessons learned, challenges in achieving the expected outcomes or results. Moreover, it also evaluates shortcomings that have adversely affected project execution and outcomes. It also tries to analyse the reasons which have led to such shortcomings.

The FE assesses retrospectively:

- Outputs and outcomes of the project activities delivered starting from inception in 2019 to the completion of the project in June 2024;
- The quality of implementation, including stakeholder engagements, financial management and risk mitigation strategies;
- Project synergies and complementarities with other completed or ongoing and planned projects in the Volta basin countries.
- Assumptions made during the preparation phase, in particular, objectives and agreed upon indicators, against current conditions;
- Factors affecting the achievement of objectives, and
- Status of the final project results at regional, national, and local levels;
- Sustainability strategies in place for the developed project products and tools including capacity development;
- Project alignment with the Adaptation Fund's strategies and objectives;
- Effects of COVID pandemic on project outcomes.

1.2 Findings

The project was evaluated following 6 criteria mentioned: C1 Relevance, C2 Effectiveness of implementation, C3 Efficiency of resource allocation, C4: Impact, C5 Sustainability and C6: Lessons learned. The key achievements and challenges of the project, as assessed by the FE, can be summarized as follows:

Key Achievements:

Development of the Transboundary Early Warning System: Before the start of the VFDM project, there was no transboundary EWS available for the entire Volta Basin region. The VFDM project was successfully able to co-design and co-develop an open-source, tailored and sustainable transboundary early warning system 'VOLTALARM' which is presently operationally used by the national agencies and regional entities for day-to-day monitoring and forecasting of floods and drought events (more information under section 5). For the long term operational use of the VOLTALARM, a MoU with zero maintenance and support cost is signed between the regional entity (VBA) and the technical partner (CIMA) who developed the EWS.

Enhanced community resilience: The project successfully engaged communities (more than 10000 community individuals directly benefited from different project activities) in disaster risk management, leading to increased preparedness and responsiveness to climate-related hazards. This was particularly evident in communities that adopted the EWS, resulting in timely evacuation and reduced losses during flood events.

Strong synergy and complementarities: The project led to the establishment of considerable synergies with other ongoing initiatives in the Volta basin region. The most noteworthy are integration of the forecasting systems developed in the FANFAR project, interaction with the development phase of the REWARD project focussed on drought, upscaling of VoltAlarm to the entire country of Burkina Faso through the Worldbank funded HydroMet project and considerable complementarities with the CREWS initiatives to improve Early Warning in Burkina Faso and Togo.

Strengthened institutional capacity: The project greatly enhanced the capabilities of national meteorological and hydrological services and other competent authorities (disaster management, water resources etc.) (More than 280 professionals at regional and national levels were engaged in various activities), enabling them to provide timely forecasts and improve disaster response coordination. This institutional strengthening has laid the groundwork for improved regional cooperation in managing transboundary water resources. Multiple capacity development opportunities at the regional level allowed stakeholders from different countries, share experiences, learn from each other and develop a community of practice for future.

Gender inclusion and community ownership: The focus on gender-sensitive approaches and community involvement has been critical to the project's success. Engaging women and local leaders in decision-making processes has not only enhanced disaster risk management interventions but also created a sense of ownership among community members.

Introduction of novel technology: The project also introduced advanced scalable EWS technological tools, including improved impact-based forecasting systems and innovative data collection methods, to enhance disaster risk management efforts and decision-making.

Reinforcement of the hydro-meteorological observing system: The project has contributed towards the installation and operation of much-needed observing systems, in particular meteorological and flow gauging measurement stations in remote areas. These observing systems are integrated into the basin-wide gauge network and contribute towards enhancing flood and drought early warnings as well as transboundary water resources observation and management.

Decisive contribution towards global objectives and goals: Through improvement of observing systems and the strengthening of cross-border flood early warning capabilities, the project has had a tangible impact on transboundary water management in line with SDG 6.5. VFDM has contributes towards achieving other like SDG 11, 13 and 15. It most directly contributes towards the UN Climate Action "Early Warning for All" (EW4ALL).

Effective coordination of actors at the basin level: VFDM left a lasting impact by improving coordination between stakeholders within countries and cross-border in the Volta basin countries. This is mostly visible through a much clearer identification of roles and responsibilities of various actors in natural hazard early warning than was available before.

Key Challenges (most of them are beyond the working scope of the VFDM project):

Financial sustainability: The intermittency of funding is a major threat to the sustainability of the systems implemented during the project. It is essential to diversify funding sources and explore sustainable financing mechanisms, such as yearly budget available from the central governments or ministries, cost recovery services to various sectors such as dam operators, power generation etc. or risk-indexed insurance. Continuous funding is also necessary for the continuous capacity development of the NMHSs and other agencies through peer-to-peer learnings, maintenance of equipment, particularly meteorological stations and hardware equipment such as servers and IT equipment. There is a need for collection of hydrological data through several technicians, which is still a challenge. Financial Investments should be

identified especially through national government providing resources to respective NMHSs and other agencies.

Maintaining skills: The transfer of skills to local actors is essential, but it must be accompanied by mechanisms for continuous capacity building through funding from government or financial agencies. Regular training programs, along with access to online exchange platforms, can help preserve and update the acquired knowledge, ensuring the long-term sustainability of the actions undertaken.

Integration into public policies: To ensure the long-term sustainability of the actions undertaken, it is necessary to integrate the project results into national and regional disaster risk management policies. This involves continuous strengthening dialogue between scientific professionals, research, risk management actors, and policymakers alike to ensure that actions are supported over the long horizon by government strategies.

Climate change adaptation: Extreme events related to climate change are becoming increasingly frequent and intense. It is crucial to keep early warning systems and emergency plans (through regular simulation exercises) up to date accordingly, to keep strengthening the capacity to respond to climate risks and to adopt approaches to strengthen the resilience of the local population in the face of climate uncertainties. Considering the frequent change of government officials in the Volta Basin countries, it is important to ensure transfer of knowledge from one professional to another so as to continue the use of skills, tools and systems provided through the VFDM project.

Language barriers: Communication with stakeholders and the effectiveness of field visits were occasionally impacted by language differences, as the executing partners and technical partners did not have knowledge of local languages in rural areas (local NGOs and consultants were hired for support but it is not sufficient). Some field partners noted areas for improvement in engagement and coordination, highlighting opportunities to enhance information sharing and collaboration.

2 Introduction

2.1 Geographical and socio-economic background

The Volta Basin is one of the most vulnerable regions in West Africa due to its high exposure and low adaptive capacity to water-related hazards. The region, which is home to more than 25 million people, has been affected by climate change events, such as flood and drought, generating social, economic and environmental losses to almost two million people over the last 25 years. Key affected stakeholders are mainly people working in the agricultural sector, as around 68% of the population in the basin has a livelihood based on substance farming (source: IUCN https://portals.iucn.org).

Ambition of the **Volta Flood and Drought management project (VFDM)** is to provide the first large-scale and transboundary implementation of integrated flood and drought management using a participatory approach by supporting National Hydro-Meteorological Services (NHMS) and other competent authorities in riparian countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Togo) with robust solutions aimed at disaster risk reduction and the mitigation of climate impact. The interventions also include capacity development for nature-based solutions as well as gender-sensitive participatory approaches. A shared E2E Flood Early Warning System (EWS) for flood and drought risk mitigation has been implemented and put into operation. The EWS reaches out to national civil protection services and other private and public stakeholders that are potentially vulnerable to flood and drought-related hazards.

2.2 Overall goal

The overall goal of VFDM is to strengthen target national and regional agencies and communities' resilience and adaptation capacity in the face of extreme climate change related events, notably floods and drought, in the riparian countries of the Volta basin by means of an integrated, and most importantly, participatory approach.

In this context the project is aligned with the Adaptation Fund Boards objective to ''reduce vulnerability and increase adaptive capacity of communities in responding to the impacts of climate change at the local, national and regional levels." The project also is in line with the agenda of implementing the UN Sustainable Development Goals (SDG) by providing direct contributions to SDGs 5, 6, 13 and 15.

2.3 Project objectives and structure

The main three project objectives, which are devoted to assisting the riparian countries towards becoming resilient in the face of impacts to climate change, have provided support in the following three key areas:

- *Objective 1*: Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making.
- *Objective 2*: Develop concrete adaptation and environmentally friendly actions (i.e. nature-based solutions) using an integrated approach.
- *Objective 3*: Strengthen policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels.

These objectives were delivered through **three main project components**: 1) *risk prevention*, 2) *concrete adaptation* and 3) *stakeholder engagement & governance*.

In **Component 1** actual and future areas of vulnerability, capacities for flood and drought management, **information on risk exposure** are identified with the aim to develop local, national and regional flood and drought risk maps. **Capacity building sessions** at the national level and the local community level transfer the potential climate scenarios and risk maps to stakeholders and address possible impacts of climate change in selected target zones.

Component 2 provides the basis for integrated flood and drought management in the region by means of **data collection and early warning systems** installed in the basin. The development and implementation of the E2E Early Warning System (EWS) for floods and drought at the scale of the Volta Basin is the key output of VFDM. Capacity development ensures adequate acquaintance with the new products, services and tools. Self-help modules on nature-based solutions and gender-sensitive participatory approaches were developed at the local and the national scales.

Component 3 explored the benefits of the project's implementation in order to revise or develop new policies, plans and guidelines on disaster risk reduction and climate change adaptation. Adaptation measures and strategies that align with environmental and social policies and gender principles are discussed locally to increase flood and drought resilience. The **participation and engagement of local stakeholders** facilitated the adoption of the strategies for disaster risk reduction and climate change adaptation with the aim of ensuring long-term sustainability.

2.4 Project executive agencies and funding

The **implementing entity** (IE) of the VFDM project is the World Meteorological Organization (WMO). The project **executing entities** (EE) include the Volta Basin Authority (VBA), the Global Water Partnership West Africa (GWP-WAF) and the WMO.

The participating countries include Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo, with Ghana being the only English speaking. The project is funded by the Adaptation Fund Board (AFB).

2.5 Project Technical Advisory Committee

A significant responsibility in the execution of the project stayed with the **Project Technical Advisory Committee** (PTAC). The main task of the PTAC is to provide strategic guidance and support to the project coordinator and project team to ensure that the activities meet the project's objectives. The responsibilities and duties of the PTAC members were:

- Review the project outcomes and identify the strong/weak points with respect to the objectives of the projects and the applications of the results (open-source, sustainable and tailored products and services with institutional strengthening);
- Comment on the teams' skills and the relevance of their proposals and actions;
- Link the project stakeholder's efforts to other initiatives to build synergies, optimize resources and assure coherence;
- Promote the exposure of VFDM project activities at the national and regional level.

The yearly PTAC meeting reports are available at the following URL:
https://www.floodmanagement.info/volta-basin/project-advisory-committee/

2.6 Project Deliverables and Outputs

Deliverables and output of the, developed among others by the IE and EE, consist of:

- **Coordinated project activities** within and across the various project components.
- Development of **annual work plans** and budget preparation.
- **Quality assurance** that the project is consistent with its design or endorsement from the donors.
- **Reporting on risks** and emerging issues for the project and proposition of respective mitigating measures.
- Preparation of **joint monitoring, progress** and **evaluation** reports on the project's activities, and outputs.
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The deliverables are available at the following URL:

https://www.floodmanagement.info/volta-basin/deliverables/

3 Final Evaluation

3.1 Introduction

In accordance with the guidelines and agreement with the Adaptation Fund and in line with the WMO Evaluation Policy, the IE (WMO) leads and undertakes the Final Evaluation (FE) for executed projects/programmes after their official date of completion.

The objective of the present FE is to analyse, present and discuss the overall progress towards the achievement of the VFDM project objectives and outcomes as specified in the project documents. It assesses the overall project impact and sustainability mechanism at transboundary, national, and local levels to identify good practices, lessons learned, challenges in achieving the expected outcomes or results. Moreover, it also evaluates shortcomings that have adversely affected project execution and outcomes. It also tries to analyse the reasons which have led to such shortcomings.

The FE assesses retrospectively:

- Outputs and outcomes of the project activities delivered between the inception in 2019 and the completion of the project in June 2024;
- The quality of implementation, including stakeholder engagement, financial management and risk mitigation strategies;
- Assumptions made during the preparation phase, in particular, objectives and agreed-upon indicators, against prevailing conditions;
- Factors affecting the achievement of objectives, and
- Status of the final project results and the quality of their implementation.
- Sustainability strategies in place for the developed project products and tools including capacity development;
- Project alignment with the Adaptation Fund's strategies and objectives.
- Effects of COVID pandemic on project results.

3.2 FE approach and methodology

As a first step, the team of consultants reviewed sources of information including reports and guiding documents published during the project preparation and implementation phase. These include the original proposal, the inception workshop report, the mid-term evaluation report, reports on coordinated activities, as well as all the technical and financial reports on project activities.

The consultants followed a collaborative and participatory approach ensuring close cooperation with the implementation entity (WMO) and executing entities such as government counterparts and key stakeholders involved in the implementation of the activities at local, national (e.g. NHMS) as well as regional (VBA, GWP-WA) levels, while ensuring a gender-inclusive perspective.

The consultants engaged for the FE conducted field visits in five out Volta Basin countries. In due course the consultants prepared questionnaires that were completed during encounters and interviews with participants at the regional, national, and local level.

Overall, the project is evaluated based on the following **six criteria** indicated in the ToR (see Appendix AB):

C1: Project design and relevance

Examines the extent to which the objectives of a project intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies. This category assesses the alignment of the project's objectives with the needs and priorities of its beneficiaries, the countries involved, global development goals, and the policies of partner organizations and donors. It evaluates whether the project's design was appropriate for addressing the identified challenges and opportunities in the Volta Basin.

C2: Effectiveness

This category assesses the extent to which the project's objectives have been achieved or are expected at the regional, national and local levels. It also considers the mandate of key agencies or institutes involved in the management of floods and drought. Additionally, the evaluation analyses factors that contributed to or hampered the project's effectiveness in addressing the identified challenges and achieving its outcomes.

C3: Efficiency

This category measures and assess how economically resources/inputs (funds, expertise, time, human resources etc.) were converted into project results and outcomes.
This category also evaluates the project's cost-effectiveness. It assesses how efficiently resources, such as funds, expertise, time, and human resources, were utilized to achieve project outcomes. This includes examining whether resources were allocated optimally and whether alternative approaches could have yielded similar results with fewer inputs.

C4: Impact

This category investigates the potential benefits of the project intervention to the regional, national, and local stakeholders of the Volta Basin countries.

This category also assesses the positive outcomes and benefits of the project intervention for regional, national, and local stakeholders in the Volta Basin countries. It investigates how the project has contributed to improving their resilience to flood and drought risks, enhanced their livelihoods, and promoted sustainable development.

C5: Sustainability

This last category analyses the potential of the continuation of benefits from the project intervention as well as the probability of continued long-term benefits emerging from it. In the case of the VFDM project, it is important to look at how sustainability has been addressed in the early stages of programming and project design.

This category moreover assesses the project's potential for long-term benefits and sustainability. Specifically, it looks at how the VFDM project has been designed and implemented to ensure that the positive outcomes and benefits continue beyond its official closure. This includes evaluating the project's capacity to be sustained through institutional mechanisms, financial resources, and community ownership.

C6: Lessons learned

This last category addresses lessons learned, and good practices developed during the project. It also identifies and analyse the key lessons learned and good practices that emerged during the project implementation. It explores both positive and negative experiences to inform future flood and drought management initiatives in the Volta Basin.

3.3 Quantitative and qualitative evaluation

The methodology to be applied to the project evaluation is of **two types**: (i) quantitative evaluation and (ii) qualitative/subjective evaluation. These two aspects will be developed in more detail below.

The evaluation takes account of the project's three-level structure, addressing regional, national community actors in the riparian countries. This requires field visits and interviews at all three levels. The field visits were carried out by two international and two national consultants. Mali has been excluded from visits due to security concerns.

3.4 Quantitative evaluation

The **quantitative evaluation** of the categories C1 - C6 is carried out after an in-depth study of the previously published project reports and materials, comparing the project's visible and measurable achievements with a set of quantitative (numerical) indicators, which have been introduced as parameters for monitoring and assessing project progress.

The indicators are grouped for each of the three project objectives and include measurable quantities such as:

- number of consultations performed,
- number of desk studies performed carried out,
- number of meetings conducted,
- number of women as participants,
- number of maps developed,
- number of equipment or infrastructures provided,
- etc.

Where these parameters are not indicated or have not been satisfactorily met in the report, which has been prepared up to the date of the evaluation by the implementing partners, the responsible actors at all three implementation levels were interviewed and explanations requested and documented.

3.5 Qualitative evaluation

The **qualitative evaluation** in C1 - C6 provides a broader impression of project implementation quality, the benefits perceived by the various stakeholders, potential bottlenecks, dissatisfaction and information on other aspects.
This quantitative information was gathered through interviews with stakeholder communities at the three levels of project implementation (local, national, regional). To this end consultants prepared a set of questionnaires that were dispatched with the interview participants and completed by the consultants during their visits at stakeholder institutions at regional and national level, as well as with local communities in the field. In this case local language translators had to be engaged.

The use of a consistent set of questionnaires ensures the homogeneity of the interviews and enables a better inter-comparison of the answers provided by the involved counterparts.

The summaries of the interviews led by the consultants are reproduced in the second part of this report. The outcome is synthetized in the following Chapter 4 "FE Findings".

4 Final Evaluation Findings

4.1 Overview

Goal of the FE report is to present the analysis of the Volta Flood and Drought Management (VFDM) project outcome according to the six pre-defined evaluation criteria introduced in Chapter 3.

The project was a pioneering initiative aimed at addressing the growing vulnerability of the Volta Basin to climate-related hazards. Over the past 25 years, nearly two million people in the basin have been affected by extreme weather events, causing substantial damage to livelihoods, infrastructure, and ecosystems. Implemented across six West African countries - Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo - the VFDM project represents the first large-scale, transboundary effort to integrate flood and drought management through a participatory approach. The chosen approach aimed at empowering local communities and national institutions in disaster risk reduction and adaptation to climate change.

After the end of the VFDM in June 2024, the FE was carried out to assess its effectiveness in achieving its objectives and gauge its overall impact on disaster preparedness and climate resilience across the region. The evaluation focused on critical areas, including Early Warning Systems (EWS), capacity-building initiatives, and the engagement of communities and local authorities in disaster risk management. It is noteworthy that the evaluation could not take place in Mali because of ongoing security concerns. Moreover, no extreme events were recorded during the project implementation period.

The final evaluation, led between August and December 2024, includes extensive consultations and discussions, most live but also online, with national and regional authorities, local organizations, traditional leaders, technical experts, and communities (both women and men) from five countries (Ghana, Togo, Benin, Burkina Faso, and Côte d'Ivoire). These consultations were aimed at gathering diverse opinions and feedback, hence providing a comprehensive overview of the project’s outcomes in the various countries.

The evaluation was carried out by a team of four consultants, including two national and two international experts on water resources management, climate change, hydrology, agronomy and community development.

4.2 Evaluation focus on the regional level

The evaluation at the regional level focuses mainly on the EEs VBA and GWP-WA in charge of coordinating the execution of the project across the six basin countries. The evaluation consists of interviews undertaken with members of the EE to assess the efficiency and quality of EE project coordination from the perspective of NHMs and other actors at the national level. Another important aspect is the management of the project progress log framework, which has not been handled with the due accuracy by the EEs.

The evaluation at the regional level also included a qualitative assessment of the participation of members of the regional organizations ECOWAS and WASCAL through interviews. Both organizations were involved in the VFDM project at the reginal scale but were not part of the EE.

4.3 Evaluation focus on the national level

National level evaluation focuses on the national hydrometeorological services and other agencies, which have acted as executive entities in the riparian countries. The most prominently involved entities were the NHMS. These oversee data collection and exchange and therefore played a crucial role in the implementation of the VoltAlarm EWS. These

agencies were strongly implicated in the development of EWS system components, particularly the EWS bulletins for the dissemination of hazard warnings.

The NHMS are operating the system through production of impact-based warnings and dissemination of warnings to other national agencies and the population at large.

Depending on the specific country, services like the agricultural departments (concerning drought), the Department of the Environment (Burkina Faso, Benin and Togo) or the Department of Forestry and Water Resources Management (Ivory Coast) were involved.

Another important role was played by the departments of civil protection, which have organized emergency simulations in the rural communities.

Participants of national agencies have played a central role throughout project implementation and remain pivotal for ensuring sustainability of the project results. These agencies have also benefitted from trainings during the project and play a key role in executing transboundary water resources management (i.e. SDG 6.5) through mutual cross-border collaboration, which has been strengthened in virtue of the project. At a less positive note, female participation in national agencies has remained lower than at the local level. The reason is mainly the difficulty of recruiting suitably qualified female technical staff.

4.4 Evaluation focus on the local community level

An important focus of the FE was to pay particular attention to the project benefits at the level of local communities, where the actual climate risk impacts are felt the most. With exception of the pilot sites in Ghana and Mali, all other rural communities at pilot sites selected at the beginning of the project were visited by the consultants. The evaluation of the communities was based on several criteria, including the active participation of the community in risk management initiatives, their proximity to established infrastructures, and their ability to provide relevant data on the project's impact. The chosen inclusive dialogue, supported by local NGOs, also enriched the evaluation by integrating diverse perspectives and fostering a sense of shared responsibility in the implementation of climate resilience initiatives.

These chosen sites were also strategically positioned to assess the impact and relevance of the project. For example, communities that benefited directly from the VoltAlarm Early Warning System (EWS) were prioritized, as they were best positioned to provide information on the effectiveness of these systems in reducing risks associated with floods and drought at the local level.

The results of the FE highlighted several notable achievements. The VFDM project made large progress in building and strengthening capacity of the pilot communities as well as national and regional institutions to anticipate and respond to climate-induced hazards. For example, in flood-prone areas, the timely dissemination of early warnings resulted in a marked reduction in casualties and property damage. Additionally, the project strengthened institutional capacity, training over 280 participants in hydrometeorological monitoring and data analysis, which contributed to more accurate forecasting and effective disaster response across the region.

4.5 Evaluation following Criteria C1 - C6

The FE determined that the VFDM project largely succeeded in its primary objectives, significantly enhancing disaster preparedness and resilience in the Volta Basin. While the project made considerable progress in reducing flood impacts and strengthening institutional frameworks, the evaluation emphasized the need for sustained investment in infrastructure maintenance, especially hydro-meteorological monitoring equipment, capacity building through hands-on training, and a more comprehensive response to the unique needs of rural

communities. These steps are regarded as essential to ensure that the project's benefits are perpetuated, leaving a lasting impact on climate resilience and in the Volta Basin.

Next, we summarize our findings following the six indicated criteria for evaluation.

4.6 C1: Project Overall Relevance

The VFDM project has been perceived by all participants, regional, national and local participants, as highly relevant for the Volta basin region. Its impact is mainly due to tackling two major climate-related threats, which are increasingly hurting the region, and causing socio-economic damage. The project, through its triple-tier structure, effectively contributed towards setting strong signals at the local level (bottom-up) and from the regional level down (top-down) towards institutional strengthening at the national level of riparian countries. The national level, encompassing agencies and service structures of participating countries, acted as intermediary between the regional and the community level.

4.6.1 Regional-Level Relevance

The project was found to be well aligned with global and national policies of the Volta basin riparian countries. It clearly adheres to the Sustainable Development Goal (SDG) 6, in particular SDG 6.5, devoted to transboundary water management.

VFDM also significantly contributed towards fulfilling the overall donor objectives, notably by facilitating the management of shared water resources, improving early warning systems, increasing resilience of individual countries and strengthening national and cross-border collaboration among national entities across the basin.

The project also aligns well with national policies and goals in the Volta basin countries, concerned with increasing the resilience across the basin in the face of flood and drought risks and is inscribed in the goals of the UN initiative "Early Warning for All" (EW4ALL).

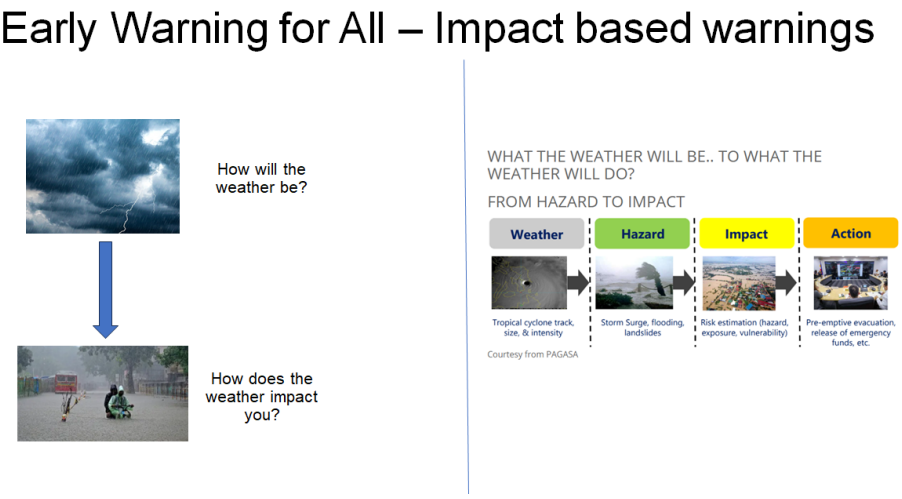


Figure 1: "Early Warning 4 All": impact-based flood warning approach

The VoltAlarm system, an scalable and robust data and model integration platform based on state-of-the art cloud-based client-server architecture, which was developed and put into operation during the project, allows for the virtual integration of different forecasting solutions, e.g. the existing national modeling systems already in operation in Ghana (FEWS Ghana) or the regional hydrological modeling tools introduced by the FANFAR project, which are operated at AGRIHYMET, Niamey, Niger. VoltAlarm also allows integrating data records collected by national observing networks in the Volta region and beyond. It therefore strongly

contributes towards data sharing among riparian states, a crucial prerequisite for effective integrated water resource management.

4.6.2 National-Level Relevance

In the view of several national agencies the project co-funded strengthening the national hydrometeorological observing infrastructure in the basin, but its relevance has remained in this regard limited. In this context it is important to note that, despite the importance of this infrastructure for improved transboundary water management, strengthening hydro-meteorological observing systems remains clearly one of the main responsibilities of the countries and it therefore plays a subordinate role in the VFDM project.

During the FE, discussions with local authorities, community members, and local organizations highlighted the VFDM project's crucial role in addressing the urgent climate adaptation needs of the Volta Basin - a region highly vulnerable to both floods and drought. The project implemented integrated management strategies, established Early Warning Systems (EWS), and promoted regional collaboration, ensuring alignment with local, national, and regional adaptation goals.

The project focused on floods as well as drought, recognizing that these hazards have varying degrees of impact in the region. Some areas are more affected by flooding, while others are more susceptible to drought. However, it was noted that the VFDM project had a stronger impact on flood resilience than on drought resilience, primarily due to a greater emphasis on flood management within the project's activities. This focus significantly enhanced community resilience to flood-related hazards, demonstrating the project's pivotal role in ongoing efforts to mitigate climate risks across the basin.

4.6.3 Community-Level Relevance

The project proved particularly beneficial to rural communities vulnerable to both floods and droughts. In Benin, Togo, Ghana, Côte d'Ivoire, and Burkina Faso, the newly introduced VoltAlarm EWS improved the preparedness and response of selected pilot communities to climate risks. However, its impact was also here stronger for flood than for drought management. This can be shown on hand of the following examples.

Example 1:
In Daoudé, Togo, the community previously lacked real-time flood meteorological information, often resulting in crop losses and displacement. The introduction of the EWS provides flood alerts 48 hours ahead of extreme events, allowing farmers to move livestock and secure assets. Local leaders reported a significant reduction in the number of victims, particularly drowning victims, during the rainy season, thanks to timely evacuations and warnings of inundations ahead of time.

Example 2:
The community of Sangabili and its neighboring communities, prefecture of Bondokou, Ivory Coast, is strongly dependent on farming for income. During the rainy season access roads to the community are interrupted because of overflowing Volta tributaries. Crossing the rivers can lead to casualties and cuts local communities off from the outside world. During the dry season, bush fires threaten crops, especially cashew nut trees. Thanks to the project and the emergency trainings, the community has received a new communication aerial antenna link to SODEXAM, Ivorian meteorological service. The community also maintains a weather station installed by the project. National warning messages reach the community via WhatsApp groups. Traditional ways of communication allow to transfer warnings to neighboring

community. These provisions increase preparedness against natural hazards and help saving lives and property.

Quantitative Data:

The VFDM project installed weather observing stations in 5 out of 6 pilot sites, contributing towards covering over 1.2 million people with weather information, significantly improving emergency local response times.

- More than 280 individuals, including local technicians and young professionals, were trained to operate and maintain the stations and interpret hydrological and meteorological information, embedding local capacity for managing climate risks.

Outcome:
Communities now have access to real-time data, which supports sound decision-making, particularly in agricultural planning, thereby increasing resilience to floods. Some gains were also made towards drought preparedness, especially in the prevention of bush fires and related agricultural losses. However, drought-related warning has been less emphasized with respect to flood alerting, leaving some drought-prone areas less well-equipped.

Challenge:
Operating and maintaining the technological infrastructure in remote areas has proven challenging, especially concerning internet connectivity and vandalism. For instance, security issues in Mali hindered the system's full operational capability, which in turn limited its effectiveness in addressing both floods and droughts.

4.6.4 Policy Relevance

At the policy level, the VFDM project made significant contributions towards the Volta Basin Authority's (VBA) transboundary water resource management efforts. By enhancing national capacities and fostering regional cooperation, the project aligned well with the climate adaptation priorities of the six countries involved. Nonetheless, like its community-level impact, the project's policy contributions were more effective in supporting flood-related policies than drought management (flood simulation exercises or the installation of water level measurement gauges).

Example:
In Ghana, the EWS was instrumental in mitigating the impact of water releases from Burkina Faso's Bagre Dam. Authorities use the VoltAlarm EWS data to issue timely flood warnings, allowing vulnerable communities along the White Volta River to evacuate, reducing loss of life and property.

Quantitative Data:

- In Burkina Faso and Ghana, over 70% of local disaster management plans were updated to integrate EWS data.
- In 2022, Ouagadougou, Burkina Faso, saw a 20% reduction in flood-related damage compared to previous years without early warnings.
- Female participation in active natural hazard mitigation training has reached levels up to 40%, especially at the community level.

Outcome:
The project improved regional coordination, preventing localized disasters from escalating and reducing economic losses.

Challenge:
Political instability and security issues in Mali hampered the full implementation of the EWS. Additionally, some stakeholders in Togo and Burkina Faso observed that the drought management aspect was insufficiently developed, reducing the system's overall effectiveness for drought resilience.

Example:
Limited involvement of the Directorate General of the Environment (Togo): Despite the political successes of the project, the limited engagement of Togo's Directorate General of the Environment has significantly hindered and limited the potential of integration of environmental policies and the broader adoption of effective management strategies. This lack of involvement has restricted opportunities for collaboration with key partners, including NGOs and international organizations, which has, in turn, limited the development of comprehensive environmental programmes. While the project achieved notable political milestones, the insufficient participation of the Directorate has as a result constrained the overall effectiveness of environmental initiatives in Togo. The reason for this lack of involvement has been explained by poor communication and coordination efforts at the regional and the national level.

4.6.5 Alignment with Global Climate Goals

The VFDM project also contributed to global climate adaptation objectives, particularly SDG 13 (Climate Action) and SDG 6 (Clean Water and Sanitation). Its focus on reducing vulnerability to water-related hazards, primarily floods, helped achieve these goals at local, national, and regional levels. However, efforts related to drought management were less prominent.

Example:
The project promoted nature-based solutions, such as reforestation in Burkina Faso and Ivory Coast pilot sites and sustainable water management practices in the Togo pilot site, supporting SDG 15 (Life on Land) by restoring ecosystems. In Burkina Faso's Kaya region, reforestation efforts reduced soil erosion and improved water retention, enhancing the ecosystem's resilience against climate variability.

Quantitative Data:

- Tree planting in flood-prone areas in Togo and Burkina Faso strengthened ecosystem resilience to climate risks.
- Women made up at least 30% of participants in these nature-based interventions, addressing gender disparities in community-based climate strategies in the five evaluated countries.

Outcome:
Integrating nature-based solutions mitigated immediate flood risks and contributed to long-term ecosystem health and services sustainability.

Challenge:
Although progress was made in promoting nature-based solutions, the scale of these interventions remained locally limited, particularly in addressing drought resilience. Communities, especially in Togo and Burkina Faso, called for larger-scale projects to enhance both agricultural productivity and access to clean water.

4.7 C2: Effectiveness of Implementation

The project has been very successful in providing increased access to early warnings and risk information to government agencies and civil protection services. This enables them to plan mitigating actions beforehand. The implementation of system facilitating to reach out to the pilot communities through the aid of WhatsApp groups has proven to be very successful

because such a model of broadcasting warnings has large potential to serve also the most vulnerable and remote populations.

4.7.1 Facilitating factors

The reinforcement of the observing system through installation of hydrometeorological stations in five out of six pilot sites (with Mali being the exception due to safety issues) was closely followed by the pilot communities. This infrastructure helped enhancing local early warning and contributed towards building trust of the population with respect of the project and agencies.

The project engaged with varying success across a broad range of stakeholders, including public services, regional and municipal authorities, traditional local leaders, and NGOs. Several knowledge and awareness materials such as videos, pamphlets, flyers etc were developed for sharing of risks and associated preparedness actions. This multi-stakeholder approach facilitated better cooperation and understanding among different actors.

The project included community-based flood and drought management activities, which were supervised for 14 months across the selected six pilot sites. These activities promoted cooperation among various actors and addressed local needs effectively.

These proves that the VFDM project managed to meet the goals of interconnecting *a)* preliminary risk assessment, *b)* local hazard monitoring and *c)* warning services for dissemination and communication. Community visits led to overall positive feedback of the population regarding these issues as has been documented in the questionnaires included in this report.

4.7.2 Inhibiting factors

The language barrier between Ghana and the rest of the Volta basin countries has been considered an inhibiting factor by some project participants.

Further inhibiting factors were language barriers and delayed information flow from the regional bodies ABV and GWP-AO towards national agencies and services.

The project progress log framework has not been updated regularly, which caused considerable difficulties to consultants during the FE. The Adaptation Fund (AF) Results Tracker within the Project Performance Report (PPR) has not been held up to date with the one completed right before the MTE by the regional coordinator VBA and GWP-AO.

Other inhibiting factors were slow communication with different actors, which made preparation of workshops difficult and inhibited stakeholder involvement in certain countries.

The project faced challenges with bureaucracy-related delays, especially due to the involvement of multiple layers of authority (central, national, and regional). The COVID pandemic exacerbated these issues by hindering face- to-face interactions, which affected project management and the development of human relationships among stakeholders.

4.7.3 Gender Participation

The VFDM project has made significant strides in advancing gender-inclusive disaster risk management, effectively addressing a critical gap in many rural communities where women—who are often more vulnerable to climate-related risks—were previously excluded from decision-making processes. This shift not only empowers women but also enhances the overall resilience of communities to climate impacts.

Example:

In the Daoudé community in Togo or the Sangabili Community in Ivory Coast, women have assumed leadership roles within flood risk management committees. They received targeted

training to disseminate early warnings and coordinate preparedness initiatives, which ultimately led to more organized and effective evacuation plans during flood emergencies. This proactive involvement has helped ensure that community responses are more comprehensive and inclusive.

Quantitative Data:

- Female participation in disaster risk management activities increased by **30%**, with over **40 women** now holding leadership positions in local risk management committees.
- Up to **50%** of participants in community workshops focused on flood and drought preparedness were female, reflecting a significant improvement in gender parity within the field of disaster management.

Positive Outcomes: The project has successfully challenged traditional gender roles, particularly in rural communities. For example, in Togo, women took the lead in designing flood evacuation routes, showcasing their capacity to influence disaster risk management practices effectively. Their involvement has not only contributed to more effective management strategies but has also inspired other women to engage actively in community resilience initiatives.

Negative Outcomes: Despite these advancements, cultural norms have hindered the widespread adoption of gender-inclusive practices in some regions, especially in Burkina Faso and Mali. Traditional gender roles initially restricted women's participation in training sessions and decision-making processes. Addressing these cultural barriers has required additional efforts, including targeted outreach and education to promote the benefits of gender inclusivity in disaster risk management.

4.7.4 Conclusions

Overall, the VFDM project has made commendable progress in integrating gender considerations into disaster risk management, thereby enhancing the capacity and resilience of rural communities. Continued efforts to engage women and address cultural barriers will be essential for sustaining these gains and further promoting gender equity in climate resilience initiatives.

4.8 C3: Efficiency in Resource Allocation

Resources of VFDM to have been overall effectively allocated.

First, part of the funds was allocated to support the regional project management structure at ABV and GWP-WA.

Second, national entitles benefited from the allocated resources trough the benefits of workshop and training activities, which were organized in the frame of the VoltAlarm project. The participating states also benefited from equipment that was installed to either replace existing ageing equipment, or to install new gauging stations. This concerned mainly meteorological and water level gauging stations.

Third, a small part of funds was employed to finance NGO-led community work at the pilot sites selected across the basin. This component shows that there is clearly a substantial return on investment of project funds due to the immediate effect the project activities have on the community. This effect was observed in all 5 communities visited.

Concerning timeliness, the project roll-out was hampered during its first half period by the COVID pandemic of 2020-2022. This led to a delay of project activities that in summary

accrued to a total of 12 months. The lost time was effectively recuperated during a 1-year budget neutral project extension.

Concerning the three criteria “Consultation”, “Involvement” and “Decision-making” the VFDM project responded to country’s needs. Unfortunately, the involvement of Mali was hampered by the ongoing security issues. The selected community in Mali could not be visited by the technical project partner K&I during the project nor by the evaluating consultants.

The Efficiency in Resource Allocation for the VFDM project demonstrated a commendable allocation of financial and human resources, although logistical and operational challenges influenced the full potential of its implementation. A key focus was on maximizing impact across capacity-building, installation of early warning systems (EWS), and community outreach efforts. Below is a summary based on findings from the project:

4.8.1 Key Resource Allocations

- **Capacity-Building**: The project directed around 60% of its budget towards training over 280 participants, significantly improving skills in climate resilience and disaster risk reduction. These training sessions were held across six countries and targeted both national agencies and local communities, which was critical in fostering ownership and sustainability.
- **Installation of EWS and Infrastructure**: The VFDM project allocated resources for the installation of hydrometeorological equipment in five pilot communities, significantly enhancing early warnings for floods and droughts. Despite security-related delays in countries like Mali, Togo, and Burkina Faso, the deployment still covered over 1.2 million people.
- **Community Outreach**: Resources were also effectively used for community awareness campaigns, which engaged over 1.2 million people across the Volta Basin. This outreach was crucial in promoting disaster preparedness strategies that were tailored to local contexts.

4.8.2 Positive Outcomes

- The VFDM's participatory approach and efficient use of resources were praised for fostering collaborations between government agencies, NGOs, and local communities, leading to improved ownership and better engagement.
- The cost-effective allocation of resources resulted in timely evacuation efforts during severe rainfall in Ghana and Ivory Coast, which reduced both loss of life and property damage. Communities also benefited from improved EWS that provided accurate weather alerts.

4.8.3 Challenges

- *Geographical and Logistical Obstacles*: Security challenges in Mali delayed the installation of hydrometeorological stations, which left vulnerable areas without proper flood and drought alerts. In Togo and Burkina Faso, similar delays also affected the project's overall efficiency.
- *Long-Term Sustainability*: While significant funds were directed toward infrastructure reinforcement, about 30% of the hydrometeorological stations continue to need ongoing technical support and maintenance post-installation. Community concerns regarding the lack of a financial mechanism for long-term maintenance highlight gaps in planning for sustainability.

4.8.4 Conclusions

Although the VFDM project made strides in achieving its goals, the efficiency of resource allocation could be enhanced by addressing sustainability issues, improving financial strategies for equipment maintenance, and ensuring that logistical challenges do not hinder overall effectiveness. Moving forward, a more comprehensive approach to covering all vulnerable regions and sustaining installed infrastructure will be key to maintaining the project's long-term impact.

4.9 C4: Impact

The project's impact on national and especially community response capacity has been significant. For example, the emergency simulation trainings received have enabled communities to better anticipate floods, thus reducing damage during a disaster.
Emergency simulations triggered by the project mobilized hundreds of participants, exceeding, and included local players, reinforcing the sense of ownership of the warning process at community level.
The involvement of female participants at the community level has reached levels up to 40%.
The national agencies who are mandated for the development and dissemination of the Warning Bulletins have WhatsApp group where knowledge and information are shared regularly.
The VFDM project had both positive and negative impacts. Below is an overview of these impacts:

4.9.1 Positive Impacts:

- **Enhanced Disaster Preparedness**:
  - The implementation of **Early Warning Systems (EWS)** in several communities significantly reduced the number of casualties and property damage during floods. In Ghana and Ivory Coast, timely flood alerts allowed communities to evacuate safely, preventing fatalities.
- **Institutional Capacity Building**:
  - The project trained over **280 participants**, including national meteorological and hydrological staff, enabling better flood forecasting and response. For example, in Burkina Faso, the lead time for flood forecasting increased from 24 to 48 hours, providing more time for communities to prepare.
- **Community Engagement and Empowerment**:
  - The VFDM project actively involved local communities in decision-making, particularly through participatory approaches that included training and capacity-building. Communities in Togo, Ivory Coast and Ghana benefited from the integration of real-time data, which helped them better manage climate risks.
- **Gender-Inclusive Disaster Management**:
  - The project empowered women by involving them in local disaster risk management committees. In Togo, Burkina Faso and Ivory Coast, women played leading roles in flood risk management, leading to improved community response and better evacuation planning during disasters.
- **Improved Regional Collaboration**:
  - The project strengthened regional cooperation among the six Volta Basin countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo) through joint activities, data-sharing platforms, and the development of a shared EWS for flood and drought management.

4.9.2 Negative Impacts:

- **Limited Long-Term Financial Sustainability**:
  - The **financial sustainability** of the installed systems, including the EWS and hydrometeorological stations, remains a concern. Insufficient funding for ongoing maintenance risks making these systems non-operational over time. Only 40% of the required budget for long-term operations was secured.
- **Geopolitical Challenges**:
  - Political instability in Mali and security concerns delayed the installation of crucial infrastructure, such as hydrometeorological stations, limiting the effectiveness of the project in those areas.
- **Uneven Impact on Drought Preparedness**:
  - While the project focused heavily on flood preparedness, **drought management** received less attention. This uneven focus left some drought-prone areas less equipped to deal with climate-related drought impacts, leading to gaps in preparedness and response.
- **Technical and Operational Challenges**:
  - The **maintenance of installed systems** faced challenges due to technical and operational issues. In some areas, there were delays in updating data, and equipment maintenance was hampered by a lack of motivation among local technicians and inadequate internet connectivity.
- **Social and Economic Needs Not Fully Addressed**:
  - Some communities felt that critical needs, such as **access to clean water** during flood and drought, were not sufficiently addressed by the project. Such sentiment requires management of expectations, as the overall focus of the VFDM project is primarily on climate change adaptation not particularly on development needs. This highlighted general gaps that need to be attended to in local economic and social realities, particularly in water management and agriculture.

In summary, while the VFDM project achieved substantial progress in disaster preparedness and institutional strengthening, some challenges related to long-term financial sustainability, drought preparedness, and the long-term operation & maintenance of observing and equipment persist.

4.10 C5: Sustainability

The project has a great chance of long-lasting sustainability for a series of reasons:

- The project has been executed through a participative approach, which involved all riparian countries. This led to the development of the VoltAlarm EWS with a jointly developed flood & drought warning bulletin, which is edited by services in the riparian countries. The success of the EWS and the active involvement of actors in different countries create sufficient buoyancy for continuation.
- The system is operated and maintained for further 3 years free of charge by CIMA on the cloud server.
- In combination with the external cloud hosting as well as support & maintenance of VoltAlarm through a centralized platform through CIMA ensures flawless operation, given that real-time observations are made available by the NHMS.
- Scalability of the system has created interest in extending the Volta basin EWS to full national-scale systems for individual countries.
- The existence of the system has enforced transboundary communication, which is likely to persist some time into the future, and especially if new projects are funded that build on the outcomes of the VFDM project.

- The population in local communities, but also employees at national agencies have received training in different subject areas, that will continue to unfold is positive sinoff effects beyond the project and which are of relevance also in follow-up activities.

The sustainability of the Volta Flood and Drought Management (VFDM) project is a critical aspect that was addressed during its implementation, but several challenges and opportunities were identified that affect its long-term viability. Here's an assessment of the sustainability of the project:

4.10.1 Positive Aspects of Sustainability:

- *Institutional Integration*:
  - The Early Warning Systems (EWS) and other tools developed by the VFDM project were integrated into **national disaster management frameworks** in participating countries. For instance, the National Disaster Management Organization (NADMO) in Ghana incorporated the EWS into its disaster response strategy, ensuring continued use and relevance beyond the project's lifecycle.
- *Regional Collaboration*:
  - The **Volta Basin Authority (VBA)** and the **Global Water Partnership-West Africa (GWP-WA)** took steps to ensure the long-term coordination of disaster risk management across the Volta Basin. This regional cooperation fosters knowledge sharing, supports ongoing training, and enhances cross-border collaboration, which is essential for the sustained operation of climate risk management systems.
- *Community Ownership*:
  - The project emphasized local capacity-building, particularly at the community level. Communities were trained to manage the EWS and maintain basic infrastructure, which could help ensure the **local-level sustainability** of interventions. In Togo, for example, communities were involved in co-developing the EWS, resulting in a high level of trust and ownership.
- *Gender Inclusivity and Social Capital*:
  - Female engagement across local organizations in disaster risk management is likely to have long-lasting benefits. The empowerment of women and active participation of local stakeholders in risk management committees means that there is **social capital** that can sustain the project's outcomes beyond its lifecycle.

4.10.2 Challenges to Sustainability:

- *Financial Sustainability*:
  - One of the key challenges is the **lack of secured long-term funding** for the maintenance and operation of the hydrometeorological stations and the EWS.
- *Maintenance of Infrastructure*:
  - The sustainability of technological components, such as the EWS and hydrometeorological stations, is at risk due to the **high maintenance costs** and the lack of continuous financial and technical support. Some equipment has already faced challenges due to insufficient maintenance, and there is concern that without a dedicated financial mechanism, these systems could become non-operational.

- *Political Instability*:
  - In countries like Mali, ongoing **political instability** threatens the sustainability of the project's achievements. The inability to install or maintain critical infrastructure in conflict-affected areas could undermine the effectiveness of the EWS in those regions.
- *Technical Workforce Challenges*:
  - The **low motivation of technicians** responsible for maintaining the hydrometeorological systems has been identified as a problem. This is partly due to inadequate financial incentives and limited career progression opportunities, which could hinder the long-term functionality of the systems.
- *Gaps in Addressing Local Needs*:
  - Although the project made significant progress in disaster risk management, some communities reported that their **socio-economic needs**, such as improved access to clean water and agricultural support, were not addressed. Without integrating these broader concerns into future projects, it may be challenging to maintain community engagement in the long term.

4.10.3 Future Recommendations for Sustainability:

- *Long-Term Funding*: Developing long-term financial mechanisms, such as partnerships with international organizations or creating dedicated national funds, is essential for maintaining infrastructure and operational systems.
- *Ongoing Capacity Building*: Continuous training for local technicians and expanding community ownership of the systems can enhance the likelihood of long-term sustainability.
- *Expanding Socio-Economic Benefits*: Addressing the economic and livelihood needs of communities, such as improving access to clean water and agriculture support, can contribute towards continued local engagement.
- *Potential Follow-up Project for Consolidation*: A second phase of the VFDM project could focus on **consolidating achievements**, addressing financial gaps, expanding project reach, and ensuring infrastructure maintenance, which are all necessary for sustaining long-term resilience.

While the VFDM project laid a strong foundation for sustainable disaster risk management and climate resilience, its long-term success hinges on securing continuous financial support, addressing operational challenges, and ensuring broader socio-economic engagement.

4.11 C6: Lessons Learned

The active involvement of all the stakeholders concerned (local authorities, national, weather forecasting, flood and drought management committees at village level, etc.) has enhanced the project's effectiveness. This synergy of action is a model to be replicated.

The time needed for each stakeholder to take ownership of the activities has caused delays. This needs to be factored into the planning to anticipate these delays in similar projects that will be implemented in the future.

The project lacked a mechanism for regular communication with stakeholders. Ongoing and more effective coordination between national agencies and the regional coordination would have prevented delays and sub-optimal use of expertise, especially concerning policy-development.

Integration into national climate resilience strategies: The project has been successfully integrated into national risk and disaster management strategies, facilitating strong

mobilisation of stakeholders, in particular civil protection services and its branches, even at municipal level. The emergency simulations have received large attention and have served as role model for future efforts in the countries, outside of the Volta Basin area.

The experience in the particularly successful Sangabili community in Ivory Coast highlighted the effectiveness of combining multiple communication channels to ensure timely and comprehensible information dissemination.

The VFDM project taught several important lessons that can serve as a guideline for future disaster risk management and climate adaptation initiatives. Below we list key lessons learned:

4.11.1 Community Involvement is Crucial for Success

- **Lesson**: Engaging local communities in the design and implementation of disaster risk management systems, such as Early Warning Systems (EWS), is essential for ensuring their relevance, effectiveness, and sustainability.
- **Example**: In Togo's Daoudé community, local participation in the development of the EWS resulted in better adoption and higher trust in the system. This community-centred approach led to more timely evacuations during flood warnings, reducing casualties.
- **Recommendation**: Future projects should prioritize early and continuous involvement of communities to ensure that interventions are tailored to local needs and cultural contexts, which enhances long-term sustainability.

4.11.2 Gender-Sensitive Approaches Improve Outcomes

- **Lesson**: Actively involving women in disaster risk management not only empowers them but also strengthens community resilience. Women's participation brings new perspectives, especially in managing household and community-level risks.
- **Example**: In Ivory Coast, Togo and Ghana, women played key roles in local disaster risk management committees, leading flood risk mitigation efforts. This involvement increased the effectiveness of evacuation plans and improved community responses to floods.
- **Recommendation**: Gender-inclusive strategies should be integral to disaster risk management projects, with women encouraged to take leadership roles. This ensures that disaster responses are more comprehensive and inclusive of the entire community's needs.

4.11.3 Financial and Technical Sustainability Requires Proactive Planning

- **Lesson**: The long-term sustainability of infrastructure, such as hydrometeorological stations and EWS, depends on secure funding and ongoing maintenance. Insufficient financial planning can result in system failures.
- **Example**: Throughout the Volta basin, some hydrometeorological stations became non-operational due to a lack of long-term funding and technical support. This highlights the importance of financial sustainability in ensuring the longevity of critical disaster management systems.
- **Recommendation**: Projects must include plans for long-term financial sustainability, such as partnerships with international organizations or the establishment of local maintenance funds. Additionally, training local technicians can help mitigate technical support gaps.

4.11.4 Multi-Stakeholder Collaboration Strengthens Project Outcomes

- **Lesson**: Collaboration among local governments, international organizations, and communities fosters resource sharing, technical support, and knowledge transfer, improving the success of climate adaptation and disaster management initiatives.
- **Example**: The VFDM project facilitated cross-border collaboration between the six riparian countries of the Volta Basin, improving regional disaster response and coordination. This joint approach helped in sharing real-time data and forecasts across national boundaries.
- **Recommendation**: Future projects should prioritize building strong partnerships between local, national, and regional stakeholders to ensure coordination, share resources, and address common challenges.

4.11.5 Nature-Based Solutions Need Greater Focus

- **Lesson**: While the VFDM project integrated nature-based solutions (e.g., reforestation and water conservation), there was a need for more emphasis on scaling these efforts to effectively address both flood and drought risks.
- **Example**: In Burkina Faso, reforestation efforts were shown to reduce soil erosion and improve water retention, but these initiatives were limited in scale and need broader implementation.
- **Recommendation**: Future climate adaptation projects should allocate more resources and attention to nature-based solutions to ensure environmental sustainability and greater resilience to both floods and droughts.

4.11.6 Address Socio-Economic Needs for Long-Term Engagement

- **Lesson**: Addressing broader socio-economic needs, such as access to clean water and improving agricultural productivity, is critical to maintaining community engagement in disaster risk management.
- **Example**: Some communities expressed that while the VFDM project improved disaster preparedness, it did not sufficiently address their daily socio-economic needs, such as access to clean water and agricultural support.
- **Recommendation**: Projects should take a holistic approach by integrating disaster risk reduction with socio-economic development initiatives, ensuring that community needs are met beyond immediate disaster resilience.

4.11.7 Regular Training and Capacity Building are Essential

- **Lesson**: Continuous training and capacity-building activities at the community and institutional levels are necessary to maintain the effectiveness of disaster risk management systems.
- **Example**: The VFDM project trained over 280 participants, which improved the use and management of EWS and hydrometeorological data. However, ongoing technical support is required to maintain the operational capacity of these systems.
- **Recommendation**: Disaster risk management projects should include provisions for continuous training and knowledge transfer, ensuring that local communities and institutions can sustain and upgrade systems over time.

In summary, the lessons learned from the VFDM project emphasize the importance of community involvement, gender inclusivity, long-term financial planning, stakeholder

collaboration, and continuous capacity-building to ensure sustainable disaster risk management and climate resilience.

5 Component-based analysis

The following sections provide a detailed analysis of the project through a breakdown based on the **three principal components**. The analysis is supported by specific examples, in particular an in-depth description of the VoltAlarm EWS.

5.1 Component 1: Develop capacity and established frameworks at the local, national and regional levels

The first component of the VFDM project focuses on strengthening capacity at the regional, national, and local levels by identifying climate-related risks and raising awareness, while fostering participatory strategies to mitigate these risks. Below is an overview of the key activities and outcomes for Component 1.

A. Pilot Site Selection and Risk Zoning Assessment

At the beginning of the project, approximately 60 rural and urban pilot sites were identified across the six Volta Basin countries, with the assistance of national agencies. These areas were chosen based on their vulnerability to floods, droughts, and other climate-related hazards. A risk zoning assessment using GIS was conducted by national agency staff and local contractors, with the resulting maps available on the project's website.

- Key Features of the Pilot Sites: The selected sites exhibited human-induced environmental degradation, such as soil erosion, riverbank erosion, and desertification, which exacerbate the impacts of climate change. Addressing these issues was a key focus of community workshops and campaigns.

B. Community Engagement and Awareness

At the community level, local NGOs with expertise in social sciences organized awareness campaigns and built trust with local populations. These NGOs facilitated participatory workshops that included:

- Mapping flood risks to raise awareness.
- Promoting nature-based solutions, such as planting endemic species to combat soil erosion and improve rainwater interception.
- Providing first aid training to prepare residents for disaster response and mutual aid during natural disasters.

C. Capacity Building for National Agencies

Workshops were organized in each country to raise awareness and engage stakeholders in the project. Additionally, regional workshops, coordinated by the EE team GPW-AO and the Volta Basin Authority (VBA), focused on enhancing cross-border collaboration and knowledge-sharing among national agencies. Despite travel restrictions during the COVID pandemic, over 200 individuals (including young professionals) were trained using distance learning modules, and 80 technicians were trained to develop flood and drought risk maps for the region. In total, more **than** 100 workshops were conducted across the six countries, ensuring that stakeholders were equipped to independently use and maintain the Early Warning System (EWS) infrastructure effectively.

- Challenges: While regional workshops effectively brought together stakeholders, some national agencies expressed dissatisfaction with the organization of country-

level workshops. They named budget constraints that limited participation and engagement.

D. Regional Stakeholder Collaboration

Regional meetings were attended by additional basin stakeholders, including WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use), AGRHYMET (Regional Centre in Niamey), and CGRE/CEDEAO (Centre for Water Resources Coordination of ECOWAS). Simultaneous translation was provided to ensure participation across linguistic groups.

The level of completion for Component 1 is detailed in Table 1.

Outcome Output	Description	Completed (y/n) (scale 0-5)	Degree of satisfaction
Outcome 1.1: Improved knowledge of risks, climate change impacts and risk management capacities through knowledge sharing and participatory mechanisms			
Output 1.1.1	Inventory of information on vulnerabilities, capacities, exposure and risks (VCERs) for floods and drought in the Volta Basin is conducted	yes 5	high
Output 1.1.2	Database of VCERs, floods and drought related risk maps are developed	yes 5	high
Output 1.1.3	Capacity of stakeholders to use Floods and Drought risk maps is enhanced	yes 5	high
Output 1.1.4	Reports and communication documents on vulnerabilities, capacities, exposure and risks (VCERs) and Floods and Drought risk maps of the Volta Basin are available	yes 5	high
Outcome 1.2: Bridging the gap in adaptation measures to integrate future scenarios (economic, urban, climate, environment, etc.) into current practices and knowledge			
Output 1.2.1	Scenarios for socio-economic and environment development along with the climate change projections are collected	yes 4	medium
Output 1.2.2	Projected impacts on water resources, urban development, environment and agricultural areas are analysed on the basis of future scenarios	yes 4	medium
Output 1.2.3	Impact on environmental indicators is evaluated for current and future scenarios	yes 4	medium
Outcome 1.3: Risk management strategies in short, medium and long-term to be integrated into development plans (economic, social, environmental aspects)			
Output 1.3.1	Guidance documents for stakeholders are developed to raise awareness about the future scenarios	yes 5	high

Output 1.3.2	Capacity of stakeholders to use future scenarios and to develop action plans is enhanced	yes 5	high

Table 1: Summary overview of completion of Component 1

Several initiatives have been implemented to strengthen the knowledge and skills of local actors, including local authorities (civil protection, meteorological services, water services, agriculture and forestry authorities), communities, community leaders, and local NGOs. These actions have taken the form of training sessions, emergency simulation exercises, workshops, and awareness campaigns through various communication channels such as social media, radio, television, as well as religious meetings, including those held in mosques and churches. Additionally, informational tools such as risk maps, gauges to measure water levels, and weather bulletins have been installed. These efforts have also integrated traditional practices, such as observing natural indicators like wind, insects, and birds.

VFDM placed particular emphasis on floods rather than droughts, as the consequences of floods are generally perceived to be more visible and immediate. The impacts of floods on communities are often more destructive and recurrent. Simulation exercises, organized in collaboration with civil protection services, have helped stakeholders better understand flood scenarios and assess their response capacities. These exercises, along with heightened awareness and timely evacuation protocols, have notably led to fewer drowning incidents during flood events, improving overall community safety.

In response to recurring floods and droughts, many communities have adapted their agricultural practices to mitigate the risks. For instance, farmers are being advised to avoid cultivating near rivers and streams, as these areas are particularly vulnerable to flooding. This practice helps reducing the damage to crops during floods and promotes safer farming. Additionally, drainage systems have been constructed to facilitate the rapid evacuation of water during heavy rainfall, thereby preventing waterlogging and protecting both agricultural lands and residential areas.

However, some communities have raised concerns about access to drinking water, which could exacerbate tensions over water resource management during both flood and drought periods. This lack of access to potable water could undermine the effectiveness of the risk management strategies already in place, highlighting the need for continuous evaluation and better adaptation to local needs. Furthermore, communities feel that their social and economic needs, particularly in agriculture and health, have not been sufficiently addressed.

It is also essential to note that women's groups and local NGOs in all participating countries have independently developed activities aimed at protecting ecosystems. These autonomous efforts demonstrate strong community mobilization for environmental preservation and climate risk management.

Some government agencies were not able to provide full contributions due to poor coordination of their interventions at the national and the regional level. This was for instance the case for the Directorate General of Environment in Togo. This absence could limit the effectiveness and harmonization of risk management strategies. Encouraging the participation of this directorate, as well as other key institutions, in potential follow-up projects (e.g. the REWARD project) would be beneficial. This allows for better integration of knowledge and practices in environmental and risk management, and more effectively address the challenges posed by climate change and natural disasters.

In conclusion, although significant progress has been made in strengthening stakeholder capacities, the active engagement of all institutional actors remains crucial to reinforcing the coherence and effectiveness of risk management initiatives, particularly concerning floods and droughts. The authorities have become aware of the issues and have integrated these concerns into their short-, medium-, and long-term action plans, but wish for follow-up initiatives

to consolidate the progress made, further strengthen climate resilience, and address ongoing community needs in agriculture and water management.

5.2 Component 2: Develop concrete adaptation and environmentally friendly actions with an integrated approach

The second central component of the project has been fully realized through the establishment of an end-to-end (E2E) early warning system (EWS) using the myDEWETRA software. This platform now integrates rainfall-runoff and hydraulic models with both local and global hydro-meteorological data, thanks to the development and configuration carried out by CIMA, an external technical partner.

As of the date of writing this final evaluation report, the EWS for the Volta, named VoltAlarm, is functioning effectively as a GIS interface with operational capabilities and incorporates rainfall-runoff models driven by meteorological data from the relevant basin components. The operational implementation of the new E2E early warning system has been supported by selected pilot sites in vulnerable regions that are characterized by varied socio-environmental conditions. Additionally, capacity-building efforts have been established to ensure that all stakeholders become familiar with the new products, services, and tools.

To improve communication between Ghana and French-speaking countries, a translation system has been integrated into the platform. This system facilitates real-time translation between the two official languages, enabling seamless communication and collaboration among stakeholders from different linguistic backgrounds. However, challenges remain regarding communication in the local languages spoken within remote rural communities. While the translation system helps bridging some communication gaps, it is crucial to develop localized communication strategies that address the diverse linguistic landscape of the region. Engaging community leaders and utilizing local dialects will be essential to ensure effective outreach and understanding among all stakeholders.

To ensure the effective operation of hydrological and hydraulic models, ground observations from national observing networks have been integrated. This includes near-real-time measurements of precipitation and discharge, which are essential for model calibration and validation. Although the hydrological observation network within the Volta Basin has still strong limitations, maintenance needs have been addressed, and solutions have been implemented to reduce the operational costs covered by national hydrological services.

However, several concerning aspects have emerged during the project's implementation. The lack of motivation among some technical staff has caused delays in updating and exchanging data, which negatively impact the overall effectiveness of the system.

Poor internet connectivity issues in some countries have made it difficult to access the platform and update critical data. Security issues in Mali have also affected the work of installing measurement equipment in the region. Furthermore, the maintenance of measurement equipment has suffered from a lack of funding in some countries, making it difficult to source spare parts. This has in part hindered the effective operation of these critical devices.

The synergy created by the VoltAlarm EWS has ensured that data collection and management are now being conducted in a more harmonized manner by the national meteorological and hydrological services in all six riparian countries. Countries like Ghana have developed own advanced hydrological modelling systems, while others have also made progress in enhancing their functional modelling capabilities, for instance by migrating their databases systems towards the WMO MCH system. The project design now includes a basin-wide modelling system managed at the regional level by the VBA and GWP-AO, supported by cloud services, thereby enabling effective sharing of hydro-meteorological data among the countries in the Volta Basin and the future operators of the VoltAlarm system.

The project management team, comprising WMO, VBA, and GWP-AO, has successfully leveraged existing regional early warning systems, such as FANFAR developed by AGRHYMET and the Swedish Meteorological and Hydrological Institute (SMHI), along with national EWS initiatives in Ghana, including FEW-OTI and FEWS White Volta, supported by HKV Consultants and the World Bank. Initial concerns regarding ongoing operational and maintenance costs have been addressed, ensuring the continuous functioning of the warning systems and visibility in the VoltAlarm user interface.

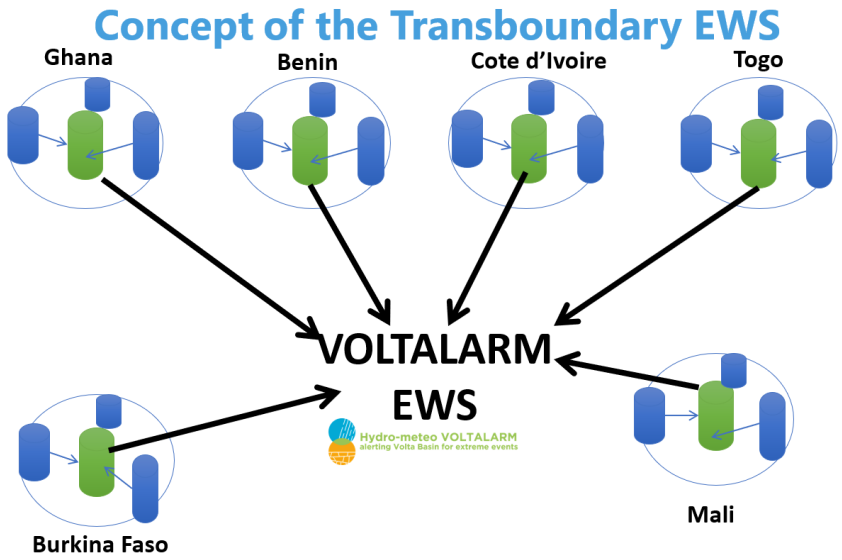


Figure 2: The VoltAlarm distributed cloud-based architecture

5.2.1 VoltAlarm - DEWETRA

VoltAlarm serves as a shared data integration platform for flood forecasting and End-to-End (E2E) early warning, requiring short- to medium-term weather forecasts and ground observations for the effective operation of hydrological and hydraulic models. Built on the existing DEWETRA platform developed by CIMA, the system facilitates the integration and utilization of global hydro-meteorological products, including satellite precipitation data. The incorporation of global products enables countries to monitor, analyse, and deliver warning services to authorities and communities. However, there are notable limitations related to the reliance on these global products due to data transmission delays and potential inaccuracies, particularly in developing countries, where data transmission infrastructure is often weak.

In an E2E EWS, real-time computations of forecasted flows are assessed against predefined threshold levels at selected forecasting sites. When critical thresholds are reached, warnings are issued and must be communicated to relevant recipients, including civil protection teams.

The implementation of the VoltAlarm system within Component 2 requires data transmission and operational model integration from national hydro-meteorological services across the Volta River basin. Utilizing a regional modelling and forecasting solution, rather than individual national models (e.g., the open-source HYPE model from the Swedish Hydrometeorological Institute or the EU FANFAR project), necessitates calibration, validation, and real-time updates based on ground observations to ensure effective forecasting.

At the time of the FE, the development of the platform has been fully completed, with functional data streams established and decisions made regarding the selection and integration of hydrological modelling systems by the project technical advisory committee (PTAC). The components for forecast dissemination and warning protocols within the context of the E2E EWS have also been defined, indicating a satisfactory completion status for this component.

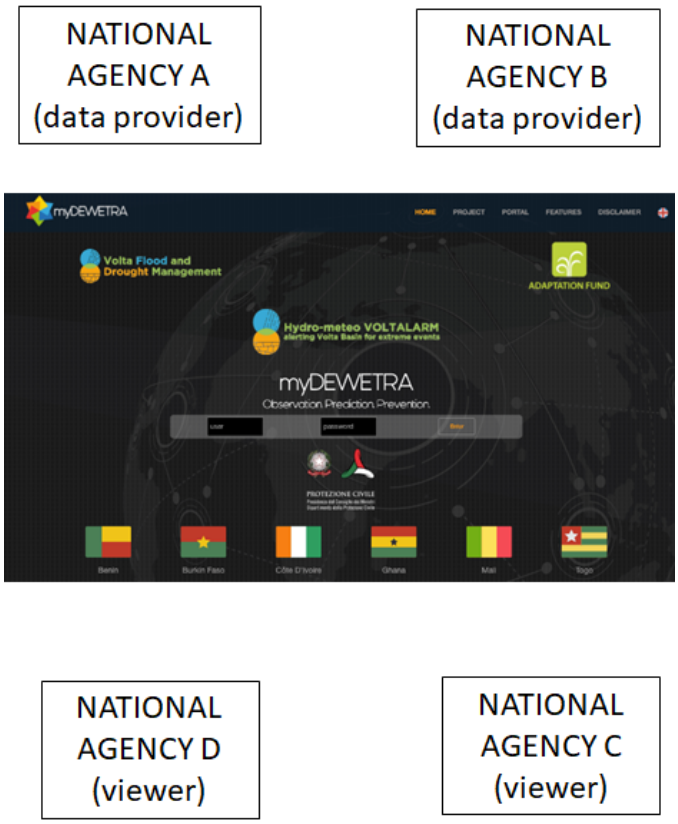


Figure 3: National agencies joined myDEWETRA platform and VoltAlarm and co-developed the configuration.

5.2.2 Local vs. Cloud Computing solutions for VoltAlarm

During the mid-term evaluation (MTE), particularly in discussions following the PTAC meeting on May 6th, uncertainties persisted regarding the implementation and operational management of the VoltAlarm system. Two possible solutions considered: a) operating the system at the VBA headquarters, or b) utilizing remote cloud services on hired computing resources (such as CIMA's facilities or Amazon Cloud), with an operator (such as CIMA) responsible for maintenance at associated service costs. The system operation and maintenance is currently covered for another 3 years after project end free of charge by CIMA.

Finally, the project opted for Option b), which relies on cloud-based services to enhance the efficiency and accessibility of data management. This decision was driven by the need for a robust, scalable infrastructure capable of supporting real-time data exchange among the countries within the basin and network operators.

To achieve this, an effective data exchange system has been established, enabling seamless sharing of crucial information, such as hydro-meteorological data, flood forecasts, and early warning alerts. This system not only improves collaboration among stakeholders but also ensures that all parties have access to timely and accurate information, which is essential for informed decision-making in disaster risk management.

The executives of the Volta Basin Authority (VBA) and the Global Water Partnership – West Africa (GWP-WA) emphasized that the founding charter of the VBA facilitates data exchanges between member states and the central basin authority. This framework is vital for fostering regional cooperation and coordination, allowing member countries to work together effectively in response to the challenges posed by extreme climate hazards. By leveraging shared data, countries can enhance their preparedness, improve response strategies, and ultimately build resilience against the impacts of climate change.

VOLTALARM EWS was co-designed and developed with the regional entities, NMHSs and other relevant stakeholders through multiple capacity development workshops so that it is used for day-to-day monitoring of floods and drought hazards. The system can be accesses through the URL: https://volta.mydewetra.world/.

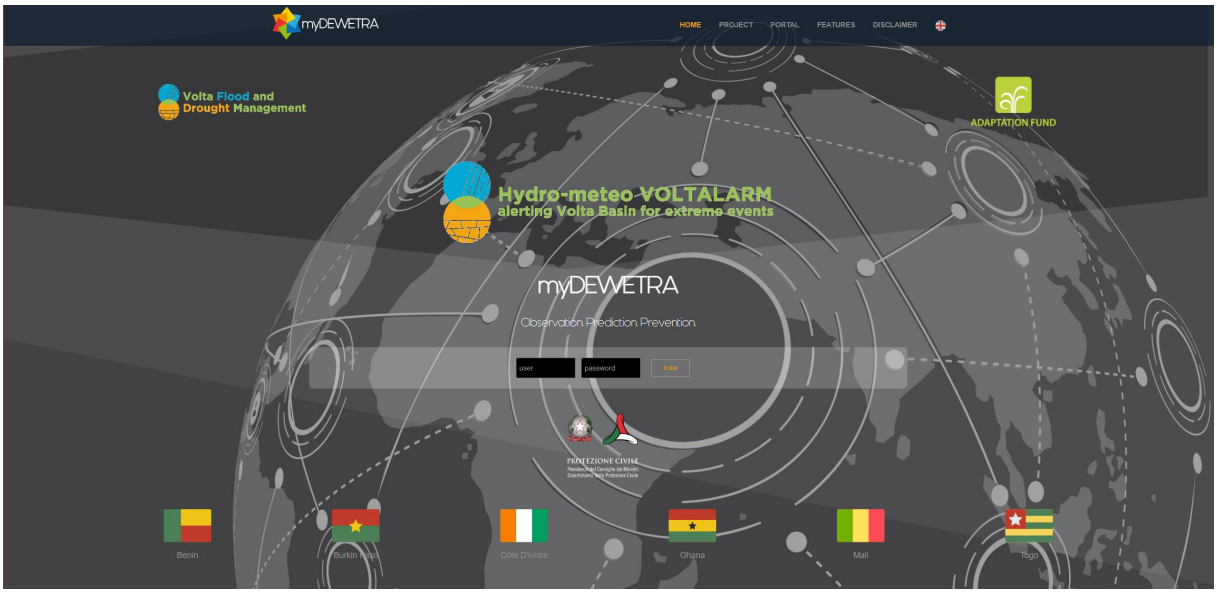


Figure 4 Welcome screen of the myDEWETRA platform configured as VoltAlarm.

In conclusion, the integration of cloud-based services and a comprehensive data exchange system marks a significant advancement in the region's capacity to manage water resources and address the increasing frequency and severity of climate-related events. The completion status of Component 2 is detailed in Table 2 below.

Outcome Output	Description	Completed (y/n) (scale 0-5)	Degree of satisfaction
Outcome 2.1: Improved flood and drought forecasting instruments and Early Warning Systems (EWS) and coordination at the transboundary level to reduce disaster risks in vulnerable communities			
Output 2.1.1	Needs and existing resources of national and regional agencies staffs for web-based EWS are defined	Yes 5	High
Output 2.1.2	The operational centre for the VoltAlarm Early Warning System is established in synergies with the NMHSs and the Volta Basin Authority	Yes 5	High
Output 2.1.3	The historical and real-time hydrological data from the gauging stations are collected and the procedure to link with the meteorological data is defined	Yes 5	Medium
Output 2.1.4	Thresholds for Floods and Drought risk levels are selected for the various parts of the Volta Basin and linked with environment thresholds	Yes 4	Medium

Output 2.1.5	The procedure for producing impact-based forecasts for the sub-basins and vulnerable areas on a daily basis is defined	Yes 4	Medium
Output 2.1.6	The web-based Early Warning dissemination interface for VoltAlarm is designed and developed	Yes 4	High
Output 2.1.7	Knowledge and awareness about VoltAlarm are increased within the user groups	Yes 5	High
Outcome 2.2: Demonstration of the added value of the E2E EWS VoltAlarm through a series of pilot testing during monsoon and dry seasons			
Output 2.2.1	Pilot testing for a number of areas over the basin during the monsoon and dry seasons are performed	Yes 5	High
Output 2.2.2	Feedback from the series of pilot testing is collected	Yes 5	High
Output 2.2.3	Development and implementation of community-based flood and drought management	Yes 5	High
Outcome 2.3: Strengthened awareness of vulnerable people on hydro-meteorological risks, prevention, preparedness, and response strategies through education programs using participative solutions			
Output 2.3.1	Knowledge and capacity development using the Flood Green Guide (FGG)	Yes 5	High
Output 2.3.2	Capacity development based on the Training Manual for mainstreaming gender in the E2E-EWS-F and flood management	Yes 5	High

Table 2 Summary overview of completion of Component 2

5.2.3 Dissemination of the Warning/Advisory Bulletins to various stakeholders

The national agencies have developed dissemination channels to timely informed various stakeholders including the population on any impending floods and drought events. Many national stakeholders are directly receiving warning bulletins through email from the VoltAlarm early warning system.

The WhatsApp group screen shots in Figure 1 und Figure 2 represent examples of such dissemination practices from Ghana, Ivory Coast and Mali, where bulletins and information are shared among participants to inform them about impending precipitation, potential flooding of areas, impacts, and advisories.

Other social media channels such as Radio, Facebook etc. have been used to communicate warning messages to various stakeholders.

Figure 3 shows the start-up screen of the VoltAlarm flood and drought warning bulletin system.

Figures 4-6 show screenshots of the graphical user interfaces of the system with the area of the Volta basin. Figure 4 shows storm cells, Figure 5 the ground stations installed throughout the basin and Figure 6 the water warning levels at a selected site.

Figures 7 and 8 show the screenshots of the forecast dissemination bulletin. Figure 7 shows a flood bulletin and Figure 8 a drought bulletin. We note that the bulletins include the impacts of the respective natural hazards (impact-based forecasting).

5.2.4 Complementarity with the CREWS and HydroMet Initiatives

The VFDM project has led to the establishment of considerable synergies with other ongoing early warning initiatives across the Volta basin. Besides the integration of the forecasting system developed in the frame of the FANFAR project, VFDM created complementarities that led to the upscaling of VoltAlarm to the entire country of Burkina Faso within the Worldbank-funded HydroMet project and also integrated with the CREWS initiatives to improve Early Warning in Burkina Faso and Togo. An upscaled version of VoltAlarm including also the remaining part of Burkina Faso outside the Volta Basin is shown in Figure 13.

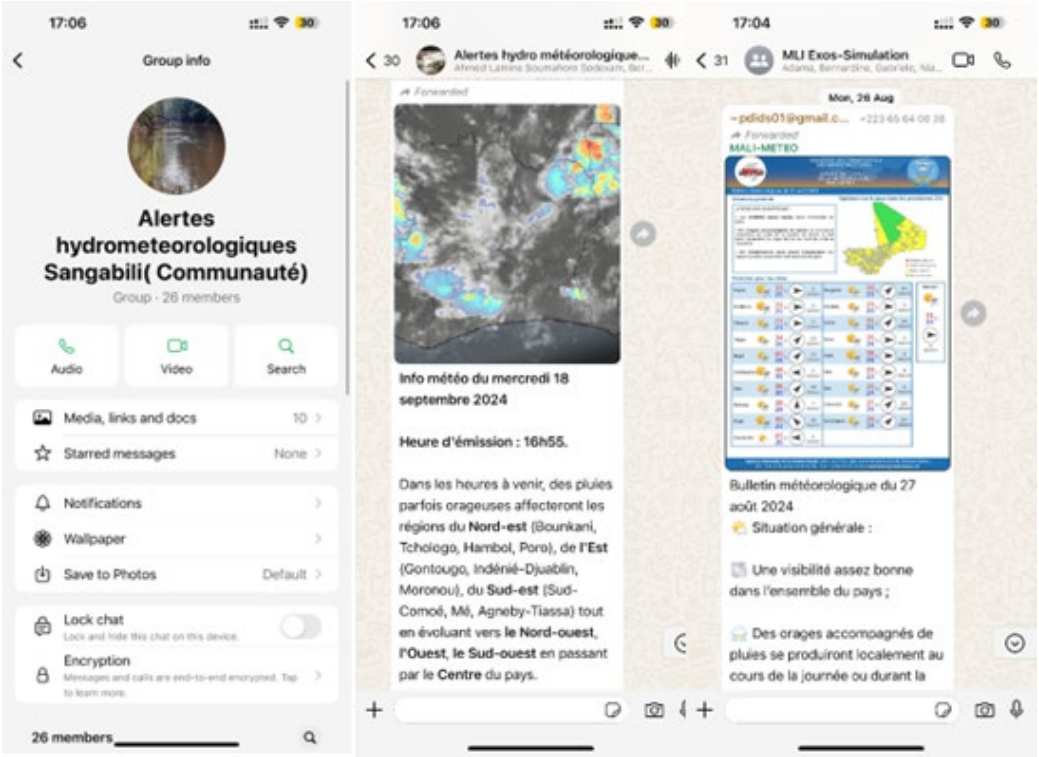


Figure 5: Screen shot of a WhatsApp Group channel to disseminate meteo alert bulletins

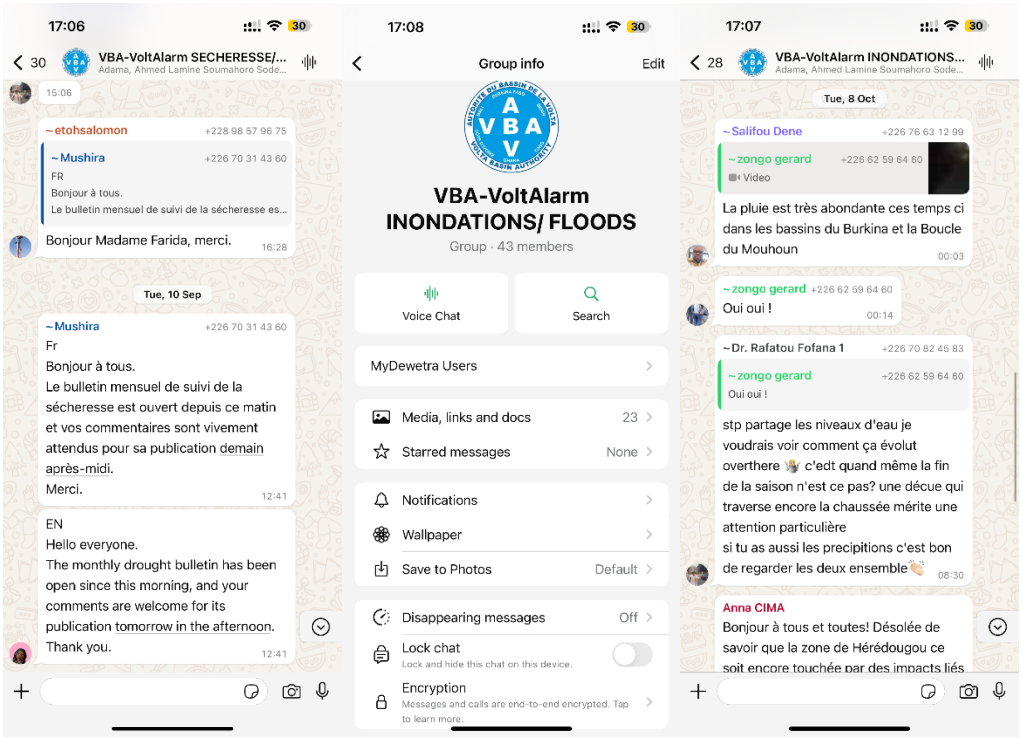


Figure 6: Bulletin Start page of the VoltAlarm System

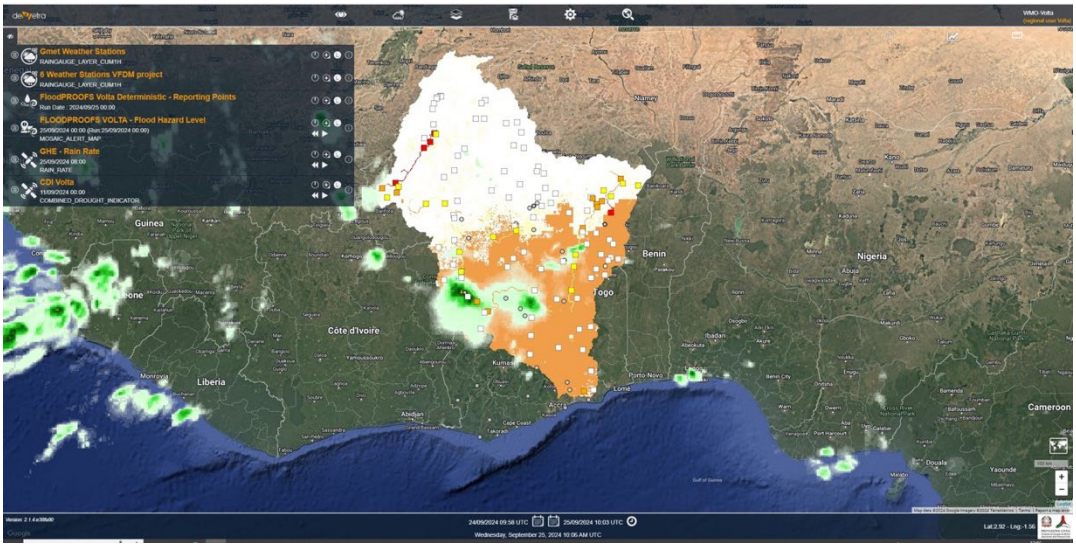


Figure 7: Storm cells visualized in the VoltAlarm system

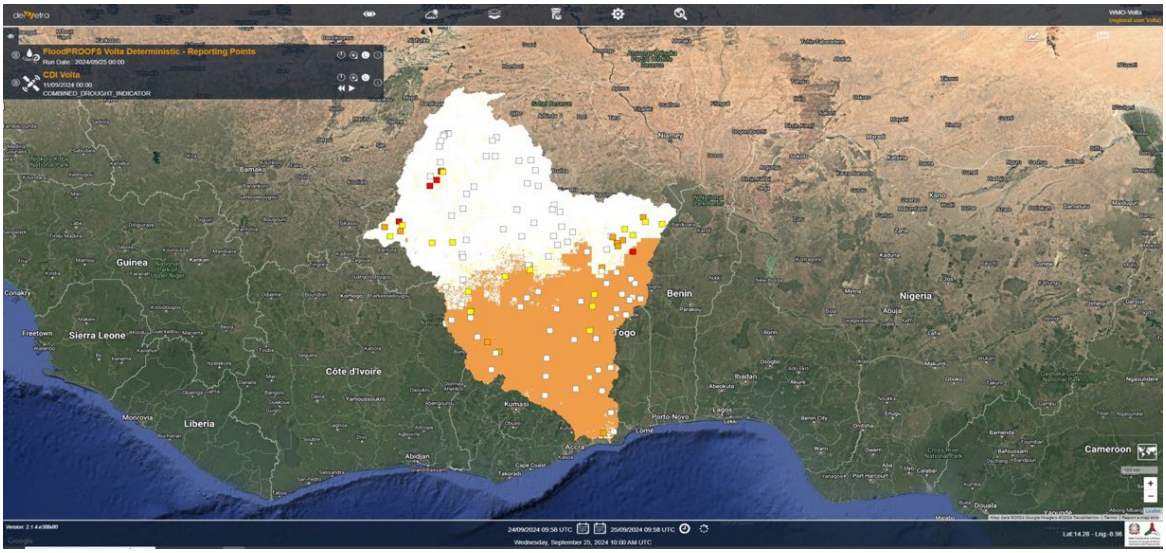


Figure 8: Locations of stations and system reporting points in the VOLTALARM system

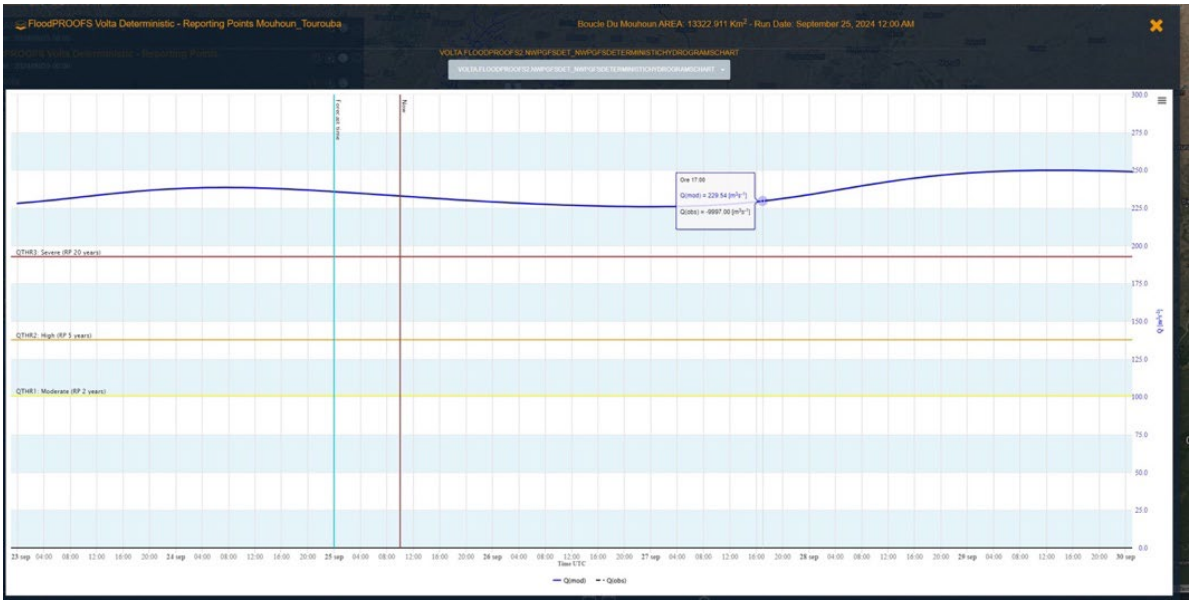


Figure 9: Example of actual water levels and thresholds at a location on the Mouhoun tributary of the Volta River.

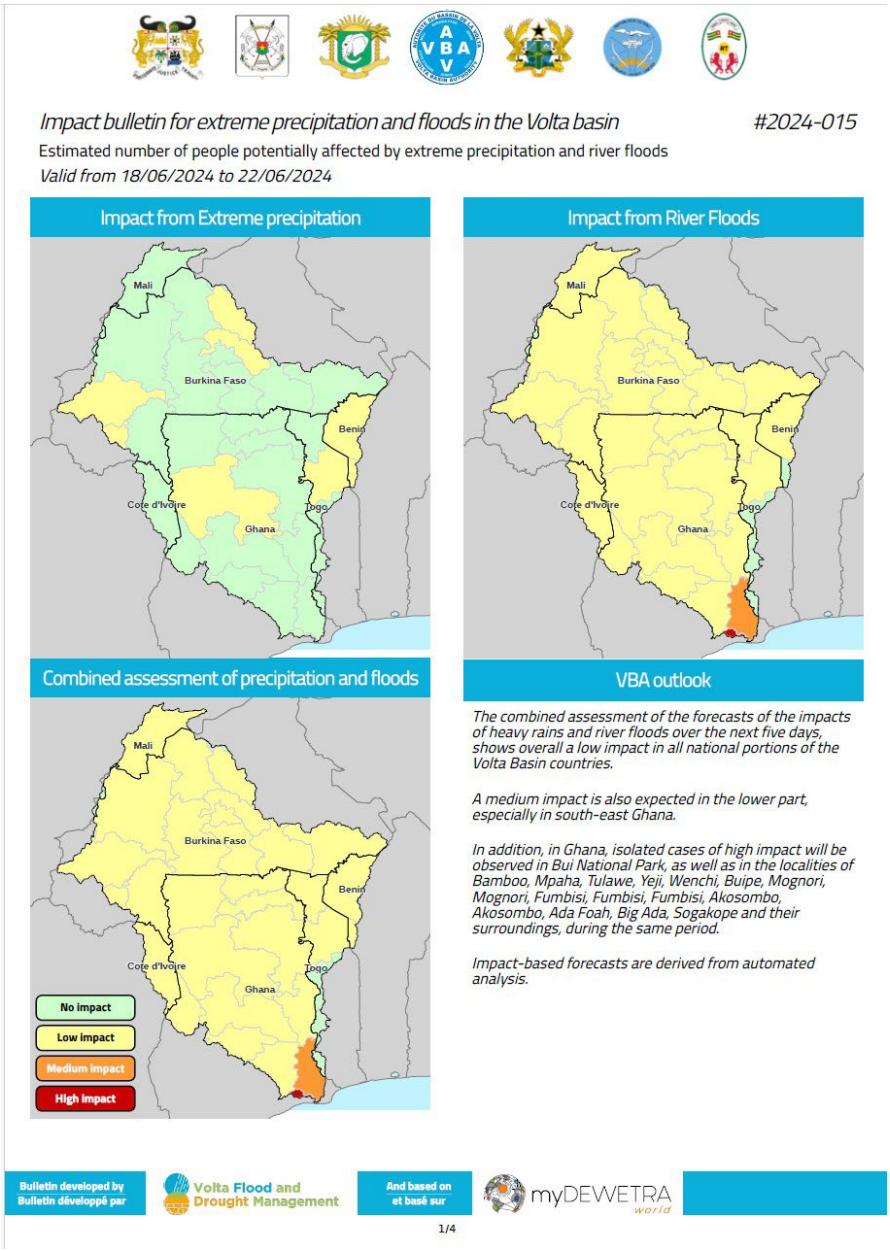


Figure 10: Example of a flood bulletin produced by the VoltAlarm system

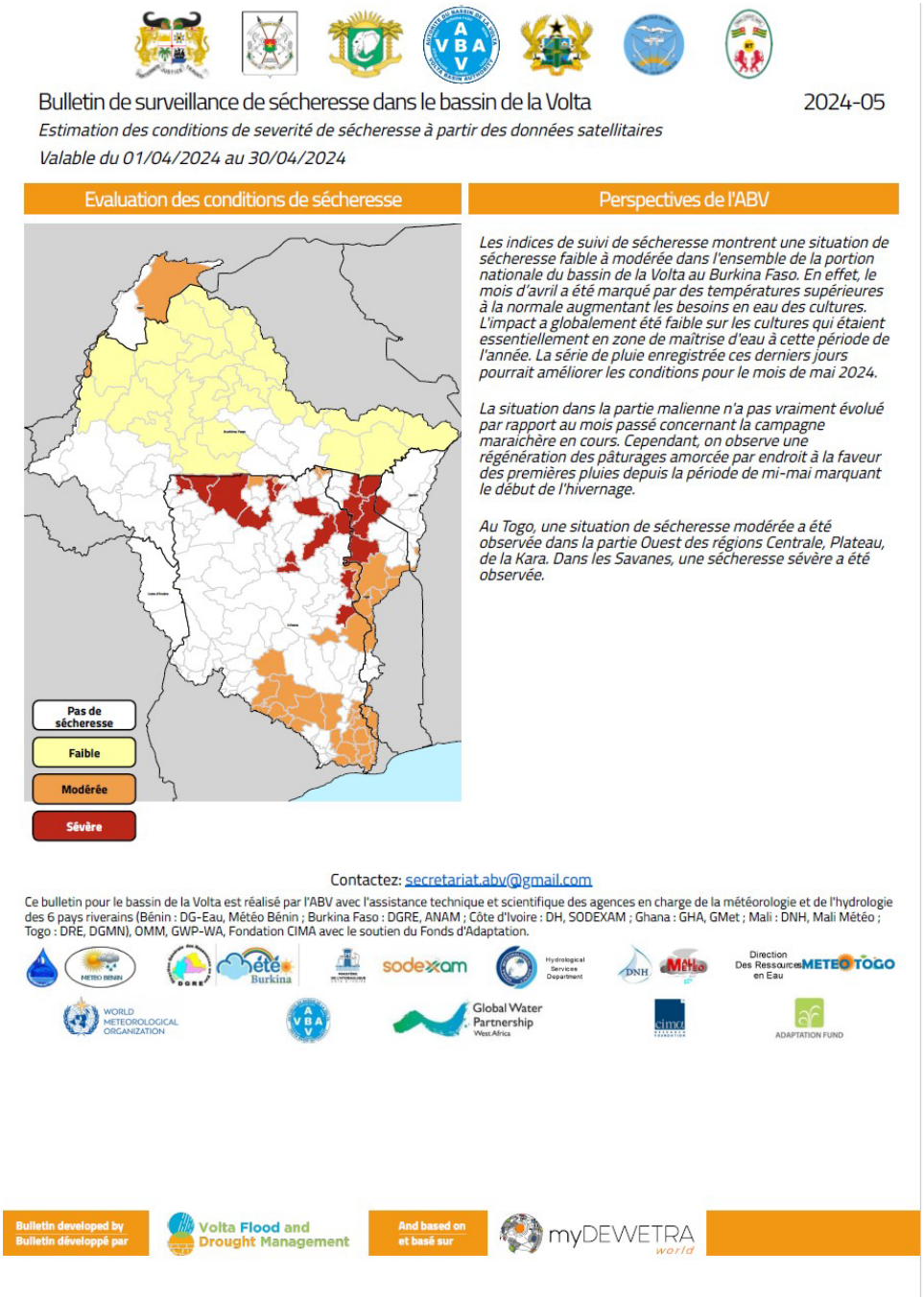


Figure 11 Example of a drought bulletin produced by the VoltAlarm system

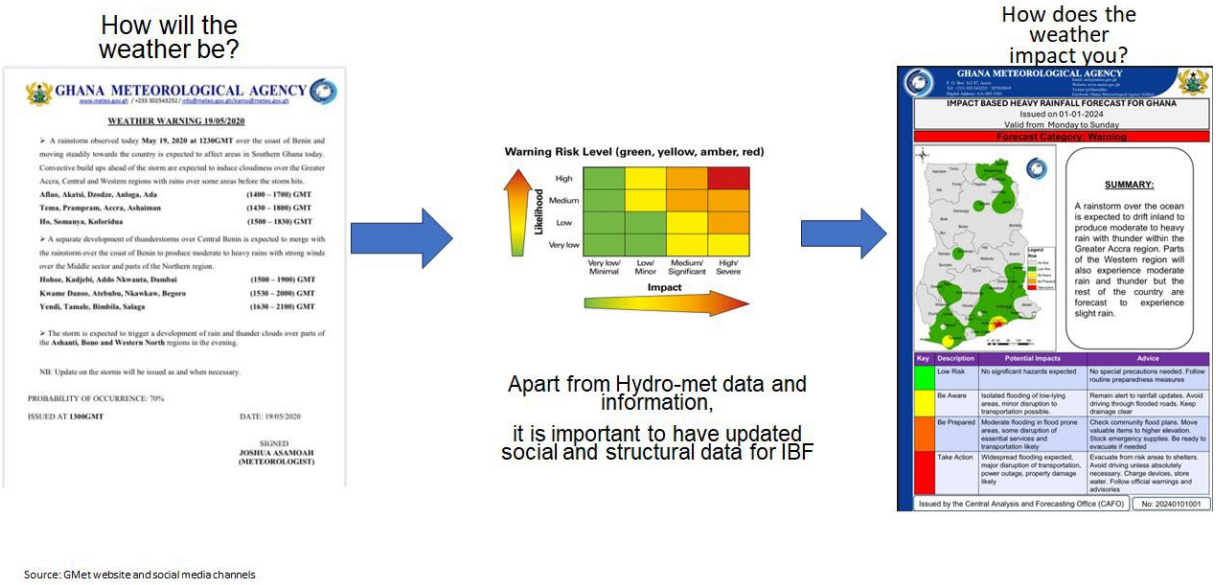


Figure 12: Impact-based forecasting

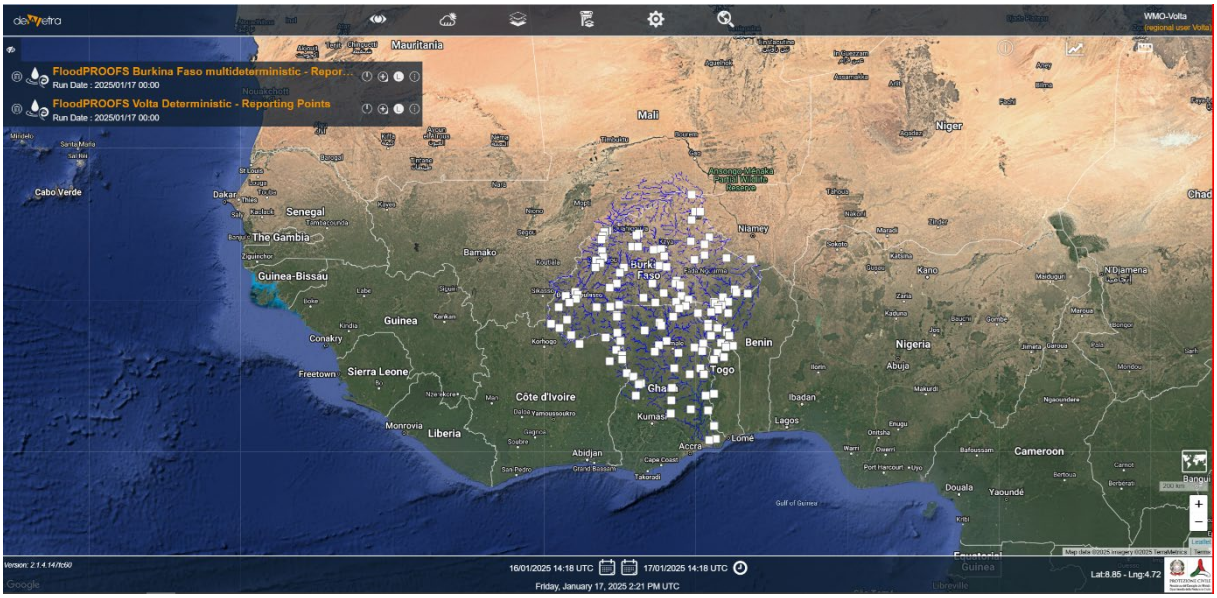


Figure 13: Upscaling of the VoltAlarm System to the entire Country of Burkina Faso in the frame of the HydroMet Burkina Faso project

5.3 Component 3: Strengthen policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels

The third component of the project focuses on the institutional aspects of flood and drought management throughout the basin, particularly in translating these management strategies into national policymaking. The completion status of Component 3 is detailed in Table 3 below.

Outcome Output	Description	Completed (y/n) (scale 0-5)	Degree of satisfaction
Outcome 3.1 Decision support and policy development for strengthening resilience at the local, national and transboundary levels of the Volta Basin.			
Output 3.1.1	The transboundary governance plans, policies and guidelines about long term flood and drought management are evaluated	yes 4	medium
Output 3.1.2	Awareness of policy-makers from the six countries on the key long-term strategies for floods and drought management and environment impact is strengthened	yes 4	medium
Output 3.1.3	The historical and real-time hydrological data Experiences of local communities on key long-term strategies for floods and drought management are collected	yes 4	medium
Outcome 3.2 Strengthened capacities of actors and decision makers at national and transboundary level on long term risk management policies, plans and strategies			
Output 3.2.1	Strengthened implementation of the revised, or new, climate adaptation plans (NAPA, NAP, NDC), policies and guidelines (on data and information exchanges) on issues related to risk reduction and EWS	yes 4	medium
Output 3.2.2	Improved integration of national policies on long term risk reduction and climate adaptation into the transboundary Strategic Action Programme	yes 5	high
Outcome 3.3 A collaborative process is developed to ensure those instruments and strategies are accepted by the local organization and communities and adapted to the local context			
Output 3.3.1	Collaboration with local communities and organizations in defining the procedures and measures to manage risks and to adapt to climate change	yes 5	high
Output 3.3.2	Capacity of stakeholders to use future scenarios and to develop action plans is enhanced	yes 5	high

Table 3: Summary overview of completion of Component 2Community Engagement and Capacity Building

Communities have been well trained and made aware of information management in the event of climate risks. This training has equipped them with the necessary tools to adapt their

agricultural practices, leading to increased resilience against climate-related impacts. For instance, many farmers have begun implementing water conservation techniques and crop diversification strategies to mitigate the effects of extreme weather. However, challenges remain; not all community members have fully integrated these practices into their daily lives.

Alerts related to climate risks are now embedded in their daily routines, enabling them to respond more swiftly to potential hazards. Nonetheless, communities have expressed a desire, in the event of a second phase of the project, to focus more on socio-economic aspects, including the improvement of access to clean water. Some community members feel that they have not been sufficiently consulted about their specific needs during the implementation of the project, highlighting the importance of participatory approaches in future initiatives.

Additionally, some farmers have a limited level of education, which prevents them from grasping complex concepts related to climate risk management and adaptation strategies, despite awareness efforts being made in local languages. To bridge this gap, it is essential to develop more accessible training materials and methods, possibly incorporating visual aids or hands-on demonstrations that cater to varying educational backgrounds.

It is also important to note that women's groups and local NGOs have become active participants in environmental protection initiatives. These groups have mobilized community members to engage in activities such as tree planting and managing school canteens in Togo. These initiatives not only support biodiversity by enhancing local ecosystems but also promote sustainable food practices and nutritional awareness among children. By involving women in leadership roles within these initiatives, the project fosters empowerment and encourages broader community participation. These groups play a crucial role in promoting sustainable practices and engaging communities in environmental management, often leading by example and inspiring others to adopt similar practices.

Overall, Component 3 has made significant progress in strengthening political and institutional capacity for integrated flood and drought management at local, national, and transboundary levels. By ensuring the involvement of communities, particularly women, and addressing language and educational barriers, the project is better positioned to create sustainable and effective management strategies in response to floods and droughts. However, to enhance the overall impact and effectiveness of these strategies, future efforts should prioritize increased community consultation, focus on socio-economic improvements, and address the barriers to access clean water, thereby ensuring that all community members can actively participate in and benefit from these initiatives.

5.4 Socio-economic benefits of the VoltAlarm EWS

The EWS has a clear socio-economic benefit, as iterated by the participants at national level and at the local level of pilot communities. The EWSs allow for informed decision-making ahead of a flood. Especially in Ghana, where large farming communities live along the Volta River, stakeholders are benefiting from transboundary flood warnings, especially when caused by reservoir operations in Burkina Faso. Recipients of flood warnings can move belongings of high economic value such as livestock, equipment or vehicles out of the risk areas.

Economic negative impacts caused by drought are increasingly perceived as larger than effects of floods by various national stakeholders in Volta basin countries but are not yet understood to the full extend. The economic benefit in of drought early warning concerns the alert for bush fire risk, which can lead to the loss of crops and jeopardize the subsistence of entire rural areas. The potential of scaling the existing system up to cover entire Volta basin countries is also economically relevant.

5.5 Communication and knowledge management

Communication of project results toward the outside world and among project occurs through a dedicated web portal accessible via the URL https://www.floodmanagement.info/volta-basin/. All information gathered during the project, in particular reports of workshops and trainings, material for dissemination among partners, digital education course documents, technical report, maps, photographic material and other documentation has been made accessible though the web site.

The main areas of the web portal include:

- General description of the project context,
- Presentation of the project team, in particular the IE and the EEs.
- Activities including workplan, a download site for deliverables in the form of reports, Knowledge & Learning including online courses developed during the project, Monitoring & Evaluation presenting the criteria and indicators on which project progress is gauged, a Discussion Forum and Project-Related Publications area.
- Gallery with photographic material from project workshops.
- Media Centre containing links to project-related press releases, news and events.
- Contacts page.
- Link to the WMO Associated Programme of Flood Management.

The web portal has been kept well up to date.

6 Conclusions and Recommendations

The VFDM project has made significant strides in enhancing climate resilience in the Volta basin, particularly through the establishment of Early Warning Systems (EWS) and extensive capacity-building initiatives. These efforts have empowered local communities, reduced the impacts of floods and droughts, and strengthened institutional capacities across the six participating countries.

Nevertheless, several sustainability challenges remain, particularly concerning infrastructure maintenance and the need for ongoing financial support.

The following conclusions can be drawn:

- The project significantly improved the capabilities of national meteorological and hydrological services across the region, enabling them to provide timely forecasts and to better coordinate disaster response efforts. This institutional strengthening has also laid a foundation for improved regional cooperation in managing transboundary water resources.

- The project successfully engaged local pilot communities in active disaster risk management, leading to increased preparedness and responsiveness to climate-related hazards. This was especially evident in communities that adopted the EWS messaging, which resulted in timely evacuations and reduced losses during flood events.

- The project has been perceived by all actors to be predominantly focussed on floods, with drought playing a secondary role. Several participants agreed that the drought forecasting and management component should be strengthened through future initiatives across the region, especially as drought is causing increasing economic damage. The REWARD project is supposed to address this aspect and build on the VFDM project.

- One of the most surprising and high-impact outcomes is the strong community work, that has been pursued in all riparian countries and which has led to successful pilot initiatives for strengthening flood and drought resilience at the community level. The pilot projects are gender inclusive and are a basic component in a bottom-up approach for strengthening resilience against flood and drought. In the Volta basin. The efforts have been successful also due to a strong collaboration between NGOs and the local population.

- The most relevant technical outcome is the VoltAlarm EWS system, which had existed only at the embryonal state during the mid-term evaluation but has been rolled out successfully in the second half of the VFDM project.

- The VoltAlarm system has been embraced by all participant countries and has already led to initiatives to extend the system also to the parts of the riparian countries that lie outside the Volta River basin. National forecasting systems, such as for Burkina Faso, Ivory Coast or Togo will potentially be developed by making use of the DEWETRA platform. One of the outstanding advantages of this forecasting system is its cloud based and centralized architecture, which makes the forecasting system easy to maintain and proved to be an efficient approach in terms of resources allocation and use.

- VoltAlarm has been implemented in a participative way by involving stakeholders in all six riparian countries. The participatory development of the systems, and especially the jointly designed dissemination component based on transboundary flood and drought bulletins has fostered transboundary collaboration between technical staff at national agencies and led to a strengthening of exchange that was not existing in the present form before.

- The VoltAlarm system also ensures sustainability of this technical infrastructure as it has been jointly developed, and it is in the vivid interest of all countries to keep the system operating also beyond the project termination. Propositions to scale the system up from the Volta basin to other areas of the riparian countries outside of the basin manifests the strong interest in further operation and developments.

- Cooperations with other ongoing flood management projects and initiatives, particularly FANFAR, have been realized. For example the modelling results computed by the regional modelling system installed through the FANFAR project are shared with VoltAlarm and are made accessible to the riparian countries.

- Complementarities have also led to upscaling the VoltAlarm to the entire country of Burkina Faso in the frame of the Worldbank-funded project Hydro-Met. Considerable complementarities were established with the parallel CREWS project initiatives aimed at improving Early Warning in Burkina Faso and Togo.

- Experience accumulated during VFDM project has been brought into the development of the drought-focussed REWARD project.

- A series of rainfall and stream level gauges have been acquired by the project and were still under installation during the period of this evaluation. The addition of these observing stations clearly strengthens the existing measurement infrastructure.

- At the gender inclusion front, progress made is modest and mostly visible at the local community level. While the involvement of women in the flood and drought management process across all countries is improving, the participation of women is still small and in several cases below 30%.

- Low participation of women in national and regional agencies is due to an insufficient number of female applicants with suitable MINT education, who could fill respective advertised positions. Despite efforts being made across most of the Volta basin countries to increase female participation, the overall number remained behind expectations.

- By contrast female inclusion is encouraging at the level of local communities, reaching up to 50% in some cases.

- The emphasis on gender-sensitive approaches and community involvement has proven critical to the project's success. Engaging women and local leaders in decision-making processes has enhanced the effectiveness of disaster risk management interventions and fostered a sense of ownership among community members.

- The bilingual setting in the Volta Basin has led to some difficulties in the performance of the project and has hampered communication. Local languages have posed some issues at the level of communities.

- Efficiency of resource allocation is viewed with mixed feelings by participants. While some have clearly benefited from allocated resources, either directly or indirectly through training and knowledge transfer, other entities feel left out in this respect.

- As only country, Mali, which only shares a very small part of the Volta basin, has not been visited during the FE mainly due to security concerns.

- While the project achieved large success, there are concerns by stakeholders about the long-term sustainability of the EWS and hydrometeorological stations. Without dedicated funding and comprehensive maintenance plans, these systems risk becoming non-operational, potentially weakening an important component of the flood warning chain.

Key Recommendations

- **Extend EWS Coverage**:
  - Expand early warning systems to additional vulnerable communities in the Volta Basin, particularly in areas lacking access to reliable flood and drought forecasting. This should include enhancing the drought management component of the EWS to better address the needs of communities facing prolonged dry spells.

- **Strengthening infrastructure resilience and flood relief**:
  - Establish dedicated financial mechanisms for the ongoing maintenance of hydrometeorological stations and EWS infrastructure. Creating a regional fund supported by the Volta Basin Authority (VBA) and contributions from national governments will ensure long-term operational sustainability. Additionally, the construction of shelters for flood victims in a potential second phase of the project could be a further important building block.

- **Increase Investment in Community Resilience**:
  - Continue building local capacity by integrating nature-based solutions for flood and drought mitigation into community planning and practices. Supporting community-led initiatives, such as reforestation and sustainable land management, will enhance resilience against climate hazards and improve local ecosystems.

- **Secure Additional Funding**:
  - Pursue financial support from international donors and organizations to ensure the long-term sustainability of the project's outcomes. Developing a comprehensive financing strategy that outlines the ongoing costs associated with maintaining EWS and capacity-building efforts will be critical for securing the necessary resources.

- **Foster Regional Collaboration**:
  - Encourage ongoing collaboration among the six participating countries to share best practices, experiences, and resources related to disaster risk management

and climate resilience. Establishing regular forums or workshops will facilitate knowledge exchange and strengthen partnerships.

- **Showcasing**:
  - Showcase project achievements at the national level at the regional, international and global level to disseminate findings to a large community.

- **Address Communication Gaps**
  - Improve communication between stakeholders by ensuring timely and transparent information-sharing, as highlighted by the recent coordination issues during the flood simulation in Togo one week in advance. Additionally, the failure to properly inform the Director General of the Environment about the VFDM project resulted in a lack of participation from the environmental sector. To enhance the effectiveness and preparedness of disaster response, it is essential to involve key government figures from the outset and establish proactive communication channels. Engaging all relevant stakeholders early will help avoid delays and ensure seamless coordination in future simulations and real-life disaster scenarios.

- **Address Language Barriers**:
  - Communication and engagement with stakeholders, especially in French speaking countries, have posed significant obstacles. Also, local dialects make communication without translation difficult. This role will also help bridge gaps in understanding and improving stakeholder engagement across the region.

- **Improve for future: communication and coordination between EEs and Stakeholders**:
  - Limited communication and field engagement have been observed, with minimal interaction from the EE with key stakeholders and a lack of field missions. To address this, it is essential to increase field missions and strengthen communication efforts with all stakeholders, especially in French-speaking countries. Additionally, consider recruiting a national staff member to serve as an intermediary between the IE and various national partners, facilitating better coordination and ensuring that local needs and perspectives are effectively communicated.

- **Improve for future: Communication and Coordination between EEs and Stakeholders:**
  - Increase field missions and communication efforts through additional EE staff support to ensure that IE remains closely engaged with stakeholders, particularly in French-speaking regions. Consider recruiting national staff to serve as intermediaries between IE and local partners to facilitate mutual coordination and understanding.
- **Partnership with Other UN Agencies and International Organizations**:
  - EEs invited UN organizations such as FAO, WFP, etc during different workshops at the national level. Strengthen partnerships with other UN agencies and international organizations to ensure a more comprehensive approach to disaster risk management. Collaborations in sectors such as agriculture, health, and education will create an integrated response to disaster preparedness. For instance, promoting climate-resilient farming practices, improving health infrastructure and raising awareness about disaster

preparedness through educational campaigns will enhance community resilience across sectors.

Annexes

7 Annex A: Meeting minutes with external technical partner Knowledge & Innovation

7.1 Introduction

The meeting with the external technical partner Knowledge & Innovation (K&I), represented by Mr. Gabriele Quinti took place remotely on the 2nd of September 2024, 10:30-12:00 CET.

The meeting was chaired by International Consultant Mr. Reggiani, who connected remotely from Germany. Among the participants were Ms. Valérie -Anne Taillandier who connected from France and Mr. Quinti connected from Rome, Italy.

Mr. Quinti presented an overview of the Volta Flood Management Project (VFDMP) and discussed its recent activities and results. The discussion focused on the project's relevance to the needs of vulnerable communities in the Volta basin. K&I's work focused primarily on community-level work in rural areas of the six basin countries, while also supporting GWP-WA and VBA.

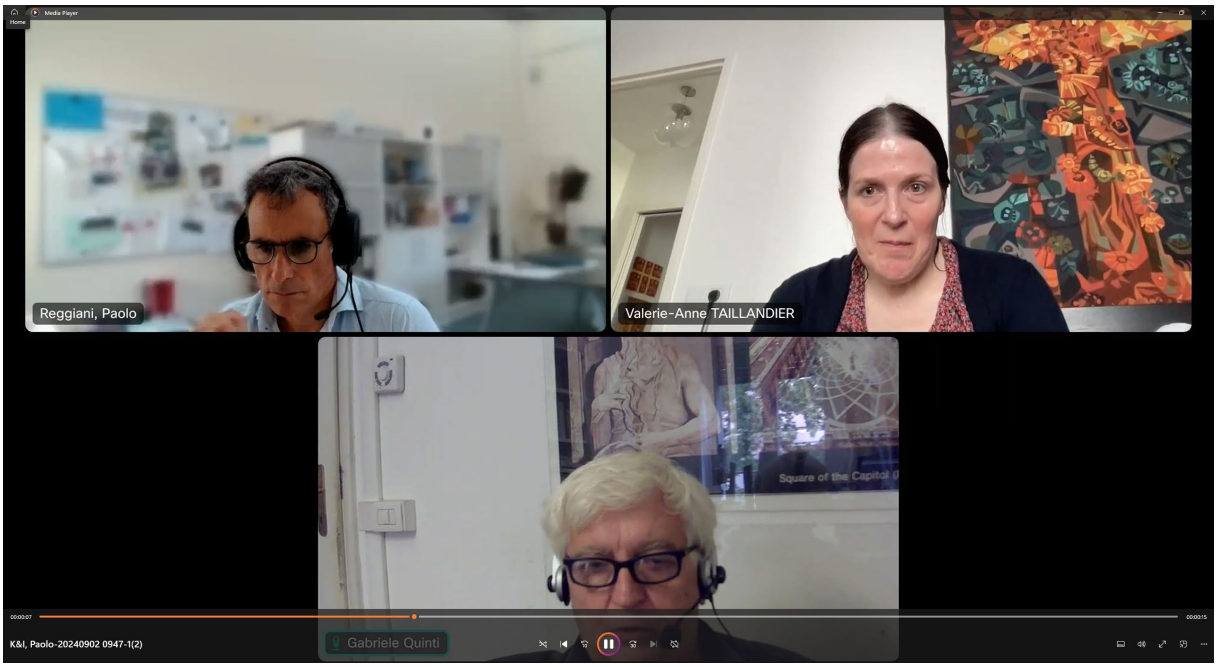


Figure 14: Meeting with Gabriele Quinti from K&I

7.2 Relevance

Focus on rural communities: The project predominantly focused on rural communities, with some activities extending to urban areas such as Ouagadougou metropolitan. This mainly rural focus has contributed essentially for sustainability and long-term impacts of the VFDM project.

The project contributed to several strategic objectives, including gender considerations, increasing risk awareness for floods and droughts, and enhanced community preparedness. While not all objectives were fully met, the project made substantial progress.

While the project hasn´t fully resolved several issues, it aimed to address, however it has significantly increased the capabilities of both, public sector and community actors in their ability to manage and respond to flood and drought risks. No major areas of concern have been identified, at least in the relations to K&I contributions.

7.3 Effectiveness

The contributions of K&I focused mainly on work with rural communities and stakeholders. The activities started in 2020, but were slowed down due to COVID pandemic, which prevented face-to-face work. Personal presence has been experienced as the most effective way to progress in achieving project goals. The contributions of K&I consist of three main activities.

K&I's primary focus was on working with rural communities and stakeholders. Although activities began in 2020, the COVID pandemic significantly impeded progress due to the limitations of virtual interactions. In-person engagement has proven to be the most effective way to achieve project goals.

K&I's contributions encompass three main activities:

Activity 1: During the 2020-2021 initial preparatory period, risks were evaluated over 14 consecutive months for 60 communities across the six basin countries. From this pool, six communities were selected as pilot sites, one in each riparian country, where actual measures were implemented to achieve project goals.

Activity 2: The main community-related project activities occurred during the period 2021 to 2022. One of the key objectives was to understand and elaborate how flood and drought affect different groups of people. Based on their residential address, social status, gender, profession, and age, various population groups were identified. It became evident that these different categories held distinct perceptions of the risks and their vulnerability to flood and drought hazards.

The community-based approach aimed to increase awareness among villagers of these diverse perceptions and the varying consequences of flood and drought risk.

Another effective effort involved valuing and utilizing the recollections of elderly people about floods, as there is often limited data or measurements available in the affected communities. Overall, the most significant progress has been achieved in the Sangabili community in Ivory Coast and in the Daoudé community in Togo, followed by the Tabota Community in Benin as well as Kunkua in Ghana.The activities also addressed flood and drought in a gender-disaggregated manner, recognizing that women and men are usually affected differently by flood and drought hazards. This is particularly the case in areas, where women play a significant role in agricultural work. The Ivorian meteorological agency SODEXAM worked with local communities and authorities to establish a multi-channel system for information dissemination, including WhatsApp groups, community radio, and loudspeakers with local language translation. A similar system is being adopted in Togo. The system operates both ways, top-down and bottom-up. It incorporates feedback from the community like mobile radar warning systems.

From a technical perspective, the installation of hydrometeorological stations in five out of six pilot sites (with Mali being the exception due to safety issues) was accompanied at a community level. These stations are aimed at enhancing local EWS.

Multi-Stakeholder Approach: the project successfully engaged a broad range of stakeholders, including public services, regional and municipal authorities, traditional local leaders, and NGOs. This multi-stakeholder approach facilitated better cooperation and understanding among different actors.

Community Management Activities: The project included community-based flood and road management activities, which were supervised for 14 months across six pilot sites. These activities promoted cooperation among various actors and addressed local needs effectively.

Activity 3: The final project activities occurred between March and June 2024. During this period, K&I primarily supported GWP-WA with additional territorial studies and organized local, national and regional workshops. These workshops brought together various stakeholders, including public sector representatives, community members and NGOs, to discuss the project's effectiveness and relevance.

7.4 Efficiency

The work executed by K&I has been executed in an efficient manner in the sense that dedicated resources have achieved mostly the set goals in an economic way. K&I's work has been executed efficiently, with dedicated resources achieving most of the intended goals in a cost-effective manner.

Most of the project activities related to community work (consultation, involvement, decision-making) were tailored to the specific needs of each country.

7.5 Sustainability

The project contributed to setting up further community projects and activities, enhancing its sustainability. Mr Quinti mentioned that the project's support enabled GWP to implement additional studies and workshops, ensuring that the momentum built during the project continues beyond the project lifetime.

Future prospects: sustainability is seen as promising, especially in Ivory Coast, where there is strong local capacity and urgency. The sustainability in other countries, like Benin, is less certain but still considered feasible. The project's results and best practices are expected to continue and expand beyond its duration.

NGO involvement: A network of six NGOs involved in the project has been established to support the sustainability and expansion of the project results. These NGOs play a crucial role in bridging the gap between community and institutional levels as well as connecting current and future initiatives beyond the project's lifespan.

7.6 Lessons learned, challenges and recommendations

Mr. Quinti stressed the importance of recognizing social disparities within communities, such as those based on location (e.g., central vs. peripheral areas), occupation (e.g., agriculture vs. cattle farming), and socioeconomic status.

Effective communication channels: The experience in Sangabili highlighted the effectiveness of combining multiple communication channels to ensure timely and comprehensible information dissemination.

Bureaucratic overhead and timeliness: The project faced challenges with bureaucratic delays, especially due to the involvement of multiple layers of authority (central, national, and regional). The COVID pandemic exacerbated these issues by hindering face- to-face interactions, which affected project management and the development of human relationships among stakeholders.

Language Barriers: The project encountered language barriers, with French being the primary working language in the region, whereas English was used at the WMO level. Efforts to overcome these barriers included improving language skills among team members, such as Ramesh learning French.

7.7 Concluding Remarks

Personal Experience: Gabriele shared a personal anecdote about overcoming bureaucratic delays and logistical challenges. This experience highlighted the importance of individual responsiveness and flexibility in successful project management.

Project activities: Mr Quinti provided a short oral recap of key completed activities. These activities included a study on drought and flood vulnerability in 60 communities, the selection and implementation of community- based management activities in six pilot sites, the creation of a manual on community-based flood and drought management and the development of a captivating documentary titled 'Voices from the Field', showcasing stories collected during field missions.

8 Annex B: Preparatory meeting with VBA & GWP-WA, 4.9.2024

The meeting with the ´VBA and GWP-WA, took place remotely on the 4nd of September 2024, 12:00-14:00 CET. The following people were present:

- Paolo Reggiani, International Consultant.
- Valérie-Anne Taillandier, International Consultant.
- Ida Ouèbounga Benagabou, National Consultant, Burkina Faso.
- Crésus Odjo Zossou, National Consultant, Benin.
- NIAMPA Boukary, Technical Director, VFDM Project.
- Robert Y. DESSOUASSI, Executive Director VBA.
- Dibi MILLOGO, Deputy Executive Director VBA.
- Armand HOUANYE, Executive Secretary of GWP-WA.
- Maxime Teblekou, Technical Director, VFDM Project.
- Hilaire Wilboudo, Technical Project Assistant, GWP-WA.

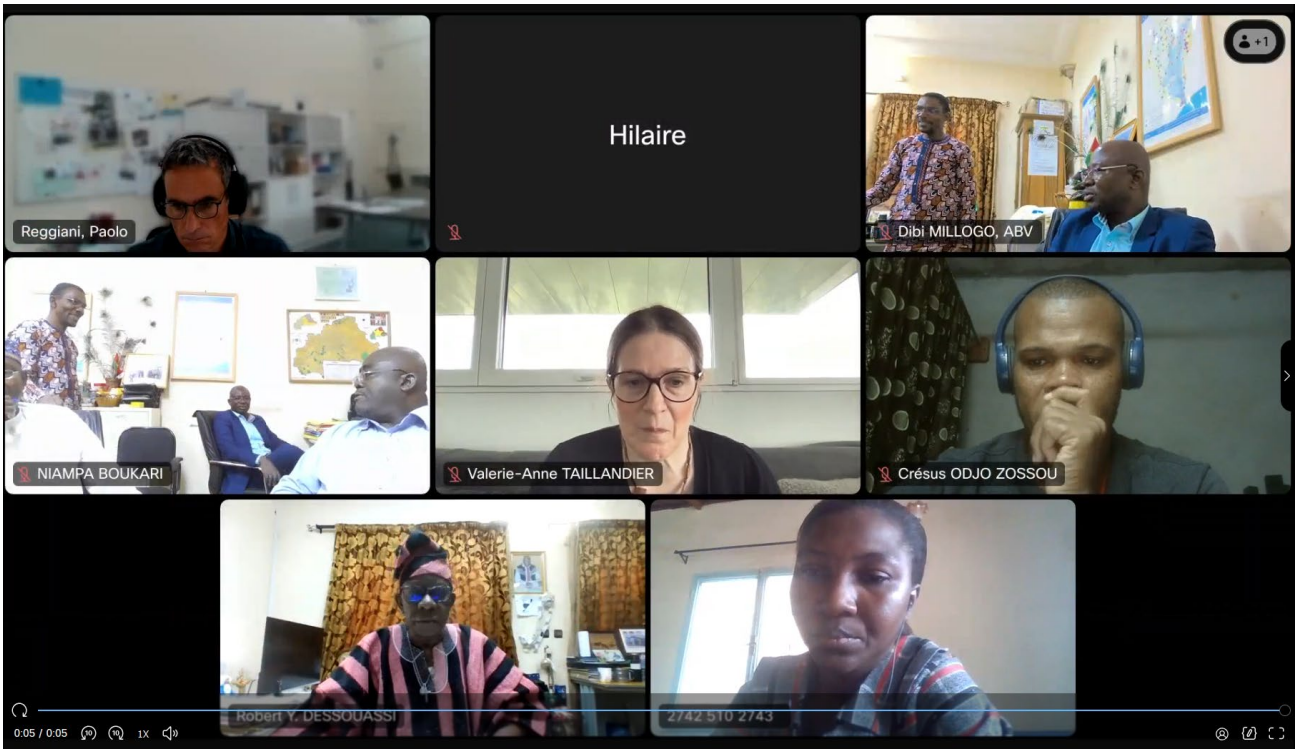


Figure 15: Meeting with GWP-WA and VBA screenshot

8.1 Agenda

The following agenda of the meeting has been prepared and dispatched beforehand to participants:

- Opening of the Meeting and introduction of the consultants.
- Roundtable and introduction of VFDM project participants.
- Presentation of the final evaluation Methodology.
- Discussion of the FE criteria.
- Planning of Field Visits and Interviews.
- Schedule of upcoming project steps.
- Questions and Clarifications.

8.2 Opening of the meeting

International consultant Mr. Reggiani opened the meeting by thanking the participants for their attendance and clarified the meeting's objective: to introduce the team responsible for the final evaluation of the VFDM project. Participants introduced themselves by stating their role and institution. These introductions helped to better understand the various stakeholders involved in the project.

8.3 Methodology

Mr. Reggiani shared a presentation detailing the evaluation methodology. He explained that the approach would be collaborative and participatory, including field visits and interviews with national, regional, and local stakeholders.

Relevant documents and information sources, including those published on the VBA website, will be reviewed. It was further explained that the project will be evaluated following 6 criteria:

1. Project Design and Relevance: Verification of the alignment of project objectives with beneficiaries' needs and partners' priorities.
2. Effectiveness: Measurement of the degree of achievement of objectives across the three levels of intervention: regional, national, and local.
3. Efficiency: Analysis of the use of financial and human resources to achieve the results.
4. Impact: Assessment of the effects of actions taken at all levels.
5. Sustainability: Analysis of the longevity of initiatives beyond the project.
6. Lessons Learned: Identification of best practices developed during the project.

8.4 Planning of field visits and interviews

As a next topic it was discussed how to plan visits to national agencies in the riparian countries as well as visits to rural communities. Execution of the visits requires information of the national focal points through letters of invitation. It was agreed that these letters will be prepared by VBA and GWP-WA, after a more detailed schedule has been provided to VPA and GWP-WA. Such schedule is attached

Concerning specific visits following was agreed on:

- Visits will be organized in the five target countries (Togo, Benin, Burkina Faso, Côte d'Ivoire, Ghana), with particular attention to rural communities.
- No visits are planned for Mali: Mr. Reggiani explained that there will be no field visits to Mali due to security concerns. This decision is supported from the side of IE.
- The methodology to be adopted is based on questionnaires to collect homogeneous and structured data.
- Mr. Reggiani presented the task schedule, introduced the questionnaire and discussed preparatory work. The task schedule in the most updated form is included at the end of this document.

8.5 Field Visits and Scheduling

Start of Visits: Field visits are scheduled to begin in the second half of September.

Visit to Ouagadougou: Ms. Taillandier is scheduled travel to Ouagadougou, Burkina Faso, to visit the VBA and the GWP-WA. She will be assisted by Ms. Ida Benagabou. Mr. Reggiani will participate online to support the team on-site. The visit is scheduled for the second half of September.

Bama pilot site visit: Ms. Ida Benagabou will handle the planning of the visit to the Bama community, a community she previously visited during an earlier evaluation. The visit is scheduled for the second half of September.

Visits to Benin and Togo: Mr. Crésus Odjo Zossou will conduct visits in the pilot communities of Benin and Togo (Daoude). He will also meet with national agencies in Cotonou and Lomé. The visits are scheduled for the second half of September and first half of October.

8.6 Questions and Clarifications: Issues Raised

The following issues and concerns were raised by the GWP-WA and VBA participants. They expressed concerns about the absence of a visit to Mali. Given Mali's active role in the project, it is according to their opinion crucial to also engage Malian stakeholders. If travel to Bamako is problematic, a local consultant could be appointed to gather information and meet with stakeholders. This approach could also be applied to other countries.

Preparatory tasks for the FE:

- A precise schedule is crucial for organizing national-level field visits. This will help effectively coordinate activities, ensure stakeholder availability, and ensure smooth visits.
- Responsibilities: The consulting team will prepare the time schedule, including proposed visit dates and a list of organizations to visit.

Technical Assistance: Facilitation of field visits by GWP-WA technical assistants:

- Role of technical assistants: The GWP-WA technical assistants could facilitate field visits. Their presence is beneficial as it facilitates access to local communities and authorities without influencing the evaluation results. In previous evaluations, their assistance was invaluable in organizing visits and conducting interviews.
- Additional costs: The addition of technical assistants will require a larger budget. We must identify funding sources to cover these expenses. It is suggested to cover limited additional expenses out of the FE budget.
- For the national component, the final evaluation should include a financial analysis to assess the project's efficiency. It should be noted that the mid-term evaluation faced difficulties in accessing financial data; it is therefore crucial to ensure access to financial reports. The WMO has a consolidated financial report that should be available for review.
- Example: It is necessary to evaluate the cost-efficiency of the project. The adaptation fund invested 1.1 million francs in the operational cost of the national component; it is important to assess the cost in relation to the actions undertaken.
- Mr. Reggiani emphasized that the FE will primarily focus on the technical and scientific aspects of the project. The FE is not intended to perform any project financial auditing.
- VBA and GWP-WA asked for the organization of a meeting for the final evaluation report handover. Mr. Reggiani specified that the meeting would be held online to facilitate the participation of all concerned partners, regardless of their location or logistical constraints.

Potential follow-up of the project:

- The national focal point for Burkina Faso would like to know if there will be a follow-up to the VFDM project. It is also important to conduct this final evaluation to identify the successes and areas for improvement of the project, to develop a potential second phase. Moreover, it was mentioned a project proposal had already been prepared at an advanced stage on the same subject, which could be funded with the help of the WMO.

Further actions to be undertaken:

Official information of national focal point on the execution of the FE. VBA and GWP-WA should inform the national focal points of the visits by the FE consultants and support the organization of meetings with national authorities, scientific and technical partners as well as rural communities in the riparian countries. The actions to be undertaken are as follows:

- Prepare the visit schedule and the list of stakeholders to be visited in each target country as soon as possible. These documents will be sent to the VBA, which will be responsible for attaching them to the letters, which the agency will send to stakeholders to inform them about imminent physical or virtual visits for the consultants and support scheduling.
- Discuss the necessary arrangements to potentially engage Malian stakeholders, whereby alternative solutions like online meeting should be considered if physical visits are impossible.
- Ensure that all reports on financial resource allocation necessary for the FE are available to the consultants to facilitate the evaluation of the resource efficiency of the project.
- Mr. Reggiani emphasized that the FE will primarily focus on the technical and scientific aspects of the project. No financial auditing is foreseen by the FE.

The meeting ended at 13.40 CET.

9 Annex C: Meeting with CIMA Foundation

The meeting with CIMA Foundation took place virtually on the 18th of September 2024, 10:00-11:20 CET. The following people were present:

- Anna Mapelli, CIMA Foundation.
- Paolo Reggiani, International Consultant.

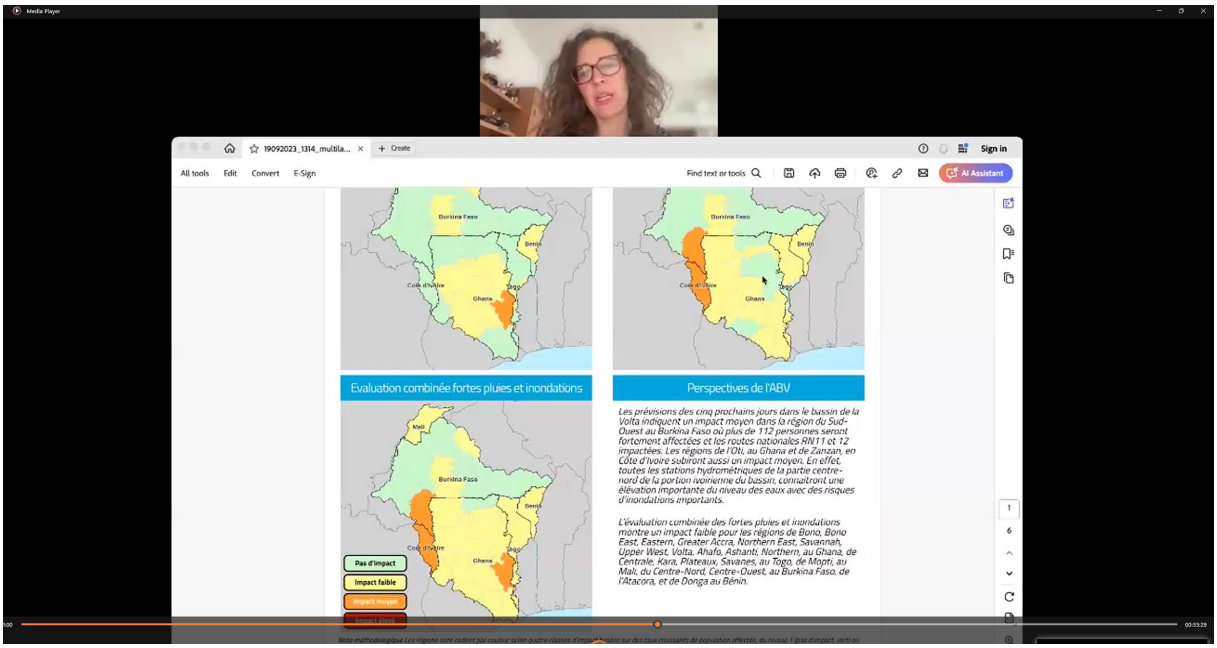


Figure 16: Meeting with Anna Mapelli from CIMA foundation

The interview started with the evaluation of the VoltAlarm EWS. The consultant was given the opportunity to see the user interface of the system through a client terminal. The system is installed on a cloud server, on which CIMA operates the client-server applications for different systems, among which the one of the Civil Protection Agency in Italy. The cloud-server solution has been proposed because of lower operating costs and easier maintainability with respect to installing the systems locally at the agencies.

The IT infrastructure in the Volta basin countries is too weak, and not sufficiently reliable to run a system 24/7 for civil protection purposes. Service contracts with telecommunication companies are also very expensive, leading to high operational costs. The data communication is manly GSM based, as there are weak land-based cable networks across all countries, making this type of communication unreliable. The VoltAlarm system is based on the DEWETRA platform developed by CIMA. DEWETRA is a generic, fully configurable platform with End-to-End flood forecasting and warning service capabilities. The data driving the systems are the global NASA IMERG and the JAXA GISMAP precipitation products at high spatial and temporal resolution. These products are validated and debiased against ground networks by the system.

The VoltAlarm EWS implementation is limited to the basin area. The interest of extending the systems to cover areas of the countries which lie also outside the basin is increasing. For example, the hydrological and meteorological services of Burkina Faso have expressed interest in applying for funding to extend the VoltAlarm System to cover also the remaining part of the county, which is outside the basin. In Burkina Faso VoltAlarm clients have been installed

at ABV, GWP-WA, ECOWAS, WASCAL, the Water Resources as well as the Meteorological departments, the national Civil Protection Agency and the Department of Agriculture.

One factor hampering full operation of the system is the weak hydrological observing network, especially the low number of reliable water level gauging station and the lack of up-to-date rating curves. During the VFDM project parts of the fuds have been dedicated to augment the hydrological observing network by adding flow gauging stations in each of the riparian countries. The procurement process has been activated during the project, but the stations will become fully operational only after the closure of the project.

Ghana is the only country with an own modelling system. The output of this system has been integrated into the DEWETRA platform for the VoltAlarm system. The System also interfaces and allows to visualize flow forecasting results generated by the system implemented by the FANFAR project. FANFAR was coordinated at the AGRHYMET service in Niamey, Niger. The VoltAlarm system produces flow forecasts on an hourly basis, whereas FANFAR operates at daily scale, making it less suitable for predictions in small, fast reacting basins and for forecasting flash flood type events.

Moreover, FANFAR addresses only the flood hazard (water depths, discharges, flow velocities), whereas VoltAlarm also addresses the risk component. This is achieved by overlying hazard maps with risk maps. Risk is dependent on population density and socio-economic vulnerability among others. The impacts are classified according to a scale developed by the Joint Research Centre of the EU. The scale assigns “coping capacity indicators” in the case of floods in a spatially distributed way. The system allows moreover to generate risk maps based on hydrological or administrative boundaries. By indicating the impact of floods, a separation is made between urban areas, pastures and environmental protection sites identified by International Union for the conservation of Nature (IUCN), which was involved technical partner in the VFDM project.

The primary goal of the VoltAlarm EWS is predictions of inundation and intense precipitation events. However, the system is also set up drought early warning. For this purpose it evaluates classical drought indices that serve for drought early warning. These indices are based on the accounting of soil moisture. The following classical indices are estimated in the VoltAlarm systems: Palmer Drought Severity Index (PDSI), Standardized Precipitation Index (SPI), Standardized Precipitation and evaporation Index (SPEI). The drought EWS helps to identify agricultural risks for food security purposes with specific lead times.

The dissemination of forecasts issued by the VoltAlarm system occur by means of bulletins. The bulletins are published by the Volta Basin Authority (VBA/ABV) and is co-edited by the hydrometeorological services of individual countries. An important achievement of the VFDM project is that homogeneous bulletins are issued for the entire basin and all 6 countries. The bulletin has been developed in a participative approach involving all. The bulletin is based on spatial maps indicating hazard and risks and is therefore easy to read.

Lessons learned: the development of the VoltAlarm platform offered the opportunity for agencies of the Volta basin countries to meet regularly in technical and organization workshops. Data exchange has been largely facilitated and enhanced through the project. The system has a bridging function between agencies of the riparian countries. One of the main difficulties encountered in the implementation of the system was the bilingual setting in the Volta basin. The participative approach adopted in the development of the system has actively contributed to reducing preexisting barriers and has led to a platform that is considered user friendly by all participants.

Sustainability: the system maintenance is currently covered for 3 years after project end. Currently there is interest of upscaling of system to cover entire countries, including areas also outside the Volta basin boundaries. Funds have been applied to upscale and extend VoltAlarm.

The meeting ended at 11.20 UTC

10 Annex D: Meeting with International Union for Conservation of Nature (IUCN)

The meeting with IUCN, took place remotely on the 20nd of September 2024, 11:30-12:15 CET. The following people were present:

- Veronica Ruiz-Garcia
- Paolo Reggiani, International Consultant.

Ms. Ruiz explained that she was mainly involved in the VFDM project during the first phase, in which the community work was designed and planned. She engaged in common activities between IUCN, K&I (former CERFE) and CIMA. Ms Ruiz found that the interaction between these organizations at the managerial level was very good. She also indicated that institutional work and cooperation with national and regional bodies was effective, especially with GWP-WA and VBA and other regional entities.

The focus on the VFDM project contribution by IUCN was mainly conceptual project implementation design of the three project components as well as the organization of training and institutional awareness raising workshops at the regional level across the Volta basin. Efforts were centred around topics like ecosystem services analysis, ecosystem conservation and nature-based solutions. IUCNs contribution has led to spinoffs, as the relevance of nature conservation in the face of progressive desertification and land degradation in West Africa and the sub-Sahara countries has been largely recognized. Large part of the land in the Volta Basin is degraded due to overgrazing, unsuitable and unsustainable agricultural practices, soil pollution through pesticide use and the erosion of fertile soils. The restoration of degraded lands is in the view of Ms Ruiz at least as important for effective drought mitigation as the introduction of advanced technical flood and drought warning systems and solutions, which do not benefit the rural communities in the same way as they serve national or regional authorities. In contrast to national authorities, rural communities are well aware of the problems mentioned above and remain key to implementing mitigating actions in the face of flood and drought.

As a sign of continuity of the work performed in the VFDM project, Ms Ruiz mentioned the concept note proposed by Togo with the aim to raise funds through the Green Climate Fund (GCF). The requested funds are in the order of 40 million $US and should be used for land protection and ecosystem conservation. In Burkina Faso productive dialogues took place at the institutional level to address similar issues as in Togo. VBA and GWP-WA also applied for further IUCN funding to counteract land degradation. These initiatives indicate that the VFDM project has led to a momentum well beyond the project duration.

Concerning lack of gender balance in the project Ms. Ruiz pointed out that the lower presence of women was due to an insufficient number of women with MINT education, that could take on the respective jobs in the national or regional bodies. Despite efforts being made across most of the Volta basin countries to increase the number of female involvements, the overall number remains behind expectations.

In the context of lesson learned, Ms Ruiz mentioned the support of further showcasing, which did not happen sufficiently during the project. She also criticized the low presence of WMO in the region during the project, which she considers necessary due to the cultural setting. She also found that in her opinion the interaction between the three main project components, ((i)risk prevention, (ii) concrete adaptation, (iii) stakeholder engagement & governance could have been stronger.

At another note, she criticized, that the project looked at flood and drought in the Volta basin mainly as hydro-meteorological hazards and as a result put too much weight on technical solutions like the development of the VoltAlarm system, whereas more importance could have been given to the development of initiatives at the level of rural communities to counteract flood and drought impacts by strengthening the resilience of affected societies. In this regard she views the project as unbalanced.

She nevertheless explicitly pointed out, that the existence and operation of the VoltAlarm system constitutes an important reinforcement of the warning and dissemination infrastructure against hydrometeorological threats, that was not available in this form across the region before. The potential of replicating this system beyond the region is large.

Finally, Ms Ruiz observed that while the cooperation between the project leadership at WMO, the Associated Programme on Flood management and IUCN could have been better, the cooperation with the parallel Integrated Drought Management Programme (IDMP) is ongoing and strong.

Concerning lessons learned, Ms Ruiz argued that for this type of project to be effective, the cultural environment needs to be understood and the local cultural environment fully embraced. At the institutional level, the upscaling of the national to the regional and international level have been successful and should be visible. What has been achieved at the national level should be showcased at regional, international and global level.

The meeting ended at 12.15 CET.

11 Annex E: Meeting with VBA, GWP-WA and ECOWAS

The joint meeting with representatives of VBA, GWP-WA and ECOWAS took place on the 23nd of September 2024, 16:30-17:00 CET. The following people were present:

- Robert Dessouassi, VBA
- Maxime Teblekou, VBA
- Rafatou Fofana, VBA
- Mushiira H. Farida Kone, VBA
- Armand Houanye, GWP-WA
- Kouakou Alexis Kouassi, ECOWAS
- Janvier Bazoum, ECOWAS
- Niamp Boukari, VBA
- Jean Abdias Compaore, VBA
- Ouya, Jean-Marie Durel, VBA
- Paolo Reggiani, International Consultant. (online)
- Valérie -Anne Taillandier, International Consultant. (online)
- Crésus Odjo (online)
- Ida Benagabou (on site)

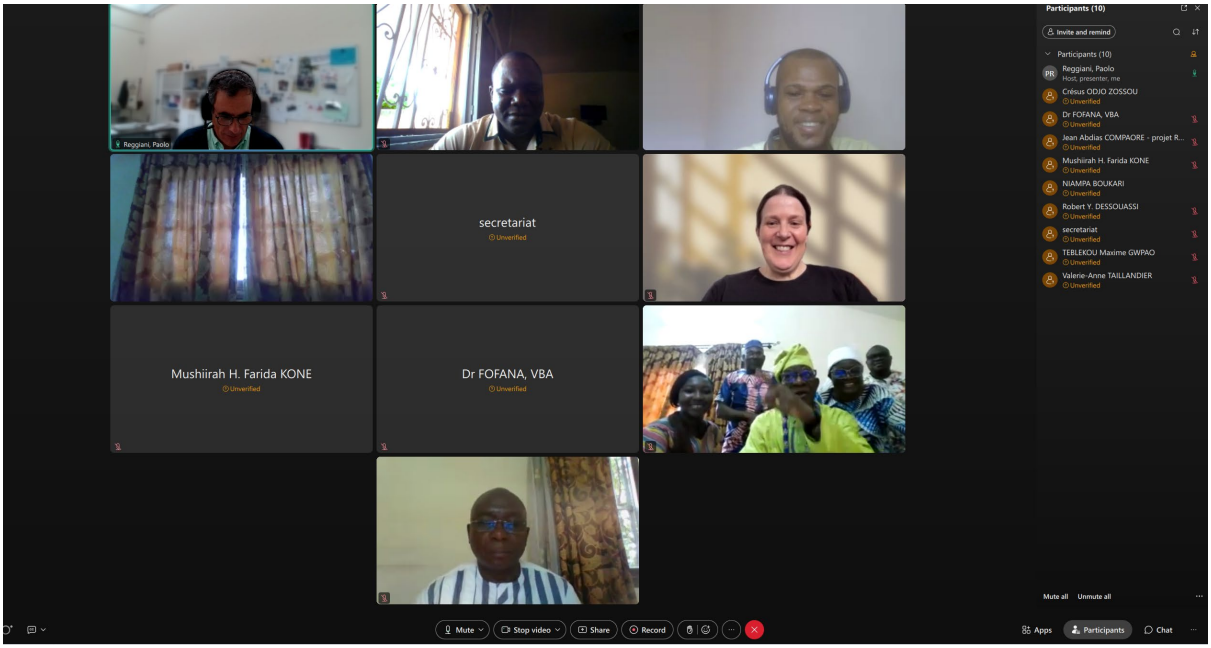


Figure 17: Meeting with the Volta Basin Authority, GWP West Africa and ECOWAS

The international consultant Mr. Reggiani opened the meeting by underlining the major challenge of this final evaluation of the VFDM project, namely, to assess among others its effectiveness and identify areas for potential improvement and areas of concern. To this end, the project is to be evaluated on the basis of 6 evaluation criteria. This approach will make it possible to assess the project's performance different perspectives.

11.1 Presentation by VBA

Next, Mr Niampa Bukary (VBA) gave a presentation prepared by the VBA and GWP-WA, in which they present the main achievements of the project. The presentation was structured in such a way as to address the six evaluation criteria. The main messages of the presentation are reported below:

VBA Presentation: Project design and relevance

Needs assessment: An initial assessment identified capacity-building needs in the six countries of the river basin, namely Burkina Faso, Ghana, Mali, Niger, Benin and Côte d'Ivoire. This assessment revealed a variety of water management issues, including drought and flooding.

Differences between countries: For example, Ghana (downstream) faces different challenges to Burkina Faso (upstream). The impact of water releases from the Bagre dam in Burkina Faso affects water levels in the river, requiring specific solutions.

Project objectives: The project aimed at setting up an early warning system to prevent floods and droughts in the river basin, particularly targeting vulnerable areas such as the Ouagadougou region in Burkina Faso and the Tamale region in Ghana. This goal was achieved, and an operational system is in place.

VBA Presentation: Efficiency of implementation

Increased participation in training: The project succeeded in training 80 technicians and 200 young professionals and students in total, exceeding the initial target of 75 technicians. This included young women and men from local universities, notably the University of Ouagadougou and the University of Ghana.

Concrete interventions in the field: The training courses were put into practice through workshops in targeted regions such as Bobo-Dioulasso and Accra, where participants developed local resource management projects.

Stakeholder collaboration: National authorities in each country, such as the Ministry of Water in Mali and the Ministry of Agriculture in Benin, played a crucial role in validating projects and engaging communities.

VBA Presentation: Efficiency of resource allocation

Human resources management: Participation figures have been regularly updated. For example, at a meeting in Niamey, it was noted that 61 technicians had been recruited, with an adjustment to be made to reflect this reality.

Optimization of indicators: Performance indicators, such as the number of participants trained (80 technicians and 200 young people), have been adjusted to ensure that financial resources (total budget of 500,000 USD) are used optimally.

Collaboration to further refine results: It was suggested that the consultants, meeting in Cotonou, work together to refine the results and ensure that the final documents are accurate before they are circulated.

VBA Presentation: Impact

Strengthening resource management: The project has facilitated regional exchanges, with workshops held in Dakar and Lomé, strengthening regional dialogue on water resource management.

Valuing local knowledge: Nature-based solutions, such as reforestation and water management projects, have been implemented, particularly in the regions of Kaya (Burkina Faso) and Kpalimé (Togo), integrating traditional knowledge.

Concrete projects validated: Specific projects, such as the establishment of an early warning network, have been validated by the authorities in places like Sikasso (Mali) and Grand-Popo (Benin), demonstrating the direct impact on populations.

VBA Presentation: Sustainability

Funding and continuity: Initiatives have been identified to ensure the sustainability of actions, including partnerships with organizations such as UNESCO and the Green Climate Fund for a projected budget of 2 million USD over the next five years.

Sustainable systems: The early warning system set up will be regularly evaluated and adjusted to ensure its effectiveness in the most vulnerable regions, such as the areas around Kongoussi and Akwapim.

Institutional strengthening: Training was also provided to local authorities in cities such as Mopti and Kumasi, enhancing their ability to manage water crises in a sustainable manner.

VBA Presentation: Lessons learned

Country-specific approach: The main lesson learned is that countries have different needs. For example, Mali and Benin have different water management priorities, requiring specific approaches adapted to each context.

Importance of collaboration: Cooperation between countries and local organizations, such as local NGOs in Benin and Togo, is essential to the success of the project and must be strengthened in the future.

Flexibility in management: The project has shown that flexibility in the management of resources and indicators is crucial. For example, adjustments were necessary following unforeseen climatic events, such as the floods of 2023 in the Bobo-Dioulasso region.

In conclusion, the project has been designed to meet the specific needs of each country, has shown notable effectiveness through its training and concrete actions, and has had a lasting impact on the region. The lessons learned underline the importance of a differentiated approach and close collaboration to ensure the future success of initiatives.

VBA Presentation: Recommended actions for extension or future programs

- Strengthen communication between local and national levels to ensure effective dissemination of alerts.
- Continue to monitor and support the installation of hydro stations in the areas concerned.
- Continue training and support for local flood management committees.
- Strengthen the collection and sharing of hydrometeorological data.
- Develop action plans to capitalize on the lessons learned from the workshops.
- Continue awareness-raising: Continue community information and awareness-raising campaigns.
- Institutional Strengthening: Extend institutional capacities to other affected regions.
- Sustainable partnerships: Building long-term partnerships for integrated water resource management.

11.2 Discussion: Questions & answers

After the presentation by VBA a Q&A session was initiated by the international consultant Mr. Reggiani. The most important points of the Q&A session are listed below and organized following the 6 evaluation criteria.

Q&A Project design and relevance

Mr. Reggiani addressed the importance of collaboration between the six countries to effectively manage water resources, while taking the specific geographical and climatic features of each country into account.

It was recognized by all participants that the project contributes to the overall donor objective, notably by facilitating the management of shared resources, improving early warning systems, and strengthening collaboration between basin countries.

Country-specific needs

In reply to a question by Mr. Reggiani on the relative importance of flood and drought, a discussion was held on the differences between flood and drought management needs. It was voiced by the participants that:

- The needs of downstream countries (e.g. Ghana) differ from those of upstream countries (e.g. Burkina Faso) due to the problems associated with dam releases and transboundary water management.
- Specific needs assessments were carried out at the start of the project, enabling solutions to be adapted to each context.

Q&A Evaluation of contribution to donor objectives

Data centralization and warning systems:

- Significant progress has been made in the exchange of data and information between countries, made possible by the hosting of data on a centralized cloud server.
- Participants confirmed that the centralization of the VoltAlarm system, hosted on a cloud server, is beneficial. It enables easier access to data for all countries, even in the event of local infrastructure problems (e.g.: power cuts or internet access problems). This has reduced maintenance costs and facilitated the rapid exchange of information critical to risk management.

Q&A Collaboration with other parallel projects (FANFAR, REWARD)

- Close collaboration has been established with the FANFAR project to integrate its data into the VoltAlarm system.
- The REWARD project was also discussed, providing an essential complement to the drought component, which was less developed in the VoltAlarm project. REWARD will focus on specific drought needs, particularly in the most vulnerable areas.
- Extending and sustaining skills.
- Participants stressed the importance of extending the project's achievements, notably by developing new initiatives and seeking new funding. It was noted that some countries, such as Benin, have expressed interest in extending the VoltAlarm system on a national scale, even to areas outside the Volta basin.

Q&A Impacts

Positive impacts:

- Infrastructure installed: The project has enabled the installation of weather stations in several pilot sites, improving the monitoring of weather and climate conditions. These stations are now integrated into national resource management systems.
- Local capacity building: The training courses organized as part of the project have helped to develop local skills, particularly in flood and drought management.
- Female participation: The project has succeeded in including a significant percentage of women in resource management committees, achieving a participation rate of 30 %. It should be noted that ABV has a gender charter that requires gender to be taken into account in the implementation of all their projects. The nature-based solution involved around fifty women. Some bushfire management committees already existed. These have been reconfigured to include women substantially. This is particularly the case in Tabota Community in Benin and in the Sangabili Community, Côte d'Ivoire, for example.

- Improved visibility for ABV: The project has enabled ABV to go further in implementing its mandate. This is in line with the water charter. As a result, the various partners and the local population have become aware of ABV's existence and importance.
- Recourse to nature-based solutions: States have been involved in the consideration of nature-based solutions that rely on local strategies to cope with flood and drought situations.

Low or negative impacts:

- Lack of direct investment: Although management models have been put in place, the investment needed to extend infrastructure to areas not covered is still insufficient.
- Infrastructure maintenance: The maintenance of infrastructure, particularly weather stations, has not yet been guaranteed over the long term, which poses a risk to their future sustainability.
-

Q&A Efficient allocation of resources

- Financial limitations: Some of the funds were returned to the parent organization, as certain investments initially planned were not carried out.
- Equipment maintenance issues: The absence of structured maintenance plans for installed infrastructures could undermine the sustainability of the results obtained.
- Community expectations: Local communities expected more direct economic benefits from the interventions, such as short-term income generation from infrastructure operations.
-

Q&A Sustainability

- National implementation: The meteorological stations installed have been integrated into national systems, guaranteeing their management by the relevant authorities.
- Ongoing training: Training for local communities has been stepped up to ensure the continuity of climate risk management activities, even after the end of the project.
- Collaboration with the authorities: Agreements with local authorities guarantee the monitoring and maintenance of infrastructures, as well as the transfer of skills for sustainable management.

To ensure the sustainability of the project's achievements, the following actions were recommended:

- Strengthen infrastructure monitoring and maintenance mechanisms.
- Increase investment in infrastructure in non-covered areas.
- Create funding mechanisms to support ongoing equipment maintenance.
- Encourage more active participation by young people on local committees.

Q&A Lessons learned and best practices

Participants shared several best practices developed during the project's implementation:

- Inter-institutional collaboration: Promotes rapid exchange of information and effective decision-making.
- Recourse to local NGOs: Allows for greater community involvement, as these NGOs have in-depth knowledge of the terrain.
- Community training: Trained local communities are able to respond quickly to crises such as flooding.
- Involvement of local authorities: Builds local confidence and facilitates implementation of activities.
- Capacity-building for local institutions: A major asset for the sustainability of the project.
- Problems linked to the migration of young technicians to the private sector: Some young people trained under the project leave public institutions to join the private sector, which may jeopardize the continuity of the project.

Q&A Concerns

- Consideration of community expectations: Several community expectations, such as support for development, integrated soil fertility management and access to improved seeds, should also be considered, in addition to the capacity-building provided to communities.
- Sustainability of achievements: The need to maintain the infrastructures and skills developed, even after the end of the project, was raised. Financial and technical support is essential to guarantee the sustainability of our actions.
- Financial management: Some local partners mentioned a lack of transparency in the project's financial management. They insisted on the need to improve communication and transparency around the use of funds.
- WMO's lack of flexibility: Several participants noted that WMO could be more flexible in its methodology for implementing activities, to enable local partners to adapt certain actions to the realities on the ground.
- Insufficient local participation: Some local stakeholders expressed their frustration at not being sufficiently informed or involved in decision-making concerning certain technical aspects of the project, particularly regarding the choice of equipment.
- Capacity-building for administrative staff: The staff of the project's implementing partners should also be trained in the donor's procedures to avoid no-objection notices.

Q&A Suggestions for future actions

- Project extension: It has been proposed to launch a second phase of the project to extend activities to other vulnerable areas that have not yet benefited from interventions.
- Strengthening transparency and communication: Participants recommended improving transparency in the management of financial resources and communication between WMO and local partners.
- Support for young professionals: Find ways to retain young technicians trained in public institutions to ensure continuity in risk management.
-

Q&A Conclusion

The meeting provided an opportunity to get a view of VBA and GWP-WA on the project's achievements, share best practices and raise important concerns for the future. Participants stressed the importance of consolidating achievements and maintaining efforts in terms of training, equipment and coordination between the various players. It was agreed that the next steps would be to submit proposals for a possible second phase of the project.

12 Annex F: Meeting with WASCAL

The meeting with WASCAL took place on the 23nd of September 2024, 16:30-17:00 CET. The following people were present:

- Seyni Salack, WASCAL organization
- Paolo Reggiani, International Consultant. (online)
- Valérie -Anne Taillandier, International Consultant. (online)
- Crésus Odjo (online)
- Ida Benagabou (on site)
-

Figure 18: Meeting with WASCAL online

The meeting began with a welcome for participants, followed by a short presentation of the meeting's objectives.

12.1 Project relevance

Mr. Salak stressed that the relevance of the project was undeniable, given the growing importance of extreme events in the region. The project has filled an essential need in terms of climate risk reduction, notably by introducing a multi-hazard system to manage floods and droughts.

WASCAL's decisive role in implementing the VFDM project:

As a research organization involved in the design of the project and consolidating skills in risk and disaster management at regional level, WASCAL was asked to clarify the spirit of the project, and the expectations and responsibilities of stakeholders who were facing conflicts of interest.

Strengths:

- The project has established mechanisms for collaboration between the various national and regional stakeholders, such as hydrological services, civil protection and NGOs.
- Considering the risks associated with floods and droughts has been timely and necessary, strengthening risk management in a vulnerable region.

12.2 Effectiveness of implementation:

On the subject of effectiveness, Mr. Salak praised the approach adopted by the project to include all key stakeholders, both at national and regional level. Regular meetings and the setting up of observation stations have generated valuable data for flood monitoring.

- Involving the relevant sectors was a wise decision, as it enabled comprehensive and effective management of all aspects of flooding and drought (hazard and impact).

Limitations:

- Efficiency could be improved in the drought monitoring phase, which has not been as well developed as the flood monitoring phase.
- Challenges remain in standardizing data and sharing it between countries.
- The difficulty of sharing data stems from legal instruments or their interpretation, which make data sharing conditional on financial compensation for a category of applicants (private structures).
- The project deplores the low level of involvement of senior ministerial administrative authorities and political decision-makers in driving forward a strong political commitment. This responsibility has been relegated to subordinate bodies with a limited decision-making mandate.
- Poor consideration of drought risks in the project, which was tackled late due to a lack of data on hazard monitoring mechanisms. Countries unable to provide historical data for integration into the VoltAlarm tool. Only information on impact data could be produced.
- Lack of investment to support populations in need in the event of natural disasters.

12.3 Efficiency of resource allocation

Mr. Salak noted that project resources have been used efficiently to install early warning systems and organize training workshops. However, it was suggested that the direct impact on local populations remains limited, due to the lack of investment in infrastructure such as boreholes or water retention systems, and the identification of Safe zones to which populations could move in the event of a crisis.

Proposals for improving efficiency:

- Introduce an investment component to finance basic infrastructure to meet the needs of populations affected by climatic hazards.
- Strengthen data-sharing protocols between countries.

12.4 Project impact

Mr. Salak mentioned that it was still too early to fully measure the impact of the project. However, the initial results are positive, particularly in terms of improved communication between national and regional stakeholders.

First impacts observed:

- Countries have begun to exchange crucial data, although this process is still under development.
- A regular flood and drought bulletin is now issued, contributing to better anticipation of extreme climatic events.

12.5 Sustainability

The system that has been put in place seems to have a certain sustainability, thanks to the involvement of local stakeholders who contribute to the production of the climate bulletin.

Example: the production of a newsletter after the project's closing date could be interpreted as the sustainability of such a result.

However, long-term sustainability will depend on the ability of regional institutions, such as the ABV (Volta Basin Authority), to maintain the system and ensure ongoing data sharing.

Recommendations for strengthening sustainability:

- Ensure greater involvement of the VBA in the management of the early warning system.
- Set up specific funding to guarantee infrastructure maintenance.
- Consider in the design of climate change adaptation projects a balance of softs actions (developed during the project) and hard measures (investment to help communities cope with the impacts of climatic events) as well as the deployment of expertise sufficiently mobilized to obtain effective results.

12.6 Lessons learned:

Several important lessons have been learned from the implementation of the project:

- The need for an investment fund to complement monitoring and warning actions by setting up concrete infrastructure on the ground, such as boreholes or water reservoirs, disaster reception centers.
- The importance of standardizing and harmonizing drought data collection methods, using indices such as SPI (Standardized Precipitation Index) or SPEI (Standardized Precipitation Evapotranspiration Index).
- Improving stakeholders' knowledge of the concept of data and the importance of data sharing.

12.7 Questions and suggestions from participants:

- One meeting participant raised the issue of creating "refuge zones" for populations in the event of flooding. Mr. Salak noted that this aspect had not yet been sufficiently addressed in the current project.
- Another question concerned the balance between efforts to manage floods and droughts. Mr. Salak acknowledged that drought was less closely monitored due to the lack of reliable historical data and adequate monitoring systems.
- For future projects, Mr. Salak recommended maximizing data collection devices and making them conditional on data sharing. To this end, we need to increase the number of sensors and diversify them: hydro sensors, with memoranda of understanding for the free sharing of information without them being subject to various conditions.
- A final point concerned the direct involvement of the ministries linked to the initiative, with representation by a designated member of these ministries.

12.8 Conclusion

The meeting provided an opportunity for a constructive assessment of the project, highlighting successes and challenges for the future. The suggestions made by Mr. Salak and the other participant couldß serve as a basis for a potential follow-up phase of the project, which should include more concrete investments to improve the resilience of local populations.

13 Annex G: Meeting with Department of Agriculture of Burkina Faso

The meeting with WASCAL took place on the 24nd of September 2024, 10:00-11:00 CET. The following people were present:

- Senghoré Aristide (Head of the Early Warning System Coordination Department, Ministry of Agriculture)
- Saron Boubacar (Early Warning System Coordination Officer, Ministry of Agriculture)
- Paolo Reggiani, International Consultant. (online)
- Valérie-Anne Taillandier, International Consultant. (Online)
- Crésus Odjo (online)
- Ida Benagabou (on site)

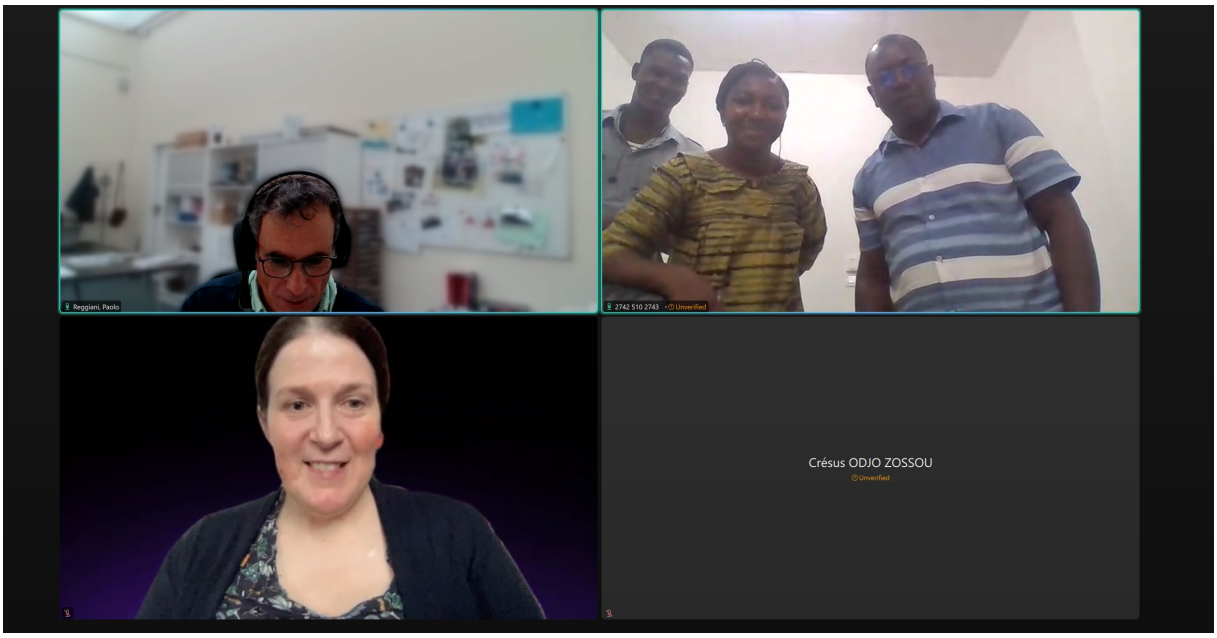


Figure 19: Meeting with the Department of Agriculture, Burkina Faso, online and personal presence.

The meeting begins with general round of introductions of the stakeholders. Mr. Reggiani, introduces the main objective of the meeting, namely gathering feedback on the implementation of the VFDM project, in particular concerning flood and drought management, and to assess the results obtained at different levels: regional, national and community.

The importance of this evaluation in reinforcing the effectiveness of future actions is reiterated and the six evaluation criteria to be applied during the evaluation explained.

13.1 Project relevance

Mr. Senghoré Aristide points out that flood and drought are major challenges for food security and the rural economy in an agricultural context. These hazards have a major impact on agricultural production results. The VFDM initiative is therefore particularly relevant, as it responds to real needs in the agricultural sector.

He also mentions the importance of early warning to anticipate these phenomena and protect farmers.

13.2 Efficiency of Implementation

The participatory method used, adapted to the context of each country in the Volta Basin, is commended. The integration of national and local stakeholders has enabled better management of the risks specific to each region.

However, Senghoré Aristide points out that although simulation exercises for flood management have been successfully carried out, the issue of drought has not been fully covered. He stresses that there remains a need for reinforced monitoring in this area.

The development and adaptation of the VoltAlarm tool for drought monitoring is considered a positive contribution of the project.

13.3 Efficiency of resource allocation

Although resource allocation efficiency in the VFDM project did not directly concern the Ministry of Agriculture, it is acknowledged that efforts have been made to provide local authorities with equipment, which has improved their ability to manage risks.

13.4 Impact

The project has enabled capacity-building at local level, particularly in communes such as Pà and Bama in Burkina Faso. These local authorities have, as a result of VFDM been able to improve their management of natural disasters.

The mapping of areas at risk of flooding is also seen as an important contribution, as it provides crucial information for early warning systems.

13.5 Sustainability

The sustainability of the project is a recurring concern. Aristide stresses the importance of maintaining the actions undertaken, particularly in monitoring agricultural activities.

He notes, however, that flood management has not sufficiently included the Ministry of Agriculture, even though it is a key player in the analysis of impacts on agricultural production.

13.6 Lessons learned

The main lesson learned was the importance of the participatory approach, which involved both government departments and local communities. This approach empowered local stakeholders in flood and drought risk management.

The automated distribution tool for the LTP (Local Transition Plan) and the collaborative platform were also praised for their innovation and usefulness in risk management.

Participants agreed that the VFDM project had provided innovative and useful solutions to climate risk management in the Volta basin. However, improvements are still needed, particularly regarding drought, and greater involvement of agricultural services in flood management is desirable.

13.7 Further issues raised on technical aspects

The tool developed for risk management has evolved positively, thanks to feedback from consultants such as the CIMA Foundation, which has developed the VoltAlarm system. It now enables a more refined risk analysis, integrating flood and drought phenomena, but challenges remain regarding its large-scale deployment. It was noted that drought and flooding are not dissociated phenomena in this context. Drought can affect vast areas, while floods, although more localized, can cause significant damage.

Agricultural sector:

As far as the impact on agriculture is concerned, it's difficult to determine which of the two hazards, flood and drought, has the greatest impact, as this varies from one season to the next. For example, in 2023, drought affected a larger area, but in 2022 it was flooding.

The Ministry of Agriculture has asked for greater involvement in future flood and drought projects, stressing the importance of their contribution to a correct assessment of agricultural losses.

Community participation and gender:

Another part of the meeting focused on the impact of the training and equipment provided to communities. It was noted that communities, although equipped and trained to better prepare against floods, need to strengthen their risk management capacity. Local authorities play a key role, but challenges remain in terms of technical skills.

On the question of gender, it was emphasized that vulnerable groups, such as women, children, the elderly and the disabled have been considered in the project, with strong participation and special efforts to include them in risk management actions.

13.8 Conclusion

The participants expressed an overall positive assessment, while identifying areas for improvement, particularly in terms of sectoral participation and long-term human resources management. Capacity building and the inclusion of vulnerable groups are also key to the success of future projects.

Recommendations include the need to ensure that training courses are followed by real feedback, even if financial and human resources are limited, to ensure effective knowledge transmission.

14 Annex H: Meeting with Department of Civil Protection of Burkina Faso

The meeting with the department of Civil protection took place on the 24th of September 2024, 11.30:00-12:00 CET. The following people were present:

- Nama Bapi, Director of the Department of Civil Protection
- Paolo Reggiani, International Consultant (online).
- Valérie-Anne Taillandier, International Consultant (online).
- Crésus Odjo (online)
- Ida Benagabou (on site)

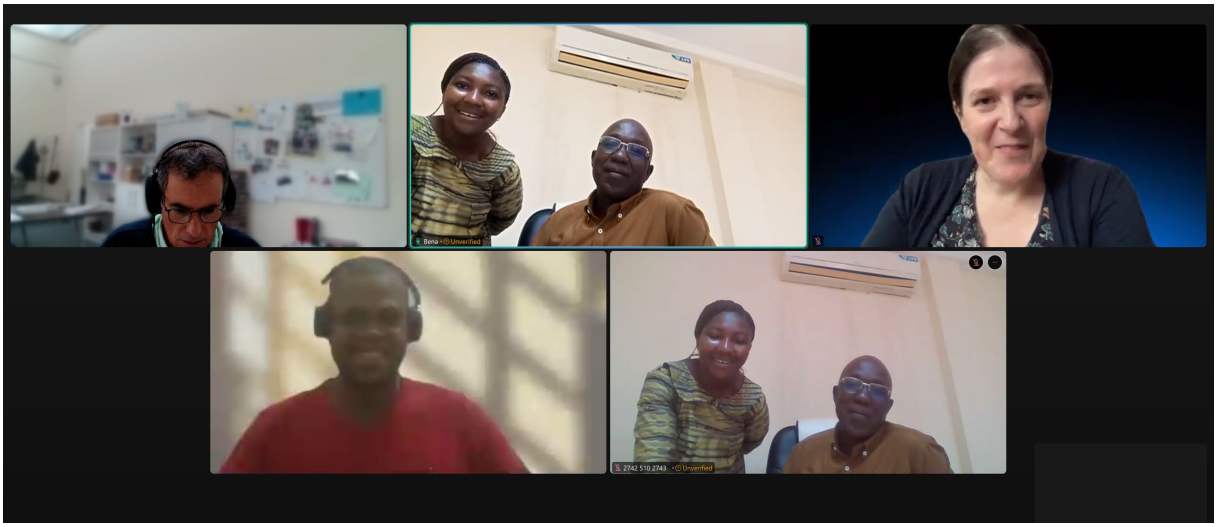


Figure 20: Meeting with the Department of Civil Protection, Burkina Faso, online and personal presence.

14.1 Introduction

Lead consultant Mr. Reggiani opened the meeting by introducing himself as lead consultant for the final evaluation of the VFDM project. He mentioned that he had hired three additional consultants. The team is on site to examine the engagement of local stakeholders in the project, which aims to increase people's resilience to flood and drought risks in the Volta Basin.

Mr. Reggiani then took the floor to explain the structure of the assessment. Next the Director General of the civil protection introduced the activities of the Directorate General of Civil Protection (DGPC)

The head of the DGPC's Plans and Operations Department presented the DGPC's role in implementing the VFDM project. He explained that the DGPC is responsible for drawing up emergency plans, raising public awareness and coordinating responses to natural disasters.

For the VFDM project, the DGPC was tasked with organizing flood simulation exercises in three pilot sites: Bagré, Bama and Eredou. The aim of these exercises was to prepare local players, such as the defence and security forces, the ministries of health and agriculture, and the Red Cross, to respond effectively in the event of a crisis.

14.2 Preparatory phase in the VFDM project

The DGPC started their activities in the VFDM project by carrying out preparatory missions **to** each of the three selected pilot sites. Each mission was aimed at informing local authorities

and populations of the objectives of the simulation exercises and explaining the importance of such preparation. These meetings raised local authorities' awareness of the risks of flooding and drought, and provided them with advice on how to react in the event of a crisis.

Execution of emergency exercises

The simulation exercises were carried out in two phases:

1. Tabletop exercise: Each player involved was able to understand his or her role in the event of a crisis. Coordination work was carried out to ensure that each participant, whether from the health, security or defence forces, knew what actions to take.
2. Field exercise: Full-scale simulations were organized to test evacuation and flood management capabilities. Emphasis was placed on evacuating people living near dams, who are particularly vulnerable during emergency gate openings.

14.3 Evaluation of results

The head of the DGPC department said that these exercises had a positive impact on both the population and local players. Residents gained a better understanding of the risks associated with flooding and learned how to evacuate quickly in the event of an emergency. In addition, the various stakeholders (security forces, fire departments, ministries) were able to strengthen their operational capacities in crisis situations. Strengthened cohesion between the various agencies was also highlighted as an important result.

Lessons learned

- Insufficient preparation time: The DGPC representative indicated that the preparation time for exercises could have been extended to enable better coordination between the various players. He suggested that six months would have enabled stakeholders to become more familiar with the contingency plans.
- Desired international exercise: It was also suggested that DGPC teams could take part in similar exercises in other countries (Mali or Ghana, for example) to enrich their experience and observe the methods used elsewhere.

The VFDM project has strengthened the resilience of local populations to the risk of flooding, while enhancing the operational capabilities of the players involved. However, adjustments in preparation times and international exchanges between Volta riparian countries could improve the management of future crises.

Emergency Management: Floods, Drought and Gender Mainstreaming in Civil Protection Actions.

Detailed discussion of emergency management, particularly in relation to floods, drought and gender mainstreaming in civil protection actions. Here is a summary of the key points discussed:

14.4 Emergency Management

Management plans :

- Actors at different levels (municipal, provincial, regional, national) need to be trained and informed of their roles in the event of an emergency.
- Regular drills, such as red plans, are organized to prepare responders.

Resources and logistics :

- Implementing exercises and plans requires significant resources, which is a challenge.

- Raising people's awareness is essential if they are to understand the importance of these simulations.
- Although less frequent than floods, drought is a problem that needs to be addressed. Measures are in place to provide water to affected populations.
- Drought severely affects livelihoods, particularly agriculture and livestock breeding, which can lead to serious human crises, including suicides.

14.5 Gender mainstreaming

Awareness actions:

- Efforts are being made to integrate the gender issue into interventions, in particular by taking into account the specific needs of women, children and people with disabilities.
- First-aid training is provided, especially for women and children, to enable them to take action in emergency situations.

Response and priorities:

- In the event of an emergency, interventions are adapted according to the vulnerable groups present (pregnant women, children, etc.), and priorities are established for their evacuation and assistance.

Community awareness:

- Awareness programs are set up to educate communities in first aid and emergency management.

14.6 Conclusion

The final evaluation meeting of the VFDM project highlighted valuable lessons on emergency management in the face of climatic hazards, particularly floods and drought. It is clear that preparing populations and raising their awareness are crucial elements in building their resilience. Gender mainstreaming is also essential to ensure that the specific needs of vulnerable groups are taken into account, thereby optimizing the effectiveness of the actions undertaken.

Logistical challenges and resource requirements, while significant, should not hamper efforts to improve crisis response. Adjustments, such as longer preparation periods and exchanges of experience with other countries, can contribute to better coordination and more effective interventions. By strengthening the capacities of local players and promoting a collaborative approach, we can create a more robust framework for dealing with future crises. This will not only protect populations but also build a more resilient society in the face of climate challenges.

15 Annex I: Meeting with Department of Water Resources of Burkina Faso

The meeting with Department of Water Resources took place on the 24nd of September 2024, 14:00-15:00 CET. The following people were present:

- Zongo Gira, Director General of Water Resources, Head of Department
- Paolo Reggiani, International Consultant. (online)
- Valérie-Anne Taillandier, International Consultant. (online)
- Crésus Odjo (online)
- Ida Benagabou (on site)

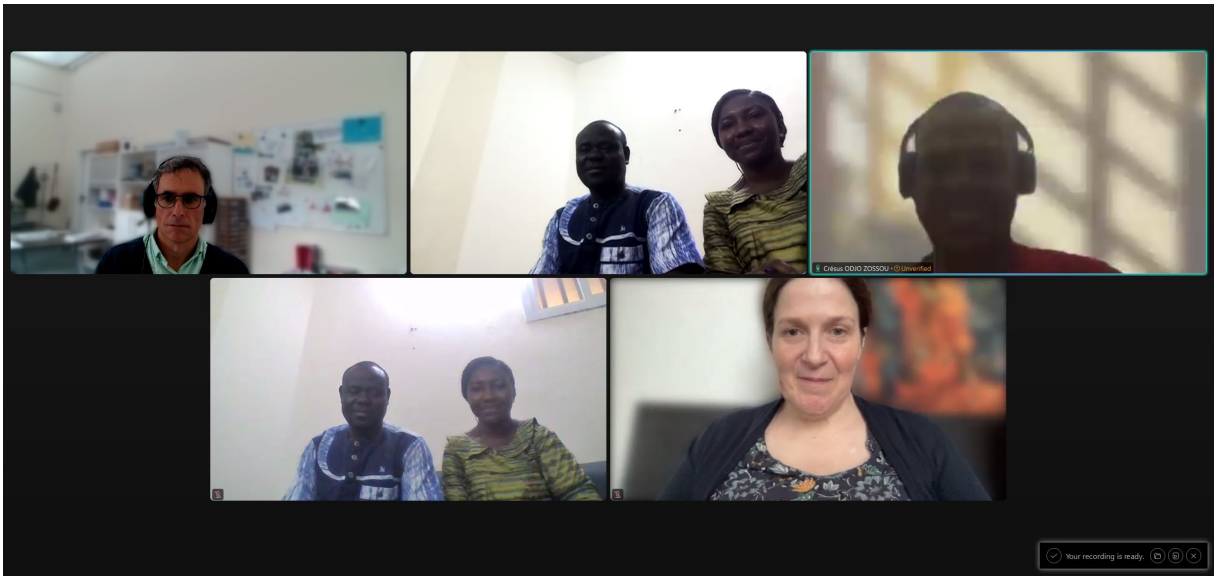


Figure 21: Meeting with the department of Water Resources, Burkina Faso, online and personal presence.

Zongo Gira provided a detailed assessment of the project's implementation in Burkina Faso:

15.1 Project relevance

The VFADM project began in 2019 but was slowed by insecurity and the COVID pandemic. Despite these obstacles, the project progressed with the identification of several pilot sites, including Badara, Pompénga, Bagré, and Pongussi. Unfortunately, activities in Pompénga were interrupted due to insecurity.

15.2 Efficiency of implementation

The following pilot sites were involved

- Badara: This site has been most successful with the installation of flood management equipment, including water level gauges and beacons. Training courses have also been organized for local populations on flood prevention and management.
- Pongussi: Despite delays, drought-related activities were finally completed by the end of the project.
- Bagré and Eredou: Simulation tests were carried out to evaluate flood management.

Impact

- The project has led to a significant increase in community awareness of climate risks (flooding and drought). The training provided has been well received by local populations, who have shown great interest in the prevention measures proposed.
- WhatsApp groups were set up to disseminate information on the weather and flood risks, enabling people to be informed quickly. Feedback has been positive, even for illiterate people.

15.3 Sustainability

Zongo Gira stressed that the project had a lasting positive impact on communities, and that it would be beneficial to replicate this type of project in the future.

15.4 Lessons learned

The VFDM project, as outlined in this discussion, has played a crucial role in building flood risk management capacity in several communes in Burkina Faso. Here are the key points that were discussed during the meeting:

- Equipment and infrastructure: The project has enabled the rehabilitation and acquisition of new hydrometric and meteorological equipment to monitor rivers, floods and other climatic parameters. However, some stations and equipment have not yet been installed, notably due to the decision to replace obsolete stations with new ones and the logistical complexity of transporting the equipment.
- Training and capacity-building: Various training courses were organized for local communities, including simulation exercises to help them respond better to floods. Women were particularly involved in these initiatives, in line with the project's gender approach. Local teams were also trained to become relays in raising awareness in other communities.
- Information dissemination: Hydrological and meteorological data collected are shared via platforms such as DEWETRA, but also through WhatsApp groups with local authorities and the media. Initiatives are underway to improve the dissemination of information in local languages through contracts with community radio stations, although additional resources are required.
- Project sustainability: One of the challenges raised concerned equipment maintenance and the harmonization of brands to ensure greater durability and reduce costs. The project also emphasized the importance of continuing these efforts and extending the project to other vulnerable communes, due to the recurrence of flooding.
- Positive impact of the project: Many lives have been saved thanks to the equipment provided and the training given. For example, during recent flooding in Badara, communities were able to use destroyed bridges to help evacuate the population.
- Desired future phase: There is a strong demand for the project to have a second phase, in order to reach more communes and continue the work begun. The project has already proved its effectiveness in the communes involved and has generated a great deal of interest on the part of the communities.

15.5 Conclusion

All in all, the VFDM project has brought considerable benefits, but there are still challenges ahead, including installing the remaining equipment, improving the dissemination of information in local languages and extending the initiatives to other flood-affected areas.

16 Annex J: Meeting with National Agencies in Ghana

The meeting with the took place on the 26th of September 2024, 12:00-14:30 CET. The following people were present:

- Eric Muala (Water Resources Commission, online)
- Richard Abaare (Ghana Hydrological Authority, online)
- Samuel Owusu Ansah (Metorology Department, online)
- Fofred Amosmah (Water Resources Commission, online)
- Paolo Reggiani, International Consultant. (online)
- Valérie-Anne Taillandier, International Consultant. (online)

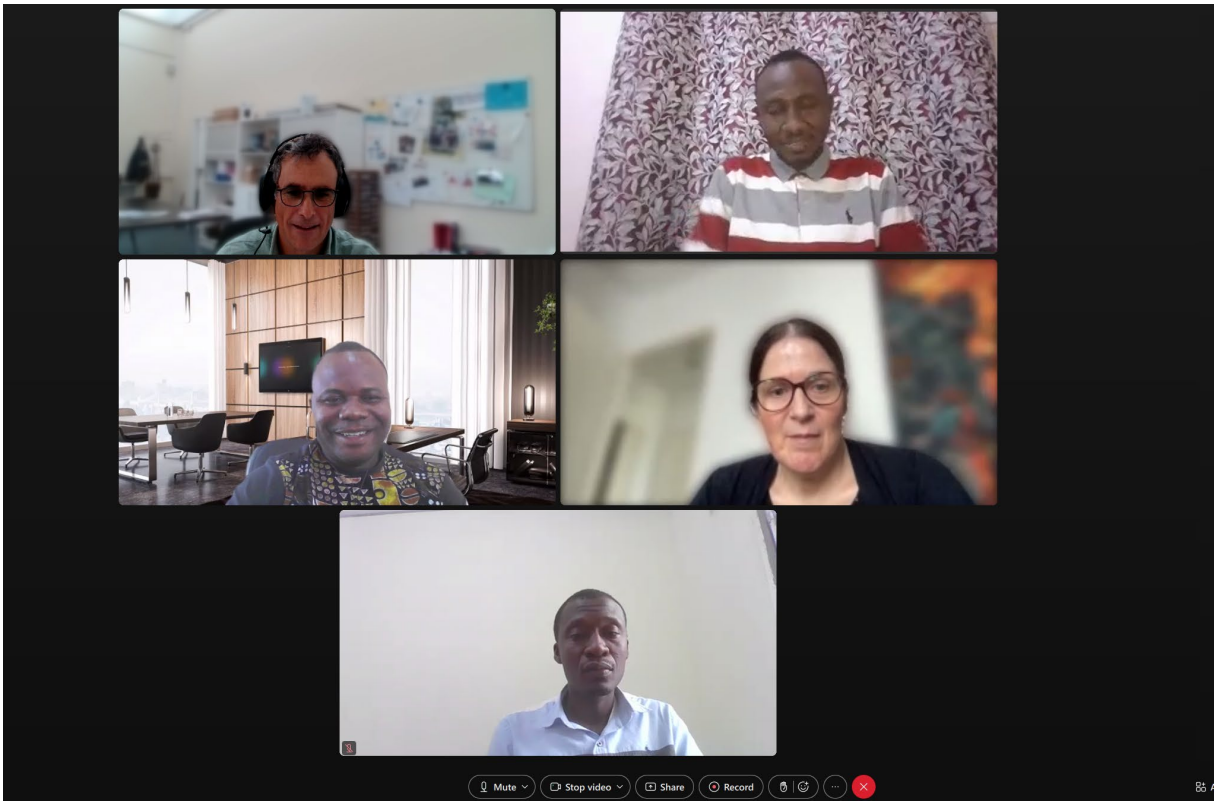


Figure 22: Online meeting with national agencies in Ghana.

Meeting participants introduced themselves and their roles. Eric Muala confirmed his representation of the Ghana Meteorological Agency, while Richard Abaare provided insights into the Ghana Hydrological Authority. Mr. Reggiani announced plans for field visits in late October to gather additional data, and participants agreed to compile documentation to support the evaluation.

16.1 Project relevance

Relevance of the project: Eric Muala emphasized the importance of the project in mitigating climate-related risks, such as floods and droughts, which have an impact on agriculture, energy and public health. There is a constant need by stakeholders to improve and better manage extreme events. Stakeholders include agriculture, construction industry, public health management, general public, energy sectors.

Alignment with development objectives: Richard Abaare acknowledged the benefits of the project but stressed the need to raise awareness to improve community understanding and preparedness.

16.2 Effectiveness of Implementation

Community Outreach Discussion: Eric Muala mentioned the installation of EWS facilities like the VoltAlarm system but pointed out that a gap existed in community engagement and community outreach could be better. The need for diverse communication methods, local dialect translations into local dialects was needed to address varying literacy levels.

Importance of local languages: Richard Abaare highlighted that English is not universally understood, especially among older citizens among the rural population. Translations of warning messages into local dialects were deemed necessary for effective engagement.

Risk assessment and community response: Participants acknowledged progress in risk assessment but noted challenges in the dissemination of information. Samuel Owusu Ansah indicated that even recipients struggle to interpret warnings, suggesting a need for clearer communication strategies.

Gender inclusion: The discussion on gender inclusion revealed efforts to involve women in environmental services and response training. Eric Muala acknowledged the strong male predominance in agriculture, but noted initiatives to engage women, particularly market women. The need for enhanced gender inclusivity in training and decision-making processes was recognized.

Training and Capacity Building: Richard Abaare mentioned the GWP-WAs involvement in gender-focused training, highlighting the necessity of encouraging female participation in technical roles for flood and drought management.

Feedback and Awareness: Samuel Owusu Ansah noted positive feedback about outputs but stressed broader awareness efforts to ensure communities take warnings seriously.

Socioeconomic Benefits: The discussion shifted to the socioeconomic benefits from improved forecasting. Samuel Owusu Ansah emphasized that timely forecasts have allowed stakeholders, especially farmers, to make informed decisions, reducing potential losses. The VFDM project has for the first time allowed to effectively address these issues.

Urban Flooding Context: Richard Abaare confirmed urban flooding in cities like Accra and Tamale, noting that while the project focuses on riverine flooding, urban areas also face challenges.

Rural vs. Urban Flood Management: Samuel Owusu Ansah indicated the project has been more effective in rural areas, with a consensus that urban flooding management requires distinct strategies and focus.

16.3 Efficiency of Resource Allocation

The discussion on the efficiency of resource allocation highlighted the need to improve the density of the monitoring network. Eric Muala mentioned budgetary constraints affecting the acquisition of stations, while Richard Abaare stated that the resources earmarked for workshops and training were being used effectively.

Transparency in the use of resources: Discussions revealed that funds were generally used for planned activities, with ongoing efforts to acquire more hydrological stations through additional funding.

Acquisition of additional equipment: Richard Abaare gave an update on the new equipment provided by the World Meteorological Organisation (WMO), although there have been some delays in installation.

Clarification on equipment acquisition and data structures: Eric Muala clarified the ongoing effort to install hydrometeorological measurement equipment in the country. Richard Abaare stressed the need for a well-established data collection infrastructure prior to large-scale projects.

16.4 Project Impact

Participants recognized the positive impact of the VFDM project on stakeholders, particularly farmers, by improving decision-making. No negative impacts were identified.

16.5 Sustainability

Mr. Reggiani stressed the importance of extending the benefits of the project beyond the completion date of the project. Eric Muala echoed the need for an autonomous system for the hydrological stations after the project. Strong relationships with stakeholders were seen as essential for continued collaboration.

Cross-border cooperation and collaboration:

Eric Muala expressed that the project has strengthened relationships between hydrological and meteorological authorities in the Volta basin region, improving communication and collaboration on forecasting.

16.6 Lessons Learned and Best Practices

The main conclusions drawn by the Ghanaian participants were as follows:

- Successful development of a joint bulletin: the bulletin is considered an important outcome of the project that improves coordination among neighboring countries, especially as Ghana is located on the downstream reach of the Volta River.
- Collaboration between institutions: Increased cooperation facilitated by the VFDM project has led to unified results.
- Confidence in results: Improved coordination has increased confidence in the information shared.
- Community engagement: Effective engagement with local communities set a precedent for future initiatives. Participants also emphasized that these lessons would be used as a basis for future projects.

16.7 Conclusion an follow-up

The meeting concluded with a summary of key points and action items. Participants acknowledged significant progress and planned to:

- Continue strengthening transboundary cooperation in the Volta Basin.
- Ensure the installation and maintenance of hydrological stations.
- Work with communities to improve understanding of early warning systems.
- Explore further funding opportunities for project achievements.

A possible follow up meeting in the frame of the VFDM final evaluation to Ghana authorities was announced for late October.

The Ghanaian meeting participants expressed their interest in following up with GWP-WA for insights on gender training initiatives, to develop strategies for addressing urban flooding and to monitor and evaluate socioeconomic impacts systematically. The importance of ensuring timely installation of new hydrological stations.

17 Annex K: Meeting with Directorate General Water Resources, Togo

The meeting with the took place on the 2nd of October 2024, 10:30-11:30 CET. The following people were present:

- Gninpale Konani
- Paolo Reggiani, International Consultant. (online)
- Crésus Odjo, national consultant (on site)
- Valérie-Anne Taillandier, international consultant (on site)

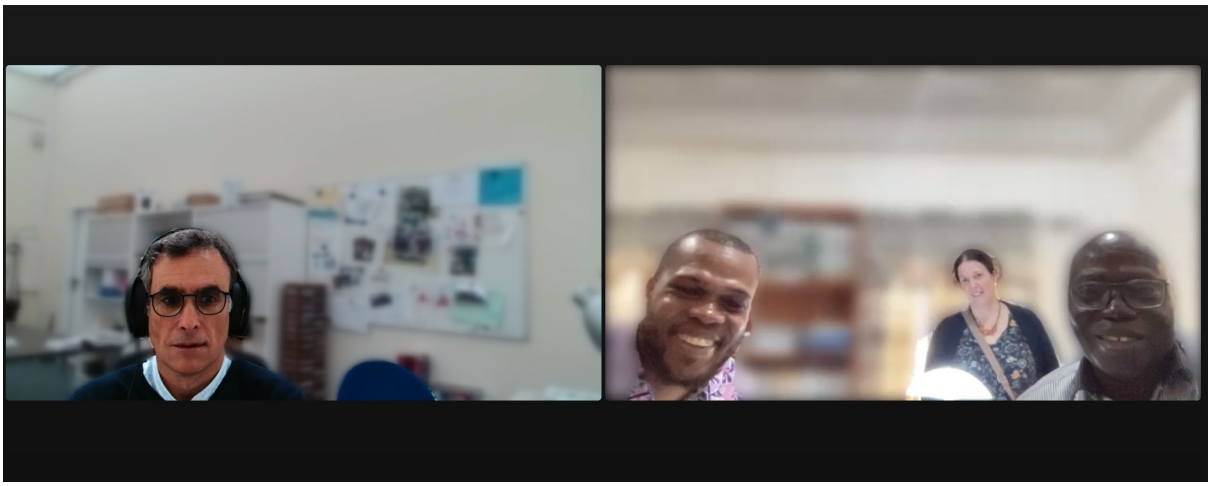


Figure 23: Meeting with the Directorate General Water Resources, Togo , personal presence and online participation.

17.1 Project relevance

According to Gninpale Konani

- The project is considered relevant, especially in view of the increase in extreme events (floods, droughts) in Togo.
- The project is in line with national strategies for hydrometeorological risk preparedness.
- Use of VoltAlarm for flood risk forecasts, although more needs to be done for droughts.

17.2 Effectiveness of Implementation

Evaluation of the VFDM project's effectiveness revealed several crucial points concerning implementation:

- Regional and national collaboration
- The implementation of the project was marked by strong collaboration between the various national and regional institutions. The Direction des Ressources en Eau (DRE) worked in synergy with other government agencies, NGOs and international partners to maximize results.
- Regular workshops and training sessions were organized to encourage the exchange of best practices and build the capacity of local players. This collaborative approach has enabled resources, knowledge and experience to be shared between the various players involved.

Community feedback

- Local communities were involved from the outset of the project, providing invaluable feedback on the specific needs and challenges encountered in the field. This also strengthened local ownership of the project, increasing its effectiveness.

- The involvement of local players in the implementation phases also facilitated data collection and impact assessment in the field, ensuring real-time monitoring of activities.
- The use of resources and allocations has played a key role in strengthening infrastructures and improving forecasting tools:

Infrastructure strengthening

- The funds allocated to the project were judiciously used to improve existing hydraulic infrastructures, including dams, irrigation systems and hydrometric measuring stations. These improvements have directly contributed to better management of water resources, essential for coping with extreme events such as floods and droughts.
- Rehabilitation and new infrastructure projects have been carried out in the most vulnerable areas, increasing the resilience of communities in the face of climatic crises.

Improved forecasting tools

- Resources were also allocated to setting up and improving forecasting tools, notably using VoltAlarm. This system provides more accurate forecasts in real time, facilitating planning and rapid response to hydrometeorological events.
- Training has been provided for local authority staff and technicians in the use of these tools, ensuring better understanding and widespread adoption of the new technologies.

17.3 Efficiency of Resource Allocation

- Although resources were used effectively for some initiatives, it was noted that they were insufficient to extend the projects to several sites. The absence of several pilot sites limited the overall impact of the project in the Volta basin. In future, it is essential to increase financial and resource allocations to cover a greater diversity of sites and populations.

17.4 Impact

- Assessment of the impact on river basins and food security.
- Examples of damage caused by floods (roads, bridges, housing) and their more visible economic impact than that of droughts.
- Participants discussed the impacts of the project, particularly the efficiency of resource allocation. Although resources were managed efficiently, some participants pointed out that they were insufficient to extend the projects to several sites. The absence of several pilot sites limited the overall impact of the project in the Volta basin.

17.5 Sustainability

- The project must generate lasting effects after its completion, in particular by setting up sustainable structures and activities.
- Regarding sustainability, it was agreed that the structures put in place should continue to operate after the official end of the project in June 2024. Collaboration between the countries in the region has improved thanks to shared newsletters and regular exchanges, which is promising for the future.

17.6 Lessons learned

- What worked well: inter-institutional cooperation, effective use of forecasting tools, involvement of local communities.

- Recommendations for a possible second phase: develop sustainable partnerships, adopt an integrated approach to risk management, strengthen resilience in the face of climate change, and improve training for local players.

Future commitments

- Continuing efforts: The Water Resources Department is committed to continuing its efforts by actively seeking funding to maintain and improve forecasting initiatives related to extreme events.
- Participation in Other Projects: Management plans to engage in other projects, such as the FANFAR program, and to collaborate with REWARD to strengthen forecasting capabilities.
- Proposals for future projects: It was suggested to invest in logistical and IT equipment to strengthen the capacities of technical services. In addition, participants recommended multiplying the number of hydrometric stations in the region to improve monitoring of climatic events.

Gender mainstreaming

- Gender mainstreaming: DRE has set up a gender unit and ensures the participation of women at all levels, both within the agency and in local communities.
- The meeting opened with the importance of involving women in crisis management, particularly during cholera epidemics and natural disasters such as droughts and floods. Speakers emphasized the crucial role of women, especially in rural areas, where they are often on the front line in monitoring and responding to environmental impacts.
- Training and awareness-raising: It was noted that training programs exist to raise women's awareness of water and disaster-related issues. Such training is provided both at field sites and at training centres such as Vantaran. In addition, women themselves have initiated actions to combat the effects of climate change.
- Women's groups and local initiatives: Women's groups have been set up to meet the challenges of drought and flooding. These women, who carry out field surveys, are particularly sensitive to the impact of climatic phenomena on their crops. Their experience and local knowledge are essential to the success of water resource management projects.
- Water storage points: Projects to create and rehabilitate water storage points have been set up to support women in the dry season, especially after crop losses due to flooding. These retention points enable women to carry out mowing activities and recover part of their losses.

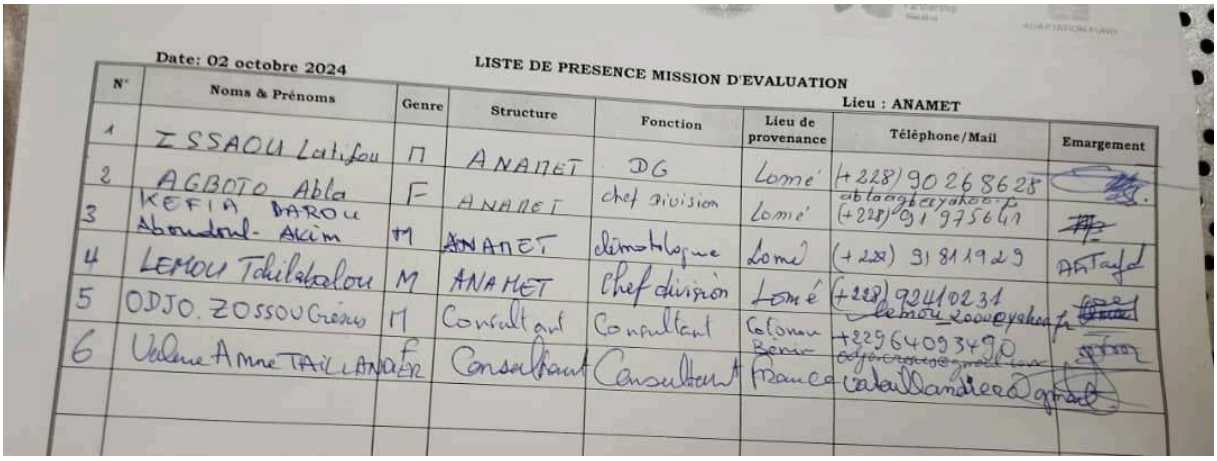
17.7 Conclusion

The meeting ended on a positive note, underlining the importance of continuing to involve women in hydrometeorological risk management and ensuring the sustainability of the initiatives put in place.

18 Annex L: Meeting with Meteorological Service, Togo

The meeting with the took place on the 2nd of October 2024, 12:00-13:00 CET. The following people were present:

- Valérie-Anne Taillandier, International Consultant
- Crésus Odjo Zossou: National Consultant.
- Issaou Latifou: Managing Director of ANAMET.
- Agboto Abla: ANAMET Division Manager.
- Kefia Darou Aboudoul Akim: Climatologist.
- Lemou Tahilabalou: Division manager.



Date: 02 octobre 2024 — LISTE DE PRESENCE MISSION D'EVALUATION — Lieu : ANAMET

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2	AGBOTO Abla	F	ANAMET	chef division	Lomé	(+228) 91 97 56 71	
3	KEFIA DAROU Aboudoul-Akim	M	ANAMET	climatologue	Lomé	(+228) 91 81 19 29	
4	LEMOU Tahilabalou	M	ANAMET	Chef division	Lomé	(+228) 92 41 02 31	
5	ODJO. ZOSSOU Crésus	M	Consultant	Consultant	Cotonou Bénin	+229 64 09 34 90	
6	Valérie Anne TAILLANDIER	F	Consultant	Consultant	France		

Figure 24: List of presence at the meeting with the Meteorological Service of Togo

18.1 Project relevance

Alignment with National Strategies

- The VFDM project is in line with Togo's strategic meteorological objectives. It has helped to develop guidelines and procedures in line with the country's strategy for managing the risks associated with climatic hazards, in particular drought and floods.
- Participants noted that existing policies had been updated, enabling better application in the field.

Improvements made:

- Significant improvements have been made in the training and awareness-raising of local communities in climate risk management. This includes training technicians and local authorities to make better use of meteorological tools and information.
- Local authorities felt valued and considered, reinforcing their commitment to implementing risk management policies.

Positive community feedback:

- Local people benefited from practical risk management activities, enabling them to apply the knowledge they had acquired. This was seen as a major step forward by the participants.

Economy and social impact:

- The project's relevance also extends to the economic and social dimensions, responding to a crucial need for improved disaster management. It has enabled communities, particularly in the agricultural sector, to better prepare themselves in the face of climatic hazards.

18.2 Effectiveness of Implementation

Synergy with parallel initiatives:

- The project has established synergies with other initiatives, such as REWARD and FANFAR, helping to build capacity at national and local level.
- Collaboration with other projects has enabled to better integrate activities and exchange best practices.

Training and capacity building:

- The project has strengthened the capacities of stakeholders through training in technical meteorological terms and the use of meteorological information. This has improved the understanding and application of policies by technicians, journalists and farmers.

VoltAlarm:

- The VoltAlarm platform has been set up to facilitate flood management and information gathering. This platform has enabled better collaboration between the various players involved, such as agriculture, the environment and meteorological services.
- Communication between partner countries has been strengthened through the exchange of information and data on floods and droughts allowed by the platform. This has enabled better anticipation and a more effective response to disasters.
- Ongoing evaluation: Although the project has brought about improvements, it is crucial to continue evaluating its impact over the long term, and to maintain collaboration between the various stakeholders.
- Support for local initiatives: Strengthen support for local initiatives to ensure that people continue to benefit from the training and tools developed.
- Sustainability of results: Ensure the sustainability of the results obtained and envisage a second phase of the project to further strengthen communities' ability to cope with climate risks.

Flood and drought bulletins

- The Flood Bulletin is produced twice a week (Tuesdays and Fridays) during the risk period, which runs from June to November. This allows us to adjust to the potential increase in flooding during the rainy season.
- The Drought bulletin is produced once a month throughout the year, due to the continuous and less predictable nature of drought risks.

Gender mainstreaming

- The project has effectively introduced a quota to ensure the participation of women, with a requirement of 40% in certain activities, particularly in training and decision-making groups.
- Project activities have encouraged gender-balanced participation. For example, at a training course in the Caribbean, the female participation rate reached 45%, with a high number of women compared to men.
- Women's groups and community activities: Initiatives have been put in place to encourage women's groups, particularly in economic and social activities within

communities. This helps to empower women and strengthen their role in climate risk management.

18.3 Impact

- The overall impact of the project has been positive, thanks in particular to the Mighty Mitra tool, which is up and running and being used by technicians. Unlike other failed projects, this one succeeded in establishing a functional platform.
- It was noted that the crucial needs of local communities, such as the construction of water reservoirs and boreholes, have not been integrated into the project, limiting long-term solutions to combat drought and improve the resilience of populations.
- An additional installation of weather stations is needed to respond effectively to the needs of different communities.
- More funding would be needed to extend awareness-raising and training activities, in particular to reach a greater number of sites.
- Suggestions made by communities concerning critical infrastructure such as water reservoirs and boreholes need to be incorporated into future project plans to ensure a more holistic and sustainable approach.
- The project has fostered greater collaboration between meteorological services at national and regional level, which is a significant advance on previous practices where only the agricultural sector was involved.
- It also enabled the sharing of international experience, enriching local skills.
- The integration of new products, such as drought indicators, has been beneficial for service decision-making and communication with populations. This enables communities to be better informed and prepared for climatic hazards.

Coordination problems with Mali:

Safety challenges:

- Security problems in Mali hampered team participation and the implementation of activities in the field. Interactions were more difficult, making it harder to assess the situation on the ground.
- Despite these difficulties, Mali has participated in technical meetings and has access to the forecasting platform.

Lack of feedback :

- The lack of feedback from Mali on the results of the project makes it difficult to assess their situation. This poses a challenge for monitoring and continuous improvement of the project.

Basin-wide usage of the VOILTALARM Platform

- Usage Varies between countries: It was noted that not all countries are taking full advantage of the platform. Some countries appear not to have received the necessary training to use it effectively.
- Workshops have been organized to help technicians better understand and use the platform, but the extra workload involved is a constraint for many participants.

Proposals and suggestions

- It was suggested that videos and conferences be used to gather feedback from countries, particularly those with difficulties, such as Mali.
- These tools could make it easier to share knowledge and challenges, thus promoting better coordination.

- Further efforts to train technicians from different countries in the use of the platform could improve its usability and effectiveness. A proactive approach to training is essential to maximize the project's impact.
- Participants noted that the project has brought significant benefits, particularly in terms of communication and access to information, enabling better anticipation of climatic events.
- Despite these advances, challenges remain, particularly in terms of safety, training and country commitment, which require ongoing attention to ensure the long-term sustainability and effectiveness of the project.

18.4 Efficiency of Resource Allocation

- The project focused mainly on the installation of meteorological stations at pilot sites. It was noted that the equipment provided was limited, and there were recommendations to improve equipment capabilities in future phases of the project.
- Participants expressed a need to acquire more equipment to strengthen the collection and analysis of meteorological data, which could improve the project's efficiency in the future.

Weather stations and equipment

- Currently, there is only one meteorological station installed in Togo, which represents a significant limitation. Although a pilot station has been set up, this is not sufficient to effectively cover the country's hydrometeorological information needs.
- It was mentioned that there had been shortcomings in the equipment. The project started with insufficient resources to extend the installation of other stations to the 200 sites identified in the basin. This limits the ability to provide accurate and relevant data to the communities that need it.

Training and awareness

- The resources allocated for training and awareness-raising were deemed adequate, enabling a good level of activity management to be achieved. However, there was a request for more funds to increase the scope of awareness campaigns, particularly for sites that had not been visited.
- Communities expressed a strong need for hydrometeorological information to support their activities, but the project was unable to meet this need due to financial limitations. A limited number of visits (11 out of over 200 sites) were carried out, limiting the project's impact.

Communication and language

- Weather bulletins are produced in French and English, making them more accessible. However, there is as yet no translation into local languages, which can hamper understanding by local populations.
- Community radios are used to translate weather information into local languages, helping to make it more accessible. The use of voice messages is also envisaged for those who cannot read or write.

18.5 Sustainability

- Impact of the Strike Project: It was pointed out that the cost of a strike can be higher than the implementation of a project, raising questions about the long-term sustainability of the initiatives put in place.

- Collaboration difficulties: Participating countries (Togo, Burkina Faso, Benin, Ghana, Côte d'Ivoire, etc.) have data-sharing problems, which complicate collaboration. This runs counter to the project's aim of strengthening regional partnerships.
- Stakeholder involvement: Some technical structures were not involved from the outset of project implementation, which hampered the development of certain tools, such as drought monitoring libraries.
- Insufficient training: Participation by highland services in drought monitoring training has been limited, making it difficult to integrate the data needed to develop effective monitoring libraries.
- Commitment to sustainability: To ensure sustainability, it is crucial to involve all stakeholders in the execution of future projects.
- Lessons learned should be incorporated into new projects.
- Training and awareness: It is essential to continue training and encouraging staff to use the platforms in place, to maintain a commitment to climate monitoring initiatives.

Maintenance and Station Management

- Shared responsibility: The maintenance of stations and tools is considered crucial. Local communities, including mayors, have a role to play in the management and use of equipment.
- Budget and resources: Funding for station maintenance must be clearly defined. Adequate funds must be allocated to ensure their smooth operation.

18.6 Lessons learned and recommendations

- Success factors: One of the key success factors is the establishment of an effective platform for data sharing and coordination between countries.
- Communication and Coordination: Improving communication and coordination between different entities, including the WMO, is essential to avoid misunderstandings and technical integration problems.
- Integrating new tools: Integrating new products, such as the Third Generation Meteosat (MTG), into the platform could enrich the data available and improve forecasts.

Sustainability and regional collaboration

- The question of project sustainability is central, with concerns about data sharing between countries such as Togo, Burkina Faso and Benin.
- It is stressed that collaboration between countries needs to be strengthened to ensure better project implementation.
- The importance of including the needs and desires of local communities in project development is mentioned. Concrete solutions, such as boreholes or water retention systems, are more beneficial than general strategies developed without consulting the populations concerned.
- The involvement of technicians and other stakeholders from the outset of the project is considered essential to its success.
- The discussion includes reflections on lessons learned from previous projects, emphasizing the need for better communication and coordination, particularly with the World Meteorological Organization (WMO).
- There is a pressing need to improve water and resource management infrastructures in the event of floods and droughts.
- The implementation of monitoring and warning tools to prevent flood risks is also discussed, underlining their importance for community safety.
-

Recommendations for future developments:

- It is recommended to prioritize the integration of new technologies and data, such as those from Meteosat 3rd generation, in future projects.
- A better division of responsibilities between countries sharing river basins, such as the Mono basin, is suggested to optimize resources and efforts.

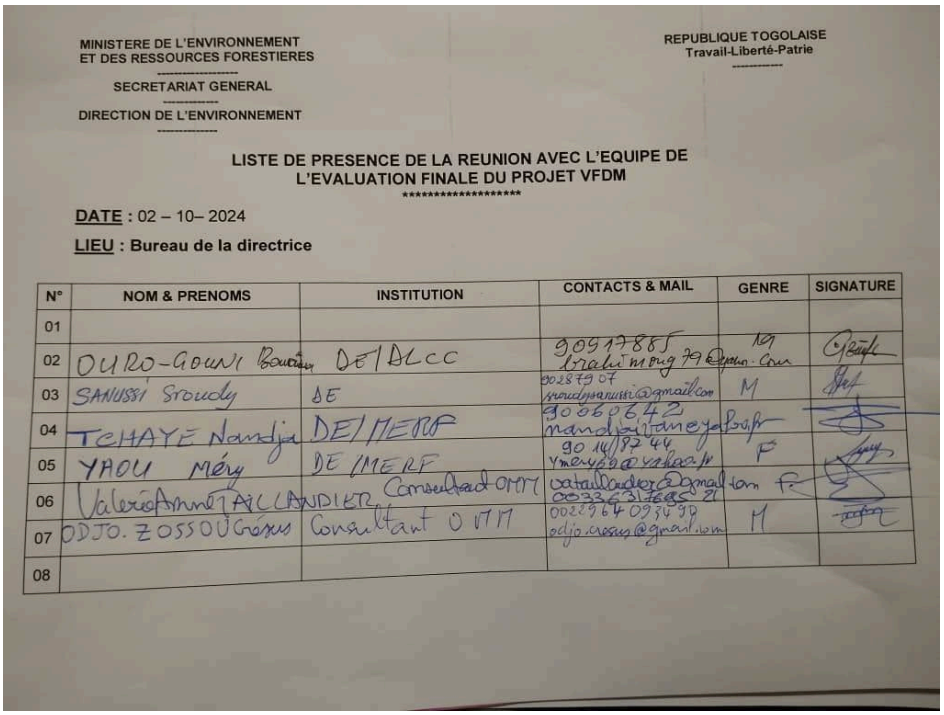
Conclusion

In short, to guarantee the sustainability and effectiveness of future projects, it is necessary to strengthen collaboration between countries, involve all stakeholders from the outset, and ensure adequate training to maximize the use of the tools put in place. These recommendations are aimed at correcting observed weaknesses and building on successes for future projects.

19 Annex M: Meeting with Ministry of the Environment and Forestry, Togo

The meeting with the took place on the 2nd of October 2024, 15:00-16:00 CET in Lomé, Togo. The following people were present in person:

- Mrs Ouro Gouni - DE/DLCC
- Sanussi Sroudy - DE
- Tchaye Nandja - DE/MERF
- Yaou Méry - DE/MERF
- Crésus Odjo Zossou - Consultant
- Valérie-Anne Taillandier, international consultant



MINISTERE DE L'ENVIRONNEMENT
ET DES RESSOURCES FORESTIERES
SECRETARIAT GENERAL
DIRECTION DE L'ENVIRONNEMENT

REPUBLIQUE TOGOLAISE
Travail-Liberté-Patrie

LISTE DE PRESENCE DE LA REUNION AVEC L'EQUIPE DE L'EVALUATION FINALE DU PROJET VFDM

DATE : 02 – 10– 2024

LIEU : Bureau de la directrice

N°	NOM & PRENOMS	INSTITUTION	CONTACTS & MAIL	GENRE	SIGNATURE
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03	SANUSSI Sroudy	DE	00228 07	M	
04	TCHAYE Nandja	DE/MERF	90 06 06 42		
05	YAOU Méry	DE/MERF	90 14 97 44	F	
06	Valérie Anne TAILLANDIER	Consultant OIM	00336 31		
07	ODJO. ZOSSOU Crésus	Consultant OIM	00229 64 09	M	
08					

Figure 25: List of presence at the meeting with the Ministry of the Environment and Forest Service of Togo

After a short introduction of the participants Sanussi Sroudy stresses the importance of recalling the concrete results of the project, in particular validated practices and data on good practices and the capacities of the players involved.

19.1 Project relevance

The VFDM project was deemed relevant by all participants. Ms Ouro Gouni recalls the importance of the link between land degradation and the impacts of climate change, particularly droughts and floods, which affect Togo.

- Tchaye Nandja: The project has enabled the introduction of tools that are appreciated by various players, notably the Meteorological Department, improving the quality of weather forecasts.
- Sanussi Sroudy: He adds that the mapping of flood-prone areas and capacity-building actions for stakeholders have been key elements in strengthening people's resilience to extreme climatic events.

- The project has enabled us to acquire useful tools, especially for forecasting and early warning of flood risks.
- Tchaye Nandja and Yaou Méry: They emphasize that weather reports and regular information on climatic conditions have benefited both agricultural producers and local populations. Information is transmitted on a daily basis, making it easier to adapt farming activities, even in difficult years like 2024, marked by excessive rainfall.
- Participants agreed that one of the project's major successes was the establishment of a regular, accessible information system. This system makes it possible to monitor weather forecasts and better prepare for crisis situations, such as flooding.

Role of the Ministry of the Environment and Forest Resources in the VFDM project:

- The Ministry's involvement was divided into two stages:
- In the beginning, the Forest Resources Department was involved, especially in questions of deforestation and land degradation.
- Subsequently, the Department of the Environment monitored the impact of flooding and water management.
- Sanussi Sroudy points out that, although the ministry didn't follow through on all the deliverables, it did contribute to the training and climate resilience aspects. However, the ministries regret that they were not more involved in the process, which would have enabled better coordination and a more significant impact of the initiatives.
- Participants emphasized the crucial importance of forests in the ecosystem, particularly in terms of biodiversity. Ms Ouro Gouni explained that drought and flooding phenomena linked to climate change have a direct impact on forests, the habitat of many threatened species.
- The Climate Department has provided information on climate trends based on studies carried out as part of the climate transition. Projections to 2050 show contrasting trends:
- Increased precipitation in some regions, particularly in the northwest, requiring preventive measures.
- Reduced rainfall in other regions, increasing the risk of drought.
- Sanussi Sroudy stresses the need for a post-disaster economic assessment, particularly for recent floods and droughts. This would make it possible to identify the worst-affected regions and assess the real impacts on infrastructure and crops. He notes that floods do not always have a significant economic impact, particularly when they occur during periods of low agricultural activity.
- Geographical predisposition: Northern areas of the country, particularly the savannahs, are more prone to drought.
- Vulnerability conditions and criteria: Each locality has a different level of sensitivity based on its geographical characteristics. Ms Ouro Gouni adds that mapping vulnerable areas is essential for planning responses to climate risks.

Resource Allocation Efficiency

Participants express concern about the distribution of resources allocated to the project.
Difficulties encountered:

- Lack of activities: The lack of specific activities hampered the determination of the efficiency of resource allocation.
- Lack of information: A lack of communication on budget allocations limited stakeholders' ability to express their needs.

Stakeholder involvement

- Participants discuss the importance of involving local players more.

- Stakeholders should be involved more closely in the development of activities to better meet community needs.
- Funding Share information about the overall project budget more widely.

19.2 Impact

Positive impacts:

- Capacity building: Beneficiaries have acquired knowledge of early warning systems.
- VoltaAlarm tool: An acclaimed development for weather alert management.

Negative impacts:

- Insufficient information sharing between VFDM project stakeholders: The lack of communication and consultation between the various stakeholders throughout the project limited understanding of the tools and resources available. This led to sub-optimal exploitation of the project's positive results, hampering local stakeholders' ability to fully benefit from the advantages offered and develop their own initiatives.

19.3 Sustainability

- The discussions highlighted the crucial importance of sustainability in future phases of the project. It is essential to integrate strategies that guarantee the continuity of benefits beyond the life of the project. This includes building the capacities of local players, integrating sustainable practices and engaging communities to ensure lasting ownership of the results achieved.
- Greater involvement of the Ministry of the Environment is essential to ensure effective monitoring and harmonious coordination of efforts, thus promoting greater sustainability and better integration of environmental initiatives into local policies.

19.4 Lessons learned

- Capacity building: Continue to train local players in the use of the tools.
- Capitalizing on local knowledge: Leveraging local knowledge to maximize benefits.
- In case of a project phase 2: It is crucial to carry out in-depth consultation with local stakeholders and communities to ensure that the planned activities truly meet their needs and priorities. This participatory approach will ensure that interventions are more appropriate and that beneficiaries take ownership of the results.
- Participants address the issue of gender, stressing the importance of integrating differences in impact on men and women into project activities.
- Suggestion on gender mainstreaming: ensuring that the specific needs of men and women are taken into account in the project.

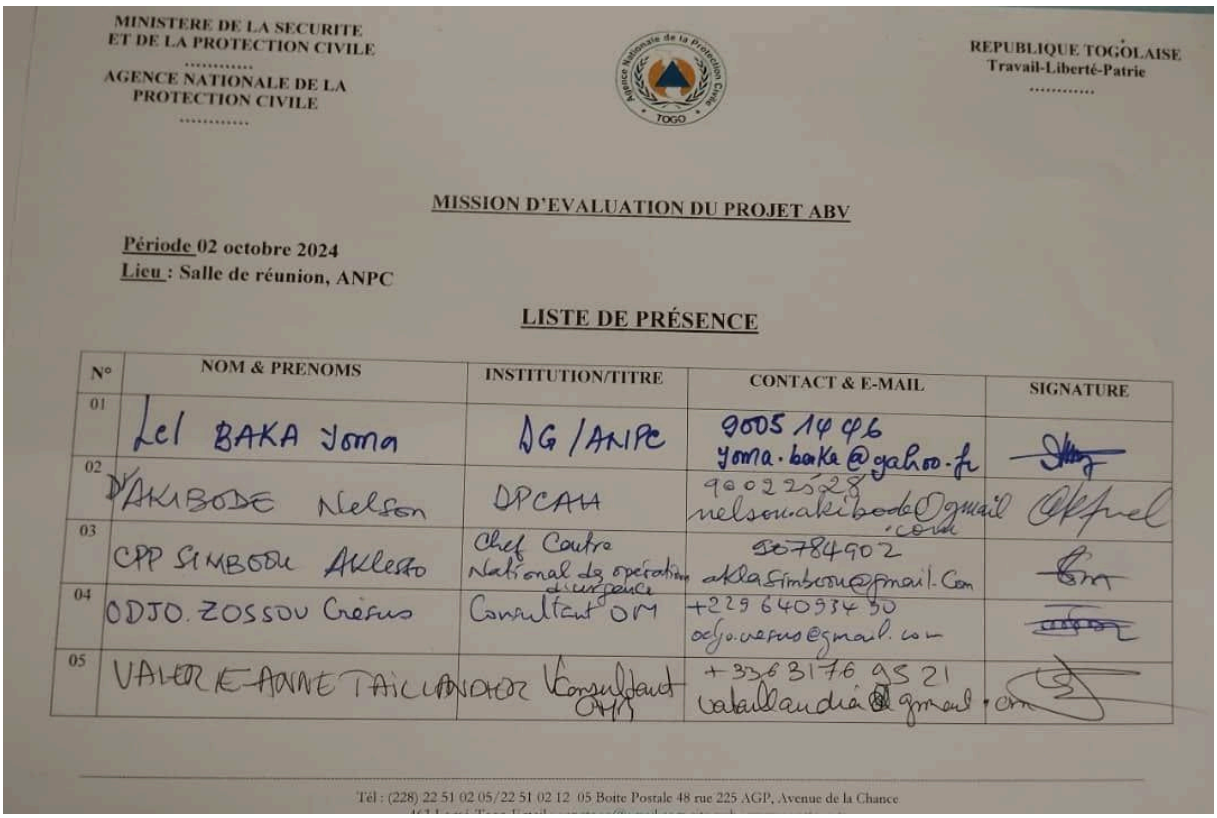
19.5 Conclusion

The interview identified several areas for improvement in project management and resource allocation. Participants agreed that communication and consultation are key to maximizing the effectiveness of future climate change projects.

20 Annex N: Meeting with National Civil Protection (NCP), Togo

The meeting with the took place on the 2nd of October 2024, 18:30-19:30 CET in Lomé, Togo. The following people were present in person:

- Lel Baka Yoma, General Manager, National Environmental Protection Agency (ANPE)
- Dr Akibode Nelson, Project Director
- CPP Simbouou Aklesso, National Center for Emergency Operations
- Crésus Odjo Zossou - Consultant
- Valérie-Anne Taillandier, international consultant



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AGENCE NATIONALE DE LA PROTECTION CIVILE
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REPUBLIQUE TOGOLAISE
Travail-Liberté-Patrie
.....

MISSION D'EVALUATION DU PROJET ABV

Période 02 octobre 2024
Lieu : Salle de réunion, ANPC

LISTE DE PRÉSENCE

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Figure 26: List of presence at the meeting with the National Civil Protection of Togo

20.1 Project relevance

Project objectives: The VFDM project has been designed to strengthen the capacities of disaster risk management institutions, in particular the NCP, by providing tools and training adapted to local issues.

- Participants indicated a good understanding of the project's objectives and activities. For example, the training of NCP officers in disaster management methods was hailed as essential.
- The integration of NCP into strategic documents was considered crucial. Participants pointed out that failure to do so could undermine the coherence between project activities and national risk management priorities.
- It was suggested that an intermediate session be included to clarify crucial points. Each stakeholder should have access to a complete document describing the activities and expected results, as well as a final report.

20.2 Efficiency of Implementation

- Participants agreed that measurable results are essential to assess the effectiveness of the project. It was proposed that clear, measurable performance indicators be developed, which could include aspects such as the number of simulation exercises organized and the level of participation.
- Follow-up on the implementation of recommendations from interim evaluations was deemed insufficient, which limited the project's effectiveness.

Points raised by participants :

- NPC's involvement in the steering committee was insufficient.
- Participants expressed concern about the lack of invitations to activities organized abroad, which limited their participation.
- The Minister noted that the follow-up to the end of the project had not been optimal, which had a negative impact on the achievement of results.
- Measurable results, such as a reduction in disaster response time, were identified as key indicators. However, it was noted that these results were not sufficiently documented in the reports.

20.3 Efficiency of Resource Allocation

- The financial resources allocated for simulation activities were deemed appropriate, with appreciable utilization. Participants reported that budgets for training and equipment were properly invested, contributing to concrete results.
- However, a need for improvement was identified in the use of time. For example, the time allotted for simulations was deemed to be limited, restricting the participants' learning potential.

20.4 Impact

- The project's impact on community response capacity has been significant. For example, the training received has enabled them to better anticipate floods, thus reducing damage during disasters.
- Humanitarian interventions, particularly in the areas of medical care and WASH, have had an immediate impact on the health of populations affected by disasters.
- The simulations mobilized up to 600 participants, exceeding the initial target of 200, and included local players, reinforcing the sense of ownership at community level.

20.5 Sustainability and lessons learned

Continuity of benefits:

- The simulation exercises were led by the local authorities, which is a good indicator of the project's sustainability. The training provided enables the authorities to ensure the continuity of risk management efforts.
- Training courses have been set up for the maintenance of meteorological installations, ensuring their long-term functionality.
- Post-training follow-up mechanisms were discussed, and it was agreed that feedback tools should be introduced to assess the long-term impact of training.

Lessons learned:

- Participants stressed the importance of involving local structures from the outset of projects to improve the ownership and effectiveness of interventions.
- A crucial point raised was the need to share experiences between countries, especially in terms of coordination. Exchange visits could strengthen the capacities of the players involved and promote mutual learning.

- Particular attention should be paid to communication with the media to ensure adequate coverage of activities, which could also improve community awareness.

Emergency Simulation

The department of National Civil Protection executed in the frame of the VFDM project an emergency simulation

- The simulation involved 600 participants from various sectors and regions of Togo. A variety of exercises, including functional drills and real-time simulations, were used to test realistic scenarios.
- The alert was broadcast live on the radio and local media, guaranteeing widespread media coverage and community involvement.
- Tangible impacts include increased community response capacity, with medical care and WASH interventions already in place to mitigate the effects of disasters.

Conclusion

Participants agreed that it is crucial to improve communication and information sharing between all stakeholders involved in the project. Recommendations will be made in the evaluation report, highlighting the need for stronger integration of NCP agency into project activities, as well as the importance of adequate documentation and transparency in decision-making processes.

21 Annex O: Meeting with Benin National Water Partnership, Benin

The meeting with the Benin National Water Partnership (Partenariat National de l'Eau - PNE) took place on the 7th of October 2024, 17.00-18:20 CET in Cotonou, Benin. The following people were present in person:

- André Zogo, Executive Secretary of the Benin National Water Partnership
- Rachel Alaye, Technical Assistant
- Crésus Odjo Zossou, National Consultant

The session began with a presentation of the participants and the objective of the interview, which was clearly defined by the consultant present during the interview.

The purpose of the interview was to assess the actions that the Volta Flood Drought Management Project (VFDM) has implemented with the involvement of the National Water Partnership (NWP) in Benin.

Activities carried out by PNE as part of the project

PNE was involved in the implementation of the project as part of the Global Water Partnership for West Africa (GWP-WA). All the activities carried out fell within GWP WA's remit and terms of reference. These activities involved awareness-raising, capacity-building and the mobilisation of stakeholders in the implementation of project actions, at both national and local levels. The PNE also took part in the various workshops organised by the project, whether to build the capacity of stakeholders or to validate mapping documents and studies carried out as part of the project.

21.1 Relevance

The project is aligned with Benin's action plan on integrated water resources management (Plan d'Action National de Gestion Intégrée des Ressources en Eau - PANGIRE), with actions relating to the introduction of mechanisms and tools for managing risks and natural disasters. The project is therefore aligned perfectly with the actions set out in this planning document. A study to assess the needs of national institutions and local communities was carried out before the start of the project in all the countries sharing the Volta basin. This study was co-piloted by Benin, and the results were compiled and shared at regional level. It enabled key stakeholders to express their needs, which were taken into account in the design of the project. Some of the needs expressed by the local populations of the Volta basin, as well as those of organisations working on climate change issues, have been incorporated into the project.

21.2 Efficiency of implementation

As regards collaboration between the VFDM project and other initiatives, in particular the REWARD project, there have been synergies in capacity building. During a regional workshop to validate the REWARD project, needs not covered by VFDM were expressed, such as the installation of WASH facilities (latrines) because of the risks associated with faecal contamination during floods. In addition, the issue of drought, which was not dealt with much by VFDM, was included in the REWARD project.

Gender aspects:

Gender was taken into account right from the needs assessment stage. Targets were clearly defined according to gender (men, women, young people, etc.). During the implementation of

certain project actions, in particular capacity-building workshops and awareness-raising sessions, the participation of women and young people was prioritised. The reports produced by the PNE have highlighted gender-related indicators.

At local level, women's groups were involved, particularly those run by the NGO ALPHA OMEGA, which was responsible for implementing the project at community level. A community early warning system was set up with a committee on which women farmers were represented.

21.3 Efficiency of Resource Allocation

The resources allocated were well managed to carry out the activities entrusted to the PNE. Activities were carried out according to the resources available and made available by GWP-WA. However, GWP-WA would be in a better position to give an objective assessment of the allocation of resources as a whole. There were delays in some activities, which created pressure at the end of the project to complete all planned actions before closing. It would have been beneficial to allocate more resources to concrete actions on the ground, such as the construction of water reservoirs to manage flooding and support agricultural production. The project has enabled the acquisition of hydrological monitoring equipment (piezometers, water level sensors), responding to an urgent need due to the inadequate coverage of the region in terms of data collection devices for effective monitoring.

21.4 Impact

The equipment installed and the actions carried out by the NGO in the field, as well as the capacity-building, are important achievements of the project. Several mapping aids, such as the risk map, are essential tools that will remain useful after the end of the project. The VoltAlarm system, another key result, has also been left as a legacy. However, restrictions on access to the VoltAlarm platform have been put in place, limiting certain access rights to data-producing structures only. For optimum management, it would be preferable for access rights to be harmonised between all the structures involved.

21.5 Sustainability

The Directorate General for Water (Direction Générale des Eau - DGEau), the Benin focal point of the Volta Basin Authority (VBA) at national level, has been involved in implementing the project. They are responsible for incorporating certain actions into their plans to ensure continuity. The communities have also been involved, and the capacity-building activities developed by the PNE will continue to be used to raise awareness and train local players in flood and drought issues.

21.6 Lessons learned

- Involvement of stakeholders: The active involvement of all the stakeholders concerned (local authorities, ANPC, PNE, weather forecasting, flood and drought management committees at village level, etc.) has enhanced the project's effectiveness. This synergy of action is a model to be replicated.
- Taking into account the pace of take-up: The time needed for each stakeholder to take ownership of the activities has caused delays. This needs to be factored into the planning to anticipate these delays in similar projects that will be implemented in the future.
- Ongoing communication: The project lacked a mechanism for regular communication with stakeholders. Ongoing coordination by the DGEau would have improved coordination.

- Integration into national strategies: The project was integrated into national risk and disaster management strategies, facilitating strong mobilisation of stakeholders, in particular the ANPC and its branches, even at municipal level.

21.7 Recommendations

The following recommendations were made at the end of the interview:

- Capitalise on the results of the project through a second phase.
- Support the country in drawing up communal contingency plans and carrying out simulation exercises.
- Take concrete action to manage water resources (such as building water reservoirs).
- Set up a mechanism to improve communication between stakeholders and facilitate the exchange of information on project activities.

21.8 Conclusion

The interview helped to highlight the actions carried out by the PNE within the framework of the VFRDM project and to collect information on the appreciation that EP managers have of the project. It highlighted the key results of the project as well as certain areas for improvement, which were formulated in the form of recommendations. If these recommendations and lessons learned are taken into account, similar initiatives implemented by the WMO will be improved.

22 Annex P: Meeting with Benin National Meteorological Agency, Benin

The meeting with the took place on the 8th of October 2024, 12.00-14:00 CET in Cotonou, Benin. The following people were present in person:

- Didier Kapka, Director General of METEO Benin, permanent representative of Benin at the WMO
- Crésus Odjo Zossou, National Consultant

The session began with an introduction of the participants and presentation of the objective of the interview. The discussions were based on questions relating to the 6 evaluation criteria. The various responses given by the Director General of METEO-Bénin were structured correspondingly.

22.1 Relevance

The project fits well with METEO Bénin's strategic planning document, which aims to improve the production and dissemination of climate information. This strategic plan was drawn up by a consultant recruited by the WMO. It should be noted that this strategic document has not yet been validated by METEO-Benin's Board of Directors. The project also responds to the recommendations of the national framework for climate services set up by ECOWAS with WMO support, by contributing to the establishment of a climate information platform. The needs of the users were identified during feasibility studies and consultations, thus ensuring a match between the objectives of the project and the expectations of the beneficiaries.

22.2 Efficiency of implementation

The REWARD project has just started and has synergies with the VFDM project. When the VFDM ended, it was noted that it had focused mainly on flooding. It was therefore decided, based on recommendations by the various heads of national and regional institutions represented in VFDM, that the REWARD project would take account of the problem of drought, thus constituting a continuation of the VFDM. In addition, certain user concerns, such as early warning for all, had not been fully integrated. Early warning for all implies other aspects not addressed by the VFDM and the consideration of certain institutions that must necessarily be involved in the EWS. The REWARD project will address these issues more fully.

Gender aspects

Gender was taken into account in the awareness-raising sessions and capacity-building carried out by the WMO. These sessions and capacity-building activities were carried out with the participation of women, and some were aimed primarily at people with disabilities.

22.3 Efficiency of Resource Allocation

The allocation of resources has not been optimised, as a more substantial investment in the acquisition of other weather stations would have made it possible to respond more effectively to data collection needs. It would therefore have been more desirable to invest more in the installation of weather stations, to facilitate data collection and thus improve the production of relevant information for users. Apart from this aspect, the investment made in capacity-building, studies and awareness-raising has enabled the desired results to be achieved.

22.4 Impact

The VFDM objectives have not been 100% achieved. However, progress has been made, in particular with capacity building for the automatic production of bulletins via the VoltAlarm platform. Trained participants are now able to generate these bulletins independently. These are ten-day flood forecast bulletins. The VFDM project has also strengthened the capacity of users to disseminate and collect information, particularly from the media. The media, which play an essential role in relaying information, have also benefited from this capacity-building. Thanks to the project, they are now able to relay climate information produced in local languages in terms that are easily understood by local populations. In addition, the acquisition of a server with the support of the project facilitates the storage of climate data collected in the project area.

It can be concluded that the project has had a positive impact on:

- Local players' knowledge of meteorology and climate.
- Building the capacity of local players to produce and disseminate meteorological information (weather bulletins)
- The resilience of populations to extreme events.
- The quality of the decisions taken by development players.
- The development of forecasting and warning tools with the implementation of the MyDEWETRA platform and a server for data storage.
- Improving collaboration between the various players involved.

22.5 Sustainability

This is one of the project's shortcomings. Normally, the project should have supported the countries for several years before handing over full responsibility. Complaints include the maintenance of equipment, particularly the automated station, where spare parts are expensive. There is also a need for ongoing capacity-building until the technicians have fully acquired the skills required to ensure the continuity of the actions undertaken.

In addition, CIMA has not fully transferred the management of the bulletins to the countries. At present, only one person has the access code for publishing them. This leads to delays, and if the allotted time is exceeded, it becomes impossible to publish the bulletin.

The sustainability of the project is therefore threatened by :

- Lack of financial resources for equipment maintenance.
- Dependence on outside expertise for certain tasks.
- The inadequacy of the weather observation network.

22.6 Lessons learned

They can be classified as success and failure factors.

Success factors:

- The VoltAlarm system that has been set up has enabled the member countries of the project to provide useful climatic information to users.
- Strengthening media capacity is an important element in reaching specific project stakeholders in a context similar to that of VFDM.
- Training for people with disabilities is an element that reinforces gender mainstreaming and ensures that all categories of stakeholders are taken into account.

Failures:

- The inadequate number of weather stations has not sufficiently strengthened the system for gathering climatic information at national level.
- Incomplete transfer of management of the VoltAlarm system hampers full ownership of the system by stakeholders and could hamper the sustainability of actions undertaken.

22.7 Recommendations

- Strengthen the observation network: Invest in the acquisition and installation of new meteorological and hydrological stations to increase the density of the network and improve the quality and accuracy of forecasts in all the localities covered by the project.
- Ensure equipment maintenance: Set up a regular maintenance plan for the automatic stations and budget the costs associated with the acquisition of spare parts, with technical and financial support from the WMO.
- Strengthen national capacities: Organise ongoing training for technicians, users and staff involved in the management of meteorological equipment. Provide targeted capacity-building for the media and community relays to disseminate information more effectively.
- Develop partnerships: Collaborate with other institutions, projects (such as REWARD and CREWS) and observation networks to pool resources, skills and technologies. Involve GSM operators to disseminate information in local languages.
- Widening the dissemination of information: Use digital platforms such as websites, mobile apps and social networks to reach a wider audience. This will require multilingual dissemination strategies, including dissemination missions in local languages, to ensure that alerts effectively reach all vulnerable populations.
- Taking users' needs into account: Improve the way users' needs are taken into account in early warning systems by incorporating feedback and adjusting climate products to local realities.
- Giving more control to partner countries: Granting shared access to VoltAlarm system and providing local teams with the resources and codes they need to edit and distribute weather bulletins independently.

22.8 Conclusion

The interview was very informative and provided an opportunity to discuss certain key aspects of the project's implementation in Benin. The project has opened new prospects for improving natural disaster risk management in Benin. By investing in the modernisation of meteorological infrastructures, building the capacity of local players and developing innovative communication tools, it is possible to build a robust and effective early warning system.

23 Annex Q: Meeting with Ghana Hydrological Authority (GHA), Accra, Ghana

The meeting with a representative of the Ghana Hydrological Authority (GHA) took place on the 29th of October 2024 at the Oak Plaza Hotel in occasion of the Workshop "Launch of early Warning for All (EW4ALL) Initiative in Ghana and Stakeholder Consultative Workshop". The following people were present at the meeting:

- Sylvester Darko, Head of Hydrology, GHA
- Kwaku Asante, hydrologist, GHA
- Paolo Reggiani, International Consultant

Figure 27: Meeting at the Workshop "Launch of early Warning for All (EW4ALL) Initiative in Ghana and Stakeholder Consultative Workshop", Oak Plaza Hotel, Accra.

During the conference a meeting took place with the Head of Hydrology at GHA, Mr Darko. He has been involved in VFDM since the beginning, including the conceptualization phase. Ms Kwaku, hydrologist at GHA also participated at the interview.

After a brief round of introductions, Mr Kwaku opened the discussion by explaining that Ghana currently is benefiting from multiple forecasting tools. These include the flood early warning system FEWS-OTI and FEWS-VOLTA, the FANFAR modelling system and the newly developed VoltAlarm system, which works at sub-daily scale. Other forecasting initiatives are aimed at the inundation prediction for metropolitan areas in Accra. The principal efforts is the Greater Accra Resilient and Integrated Development Project (GARID) encompassing the development of a flood early warning system for greater Accra (FEWS Accra).

23.1 Project relevance

- Before the VFDM project, flood hazard information and notably forecasts were not available at a wider scale.
- The project has contributed to organize flood and drought-related information, which is now readily available to interested end-users and stakeholders.

23.2 Effectiveness of Implementation

- The project involved many persons from different disaster management units.
- Efficient training sessions targeted at a variety of stakeholders were held during the project.
- Training for applied field measurements on streamflow measurements benefited the participants of GHA.
- Reasonable integration and participation of female participants in the project. Particular training sessions were specifically adapted to the needs of female end-users and stakeholders at the rural community level.
- The VoltAlarm system is technologically very advanced with clear added value.
- The system contributes considerably to improving the entire communication chain from risk quantification to hazard assessment, warning and rescue.
- Simulation exercises were executed in the Kunkua, Bolgatanga and Sogakope rural communities located in the Volta basin part of Ghana.
- The project is in line with the UN Sustainable Development Goals SDG 6.5. on transboundary water management. This contributes indirectly also to the management of water quality on the Volta River, which are outside the scope of the project, but weight heavily due to ongoing mining activities.
- The project outcomes also play a role in the planning and management of the Pwalugu multipurpose dam to be build in the North of the country and aimed at flood prevention.
- For Ghana, the economic damage through floods is more incisive than the damage caused by floods.

23.3 Efficiency of resource allocation

- Measurement equipment has been deployed during the project. Part of it is not yet installed due to late arrival at the end of the project in 2024.
- Resource allocation could not be commented on by Mr Darko.

23.4 Impacts

- In virtue of the project forecasts are distributed regularly to national agencies and stakeholders.
- The parties benefiting from the forecasts are foremost farmers, traditional authorities, transport industry, farmer associations.
- Dissemination occurs via TV, radio, mobile phones, WhatsApp groups.

23.5 Sustainability

- Major challenges for sustainability concern the logistics for observing equipment operation and maintenance (O&M). There are few government resources available to this end.
- Vandalism in the region poses a risk of instrument damage and loss of data as a result. Especially the theft of solar panels is an issue, and therefore they are being replaced with other sources of power supply which can be better protected.
- The sharing of data across the basin has had a positive spinoff and has created sufficient momentum to ensure continuation of the dissemination of bulletins.

23.6 Lessons learned

- The project has strongly improved data sharing on climate-related hazards across the Volta basin.

- The regional authorities leading the project, in particular the VBA and GWP-AO could have been more efficient.
- The adaptation and risk mitigation procedures have considerably improved through the project.
- In case a possible second phase of the project or any other follow up is funded, funds shuls go towards filling existing gaps.
- In Ghana gender participation could be improved with adequate measures.
- Participatory approaches such as those led by the project should become more common.
- The national countries must commit resources to O&M of equipment in a stable way.

24 Annex R: Meeting at the Ghana Meteorological Agency (GMET), Accra, Ghana

A visit to the premises of GMET by the international Consultant took place on the 30th of October 2024. The consultant was accompanied through the site the premises by Mr Peter William-Abbey. First, the consultant paid a courtesy at the office of the director general of the service. The following people were present:

- Dr. Eric Asuman, General Director of GMET
- Mr. Peter William Abbey
- Paolo Reggiani, International Consultant

Afterwards the consultant was taken to the server rooms and was given the opportunity see and validate the data transmission from the operational meteorological stations to the server and data base infrastructure.

The data base used is the MCH (Meteorology, Climatology and Hydrology Data base Management System) of WMO. Some of the stations did not transmit, allegedly due to faults in the equipment. Next, the international consultant was taken to the operational forecasting room, where the bulletins generated by the VoltAlarm system are amendment for to add the Ghana-specific meteorological and hazard information.

Figure 28: Operations room at the Ghana Meteorological Service, Accra.

25 Annex S: Meeting with the Directorate of Hydrology, Abidjan, Ivory Coast

The international consultant met with Mr. Yao Firmin at the Directorate General of Water Resources (DGRE) in Abidjan on the 5th of November 2024, at 9:00. After a brief courtesy visit to the office of the Director General of Water Resources Ivory Coast, Dr. Yeo Wonnan Eugène, the consultant was taken to the premises of the Directorate of Hydrology. On arrival, a meeting took place between 10:30 and 11:00. The following in following persons participated:

- Mr. Sow Massire, Chief Directorate of Hydrology
- Mr. Yao Firmin, DGRE
- Mr. Paolo Reggiani, International Consultant

Figure29: Group picture at the office of the Directorate of Hydrology, Abidjan. Mr Massire ist the second from the left in the front row.

During the meeting an interview took place with focus on the six evaluation criteria as a guideline.

25.1 Project relevance

- The project has facilitated training of vulnerable populations and local authorities to manage events linked to extreme hydro-meteorological phenomena. There was a strong involvement of beneficiaries during the project implementation. The day-to-day forecasting platform VoltAlarm has been acquired and is operationally in use at the Directorate of Hydrology.
- The service is actively involved in the preparation of the impact bulletin for heavy precipitation and flooding in the Volta basin. It allows for a detailed outlook on heavy

rain over a 5-day forecasting horizon. The project facilitates the acquisition of two transmission hydrometric stations, but these are not yet installed because they were delivered late in the project.
- In the frame of the project training for hydrometeorological services management of extreme events linked to climate change took place. The training concerned the collection of hydrological and meteorological data, introduction to daily forecasts and impacts.
- The project facilitated the involvement of media and stakeholders from different sectors in decision-making on natural hazards flood and drought. MyDEWETRA acts as a real-time exchange platform for information in this regard.
- An evacuation simulation exercise was held in the pilot rural community of Sangabili.

25.2 Effectiveness of Implementation

- The project led to involvement of the media, local authorities and stakeholders from different sectors in the implementation.
- Local people in rural communities have been trained to set up an early warning system in response to an event linked to climate change related hazards (flood drought, bushfires). A bushfire control committee has been set up in the village of Sangabili, the rural pilot project site in Ivory Coast.
- Training workshop for the various stakeholders and end users in different areas (fisheries, agriculture, water and forestry, livestock, civil protection, etc.) of hydrometeorological information took place.
- A detailed and practical flood and drought response plan (i.e. simulation exercise) was drawn up and was executed.
- Early warning systems were simplified and adapted to the understanding of decision-makers and beneficiary among the rural population by using colour codes, marking of trees, flags on masts, megaphones, WhatsApp messaging tools.
- A weather station which is fully operational was installed. Two more hydrometric stations not yet installed, but the equipment has been delivered.
- Women were involved in the preparation workshops and simulation exercises.
- Extensive programmes were initiated to raise awareness of the benefits of the project.
- Not only were always the players available, but they also showed their commitment to the project. As a particular success of the project was achieved by reaching emergency communication agreement protocols with different stakeholders.
- The project has enabled rural inhabitants to learn about the risks of flooding and drought, so that they can adopt appropriate behaviour to reduce the effects of climate change and save lives and property.

25.3 Efficiency of resource allocation

- The Hydrology Department, as a major stakeholder, was not aware of any financial resources allocated to it.

25.4 Impacts

- Among the major impacts was the setting up of a platform for daily rainfall, runoff and flood/drought impact forecasts
- Capacity building of national players to manage events linked to climate change was actively supported by the project
- The set-up of a hydrometeorological database for the basin based on MHC (Meteorology, Climatology and Hydrology Database Management System of WMO) has been advanced by the project.
- Unfortunately, there was no creation of an automatic transmission hydrometric station at the start of the project to better address hydrological problems in the project area.

25.5 Sustainability

- From the perspective of the Directorate of Hydrology, it is necessary to continue to hold up simulation exercises to increase risk awareness. The Sangabili village test case laid the basis design for the performance of multiple of such exercises in the future.
- The project execution highlighted the need for supporting national hydrometeorological services.

25.6 Lessons learned

- Among main lessons learned are the successful development of a blueprint for emergency simulation exercises and the training of all types of stakeholders.
- The installation of an automated hydrometric station on the watercourse instead of simply marking a tree trunk to mark flood heights would be effective.
- Considerable experience with regular observations of flows in watercourses in the project area was acquired.

26 Annex T: Meeting with the sub-directorate of Operational Planning, National Office of Civil Protection, Abidjan, Ivory coast

Next, a visit took place at the Sub-directorate of Operational Planning, National Civil Protection Agency (ONPC). The meeting took place on the 5th of November 2024 between 12:30 and 14:00.

- Mr. Brou Kouakou Olivier, Subdirector of Operational Planning, ONPC
- Mr. Yao Firmin, DGRE
- Mr. Paolo Reggiani International Consultant

Mr Kouakou was in charge of organizing the flood simulation exercise in Sangabili village from the side of the national civil protection. The area has been chosen because it is situated in the Volta basin and is regularly hit by inundation, which causes the access road to be damaged. Because of floods during the rain season, the entire area surrounding Sangabili is cut off from the outside world. The area is also exposed to drought risk, which is increasingly causing economic damage through bush fires.

The national department of civil protection, sub-directorate of operational planning developed the blueprint for the emergency simulation exercise. Thanks to funding through the project, workshops for villagers were organized in the town of Bondokou, the capital of the prefecture to which Sangabili belongs.

26.1 Project relevance

- The VFDM project has been designed to strengthen the capacities of disaster risk management institutions, particularly the office national civil protection (ONPC), by providing tools and training.
- This has been achieved through the Sangabili flood simulation exercise.
- National pilot test case has been created, which can serve as a blueprint for similar simulations in other communities outside of the Volta basin.

26.2 Efficiency of Implementation

- High involvement of the population with support of local NGO LaCIBES.
- Strong participation of all parts of the population (age groups, professions)
- High participation of women (40%)
- Clear contribution to strengthening self-reliance of the population in case of disaster as the pilot area is difficult to reach during floods.
- Improved communication with neighbouring villages leads to higher resilience in the case of an emergency.
- Both, flood and drought risk addressed and covered.

26.3 Efficiency of Resource Allocation

- The resources allocated for the simulation exercise were deemed sufficient.
- Similar exercises should be performed in other areas of the country following the Sangabili emergency simulation blueprint, but currently allocated national means are insufficient for a wider application.

26.4 Impact

- The emergency simulation simulations mobilized the entire rural community.
- The participants were representative of different age groups and activities.

- The project's impact on community response capacity has been significant. For example, the training received has enabled them to better anticipate floods, hence reducing damage during disasters.
- Communication among communities in the area has been improved and WhatsApp groups installed through which warnings from SODEXAM can reach the rural community.
- Drought risk awareness was also exercised during the emergency simulation.

26.5 Sustainability and lessons learned

- The simulation exercises were locally accompanied by the authorities of the prefecture of Bondogou, which is a solid indicator of the importance attributed to the issue.
- The communication procedures and protocols put in place during the project are sustainable as these can be continued into the future with little additional financial and material means, just by making use of broadly accessible communication channels and traditional ways of communication (smoke signals, flags, acoustic signalling using drums).
- The training provided enables the authorities to ensure the continuity of risk management efforts.
- Training courses have been set up for the maintenance of meteorological installations, ensuring their long-term functionality.
- The same type of simulation should be implemented also in other areas exposed to similar risk. To date this has not happened because of lack of funding

Figure 30: Group picture at the office of the sub-directorate of operational planning, National office of Civil Protection, Abidjan. The Subdirector Kouakou is depicted in the middle.

27 Annex U: Meeting with the Meteorological Service, SODEXAM, Abidjan, Ivory coast

Finally, the international consultant visited the premises of the National Meteorological Agency (SODEXAM) in proximity of Abidjan International Airport. The visit took place on the 5th of November 2024 between 16:00 and 17:00. After a short courtesy visit at the office of the Director General Dr. Konade Daouda of the Service, the Consultant met Mr. Soumahoro Lamine Ahmed for a short interview on the operational use of the Volt-Alarm system at the Service.

- Mr Soumahoro Lamine Ahmed, SODEXAM¸ national focal point VFDM Ivory Coast
- Mr. Yao Firmin, DGRE
- Mr. Paolo Reggiani, International Consultant

The consultant encountered the Mr Soumarhou, representing the national focal point of Ivory Coast in the project. The consultant was shown the interface of the VoltAlarm system and the server room at the, on which the national databases are working.

SODEXAM collected the data of the stations that were installed during the project, particularly the weather station installed at the Sangabili community visited by the international consultant. Mr Soumahoro confirmed positive participation at several training workshops during execution of the project. As the national meteorological service in charge of data exploitation, SOEDEXAM is also responsible for the editing the Ivory Coast component of the Flood and Drought alert bulletin.

With reference to sustainability, the cooperation with services of neighbouring countries has been strengthened through the project and will continue to hold up also beyond the end of the project life. SODEXAM is ready to participate in upcoming initiatives, such as the REWARD project, which will focus more on drought.

Like representatives of services in neighbouring countries, the need for further expansion of the observing network, meteorological as well as discharge has been mentioned as important goal.

Figure 31: Group picture taken during the visit at SODEXAM, Abidjan. Mr. Soumahoro is the second from the left.

28 Annex V: Visit to BAMA Communities in Burkina Faso, September 26-27, 2024

Criteria	Pâ / Hèredougou	Bama / Badara
Project realization		
A- What are the main actions your community has benefited from as part of the project and what did they consist of?"	- Capacity-building for active early warning of flood risks and effective risk preparation and management at the communal level - Simulation exercise conducted in Heredougou - Equipment grant received from the commune (lifebuoy, lifejacket (4), flashlight, 1 megaphone, 1 flashlight, 1 rope).	- Capacity-building on various topics relating to flood and drought risk preparedness, adaptation and management - Support with equipment such as a hydrometeorological station, road signs, life jackets and buoys, rope, gloves, torches, public address systems to broadcast and improve the range of sound over long distances and reach a large number of people simultaneously. - Exercise simulating the role of players in the event of flooding, to clarify expectations in terms of coordination between stakeholders. - Tree-planting day - Setting up a Whatsapp VoltAlarme Bama group - Strengthening communication between players by creating a whatsapp group.
B- Which people or categories of people (farmers, herders, fishermen, women, etc.) have participated in the project in your community?	Fishermen, farmers, livestock breeders, people with disabilities, men, women, the elderly, traditional and religious authorities, technical services, women's and youth associations.	Farmers, stockbreeders, fishermen, traditional and religious authorities, women, men, people with disabilities.
C- Have the most vulnerable populations (such as single women, the elderly, the disabled) benefited directly from the project? If so, how?	During the simulation and role-playing exercises, participants, including people with disabilities, took on roles. The rescue actions highlighted the priority given to people with disabilities during rescue operations.	Yes, they took part in certain activities as long as their disability did not hinder their participation: - Capacity-building activities - Simulation exercises
D- Which local institutions or partners did you work with on the project? How did you interact with them?	Administrative structures (DGPC, Météo, DGRE).	- Administrative structures (DGPC, Météo, DGRE). - An NGO (PNE-BF; Le Partenariat National de l'Eau). They received the following training. ***1.*** *Activity 1: Organization of two training sessions on flood and drought prevention for the people of Badara*

Criteria	Pâ / Hèredougou	Bama / Badara
		2. *Activity 2: Capacity building in flood and drought early warning system initiation.* **3.** *Activity 3: Drawing up a response plan to cope with the effects of flooding and drought: causes of flooding, solutions to consider in the event of flooding, resilience strategies.* **4.** *Activity 4: Setting up a flood and drought management committee: this committee is responsible for early warning and implementation of the village flood response plan (see appendix, Table I).* **5.** *Activity 5 (ongoing): Creation of a flood management platform in Badara, Proposal to improve the existing village warning system by installing beacons to better assess water levels.* **6.** *Activity 6 (ongoing): Census of vulnerable households* *Activity 7 (in progress): Acceptance and installation of equipment for a stand-alone hydrometeorological station*
E- Were there any specific challenges encountered during project implementation? How were they overcome?	Not really, they were integrated into the project late (November 2024).	No, not at all. Even COVID did not slow down VFDM project activities. Project technicians continued to work with their communities during COVID. Some training courses were carried out under pressure and concentrated on a short timeframe, making it difficult for grassroots populations to assimilate them. They pointed to late disbursements in the words of national partners.
F- How was communication between the various project stakeholders (community, authorities, partners) facilitated? What tools or methods were used to ensure good communication?	Ordinary and standard communication channel, (telephone call, administrative note address).	Communities are kept informed by members of the office and also by the local authorities. The office receives information from local authorities and national and regional structures (ABV, Météo et DGRE, and local NGOs). Use of WhatsApp group to broadcast alerts.

Criteria	Pâ / Hèredougou	Bama / Badara
1. Relevance		
A- Before the project, what were your main concerns about flooding and drought? Has the project addressed these concerns? How has it helped you?	Strengthening prevention and early warning capabilities. Saving human life.	They needed : - Equipment (ambulance, siren, construction of a second roundabout, motorcycle cab, dugout canoe, equipment to facilitate evacuation, storage area for agricultural produce, wheelchair and stretcher). - Infrastructure reinforcement : - Need for **2 bridges** to increase water flow; - **Drilling** requirements at station installation site. - Cleaning of sandy shallows, - Capacity-building needs in flood management in particular
C- Did you feel that the issues addressed by the project really corresponded to the difficulties you were encountering in terms of flooding and drought?	**Yes**, the simulation exercise was guesswork. There was a flood, and the coordination achieved during the simulation exercise is a factor in the successful management of August 2024, with zero loss of human life, unlike the years preceding the project. No, because the equipment made available to them was insufficient to initiate rescue operations in the flooded area. They were provided with light equipment. However, the need is also for large-scale equipment such as motorized pirogues. Current equipment received has not been used due to lack of real capacity.	**Yes**, the activities were relevant. A lot of satisfaction But not enough. See the first question in this section on additional needs.
D- Do you feel that the project has taken your needs and those of your community into account?	**No**. Need to set up a **rescue cell** in the event of flooding. Rescue cell in place. Indeed, during the recent floods, the village was isolated from the commune's main town by the waters, making the equipment stored in the commune inaccessible. What's more, the absence of a community association specializing in first aid in the locality accentuated the difficulties of intervening in emergency situations.	From the simulation exercise alone, there's plenty to be pleased about. The exercise demonstrated solid preparation, guaranteeing a successful response to the July 2024 flood in the village of Badara. Training the players involved has helped to mobilize all the stakeholders (prefect, high commissioner, etc.). What's more, the community is fully involved as a volunteer.
Are there other needs that have not been taken into account? Which ones?	**Yes**. No humanitarian assistance planned for the project, while flooding in Heredougou is accompanied by the destruction of homes. The new relocation site is far from basic social services. But the lack of amenities (latrines) has led to the emergence of disease in the community.	**No**

Criteria	Pâ / Hèredougou	Bama / Badara
E- Were the training courses offered as part of the project adapted to the specific needs of women and men?	Another relevant topic not addressed is the possibility of rescue by the local population.	**Yes**, the training sessions dealt with relevant issues such as the anthropogenic causes of flooding: silting of the watercourse linked to human activities. These are relevant topics. Awareness-raising campaigns to reduce flood risks Awareness-raising campaigns have been developed for the general public to reduce flood risks (avoid farming activities on riverbanks, respect regulatory distances).
F- Did you have opportunities to express your needs and concerns during the project? How was this feedback taken into account?	No, we were integrated into the project at the last minute and carried out only one activity: the simulation exercise, as well as capacity-building actions linked to this same activity.	Yes, at a meeting in the commune of Bama attended by national and international experts. However, they deplore the fact that such a beneficial meeting took place towards the end of the project. The proposals made were therefore not taken into account in relation to the deadline.
2. Efficiency		
A- During the project implementation period, did you receive any flood or drought warnings? Did these alerts help you prepare?	**Yes,** the risk of flooding in August 2024 has been brought to our attention. People were provided with information to help them prepare, evacuate people and part of their property to areas less at risk.	**Yes**, the flood of July 2024 came as no surprise to the majority of the community. The information or warning was issued moments before the incident. Information was disseminated through communication channels, using public address systems to reach as many people as possible. A local team descended on the most at-risk areas to help potential victims evacuate quickly. The training received from VFDM has prevented loss of life this year. The training and the early warning system have helped raise awareness and ensure better coordination of actions between the authorities, the community and other localities.
If not, what adjustments would you suggest?	-	The warning must take into account upstream areas (Djaradougou, Sendimisso), which are also a source of information and warning. The communities of these two localities have passed on the warning of a huge mass of water flowing towards the commune of Bama. Establishment of an emergency fund at municipal level to finance awareness-raising activities and the rapid dissemination of information once an alert has been received.
B- How do you receive these alerts and from whom?	ANAM, DGRE through a whatsapp group and some local players Transmission to CVD and village chief village whatsapp group	The source of the alert was twofold, if not threefold: The one coming from the technical services at central level (Météo, DGRE) and the one issued by the hydrometeorological station.

Criteria	Pâ / Hèredougou	Bama / Badara
		The 3ème source comes from communities in upstream areas who have knowledge of the river's actual situation. By WhatsApp group, flag system (white, orange, red). Place 3 flags in strategic locations around the city.
C- Do you think the information provided by the alerts is clear and easy to understand?	The format is understandable, as the local authorities have received capacity-building to interpret the messages.	Interpreting information from the water, from the weather, the training courses were a great help. Some, like the flag, the station; but hydro-weather information from technical services required training.
D- Have you taken part in any training courses or activities organized by the project to better cope with climate risks? If so, what did you learn?		
E- Have the women in your community been invited to these training courses?	Women at communal level took part. Women did not take part in certain activities	-
F- Are the tools or materials/equipment provided by the project for climate data collection used? If so, by whom and how?	Heredougou did not benefit, as it was included in the last phase of the project (November 2023).	Public address by press release (association). Others, like gilet beauté, require the hazard to occur (association). WhatsApp group members.
G- Were there any extreme weather events during the project implementation period? Please describe these periods.	**Yes**, only one, that of August 2024, as this is linked to its late integration. A major climatic event occurred in August 2024.	**Yes** on July 18, 2024 for flooding March-April 2024 (drought) with drought (with station alert). Impact on agricultural, animal and human products (lack of water for drinking and hygiene).
H- If so, how was coordination between the various players (local authorities, organizations, etc.) achieved?	Only firefighters were authorized to carry out rescue activities in the water. In fact, the main players prevented the communal players from taking formal charge of the project, which was blocked on the other side of the flooding point. The communities played a role in evacuating the material from the concessions. The communicating authorities organized the whole strategy and invited the structures involved.	The example of the players involved in simulation Information for a judicious choice of agricultural crops (short cycle) For drought, no other coordination actions.
I- Have you noticed any improvement in the management of these events compared with the years preceding the project?	Improved care and support from other communities to preserve materials and prevent loss of life.	**Yes**, because better care changes behaviour Skills development and adapted practices. Revisit training courses and materials to make better use of other elements not covered during training.

Criteria	Pâ / Hèredougou	Bama / Badara
J- How are alerts integrated into the community's daily practices? Have there been any improvements in preparation or response following the implementation of the project?	Regular consultation of alerts to stay one step ahead.	Communities now pay attention to the color code of the flag, Observing the water level (some people only believe by observing the facts (seeing the water level rise).
K- How has feedback from community members been incorporated into the development of strategies for responding to climate risks?	No opinion	Information dissemination has integrated several dimensions. Information carried on a large scale by town criers and the adoption of other effective communication strategies such as door-to-door canvassing.
3. Efficiency		
A- Have you noticed any changes in your village (infrastructure, support for farmers, etc.) since the project began?	No	No
B- In your opinion, were the project actions implemented quickly and efficiently?	Yes, the actions were implemented quickly and efficiently, despite the late start to the project. We have noticed a rapid response and the emergency action services (conasur, development of reflection and transmission of information to the national level for management.	**Yes** for certain actions. The simulations were carried out in good time just before the flood, which contributed greatly to the management of the disaster. **Not** for certain capacity-building activities for which there isn't enough time to carry them out properly (concentration of training activities over a relatively short period).
C- Do you think the funds allocated to this project have been well invested in the various projects carried out in your community?	They did not give an opinion on the matter as they did not consider themselves to be budget authorizers.	They did not give an opinion on the matter as they did not consider themselves to be budget authorizers.
D- Have the decision-making processes for project implementation been transparent and inclusive?	They have not been taken into account, and believe that this is linked to their special status in the implementation of the project. Late integration with the completion of a flagship activity: simulation exercise and associated capacity-building sessions.	They were taken into account in the decision-making process (equipment, station, awareness). They expressed their needs as the project progressed. For example, the provision of certain equipment was based on the community's expressed needs.
E- Have there been any significant variations in the quality or speed of services provided compared with initial expectations? If so, how were these variations managed?	No opinion	Activities or some of them have been delayed due to funding delays Impact: some of the training sessions focused on the end, which did not facilitate assimilation by the communities.
4. Impacts (Effects)		

Criteria	Pâ / Hèredougou	Bama / Badara
A- Since the project began, have you observed any changes in the way your community prepares for floods or drought?	Yes. Precautions are now taken according to rainfall (people avoid flood-prone areas when rain is forecast). Access to flood-prone areas is also conditioned by the time of day (they avoid being there at certain times).	There has been a noticeable change in the vast majority of people, who are now more willing to evacuate in good time as soon as an alert is received.
B- Have you seen a change in the way women participate in community decision-making, particularly on issues related to floods and drought?	Generally speaking, women are involved in community decision-making. However, in the specific case of the VFDM project, there were not enough activities to allow an assessment of their involvement. During the flood, there really wasn't enough time to prepare adequately, although some of the actions suggested during the simulation could be reproduced.	Women play an active role in disseminating information within the community. Women's decisions are taken into account during critical situations. For example, during the flood, some women suggested limiting the number of people gathering around the fragile areas of the bridge that had collapsed under the pressure of the water.
C- Has the project helped your community to better protect its crops, property or animals in the event of flooding or drought?	Yes, as soon as the alert was received, evacuation began immediately. Animals and other property were rescued, limiting material losses.	Yes, the animals were evacuated on time. What's more, people are adopting an interesting new approach by now avoiding flood-prone areas. This evolution is reflected in the fact that several people have chosen not to cultivate on riverbanks this year, demonstrating a heightened awareness of flood risks.
D- Have you observed any unexpected advantages/benefits from implementing the project? If so, which ones?	No. Better preparedness and effective response in the event of flooding.	Initially, the idea was to pool efforts and knowledge to prepare for the consequences of floods and droughts. However, there was no provision for equipment, and potential acquisitions of amenities are all relevant today. Similarly, the hydrometeorological station was previously destined for the Kongoussi commune.
E- Have you noticed an improvement in your quality of life since the project began?	Yes, the fact that the majority of assets were saved during the flood, in contrast to the situation prior to the project's implementation, bears witness to an improvement in the response provided. In addition, the rapid intervention of state social services, with food distributed to disaster victims on the same day, reinforced the effectiveness of the care provided to victims.	Yes, it has improved solidarity and cooperation within the community, while promoting social cohesion. From now on, intervention will take a global approach, integrating the dissemination of information, evacuation, the provision of initial social services, and follow-up after resettlement. In addition, acts of solidarity such as housing disaster victims without financial compensation and other forms of assistance exist.
F- Has the project made you feel safer in the face of extreme weather events?	No answer	Yes. The various community awareness campaigns reinforce the precautions taken and the avoidance of farming in flood-prone areas, and facilitate the choice of crops adapted to climatic conditions (short or long cycle).
G- Has the project helped to strengthen solidarity or cooperation between community members in the		Yes, it has improved solidarity and cooperation within the community, while promoting social cohesion. From now on, intervention will take a global approach, integrating the dissemination of information, evacuation, the

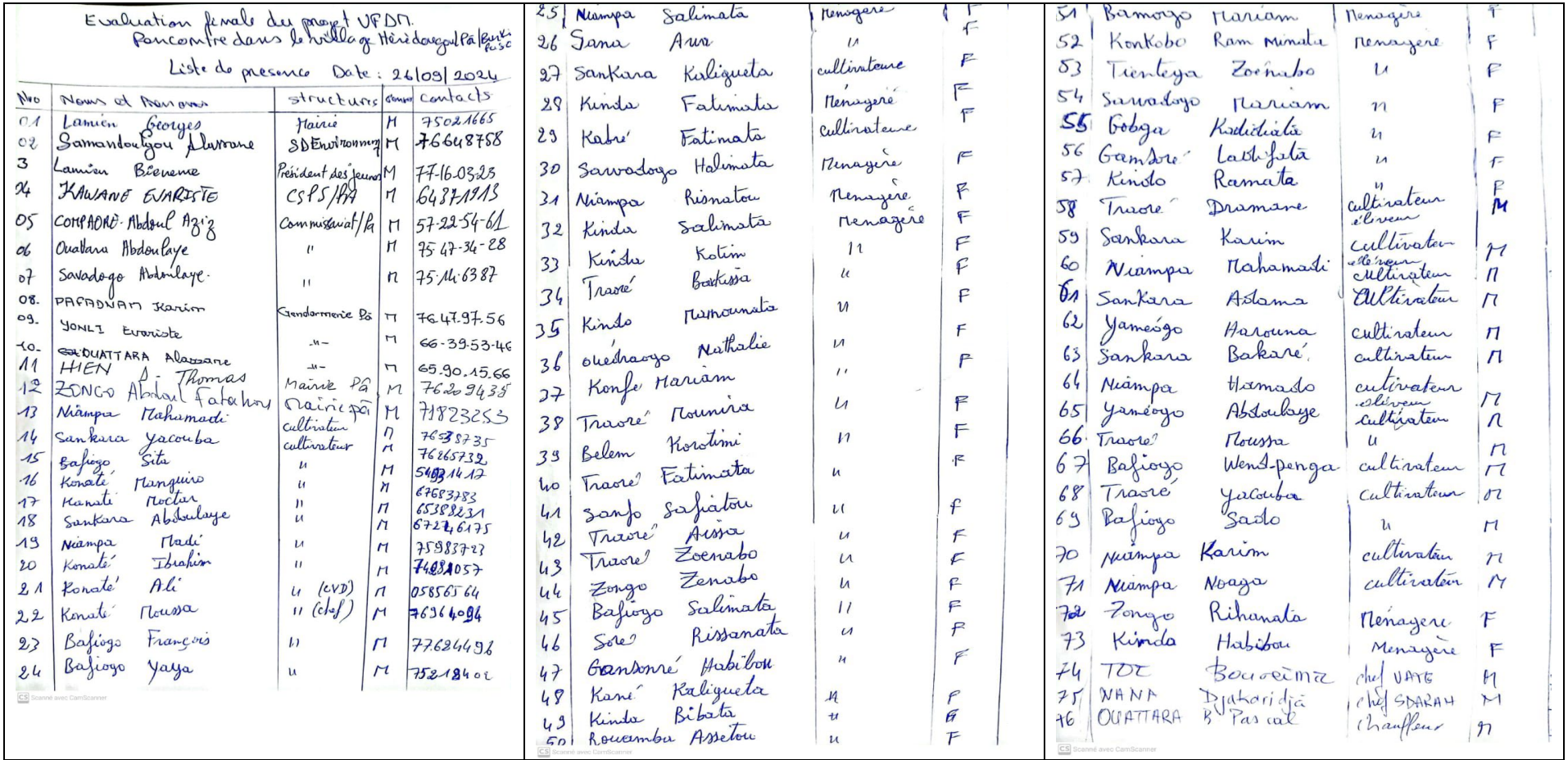
Criteria	Pâ / Hèredougou	Bama / Badara
face of floods or droughts? If so, how?		provision of initial social services, and follow-up after resettlement. Solidarity actions such as providing free accommodation for disaster victims and other forms of assistance are also available.
H- Have you observed any changes in the behavior of community members regarding agricultural practices or climate risk management strategies?	We can't talk in concrete terms about changes in behavior, as the major activities are focused on the flood simulation exercise. However, the training received by the communal, customary and religious authorities and the communities has enabled coordinated action by the commune's players. Also during the meeting, some disaster victims admitted that they had learned from the restrictions imposed and would henceforth avoid flood-prone areas after their crops and homes had been destroyed.	Yes, because farming practices now take account of flood risk factors. As a result, farmers have adopted a speculative approach to land use, with highland cultivation for less water-demanding crops, and lowland cultivation for crops with permanent water requirements. Producers also avoid the river banks.
I- Has the project influenced the way local authorities plan and manage responses to climate-related disasters?	Yes, we are currently observing - Alert reception to facilitate preparation; - A coordinated response through greater involvement of local authorities, decentralized technical services, defense and security forces, specialized first-aid teams and humanitarian actors, - Real-time information sharing ; - Reinforce a commitment to accountability to authority through the development of rapid reporting to line management; - Dissemination of voltalarm information via rapid communication channels such as social networks, which surpass the communication efficiency of town criers.	Yes, a watch unit is set up, headed by the prefect.
5. Sustainability		
A- Do you think the changes brought about by the project will continue to help you after the project is over? If so, how?	Capacity building is a lasting achievement. The equipment received will also be recycled over the long term	Yes, because they recognize the benefits of the project's actions in a context of recurring climatic phenomena such as flooding.
B- Will members of your community continue to use the new practices taught by the project to cope with climate risks? How do you plan to	Yes, I've already answered question "H" above.	Yes. All actions already deployed and having proved their worth will be continued. Equipment received such as lifebuoy, lifejacket, etc.

Criteria	Pâ / Hèredougou	Bama / Badara
perpetuate the use of these practices?		- Knowledge gained from capacity-building sessions is shared on a daily basis / constant community awareness-raising by members of the management committee. - the whatsapp group makes it possible to disseminate information on a permanent basis; - Practices that require little or no resources are easily sustainable. This is the case with flagpoles, whose installation is affordable for the community. - However, other materials and practices requiring substantial mobilization of financial resources will be difficult to sustain without financial support from the community. - The operation of the watch unit in the event of activation is very costly in terms of resources, and the allocation of financial resources to a fund at community or local level will reabsorb voluntary work, which hardly seems to fit in with an orientation towards sustainability.
C- Do you think that the various authorities who were in contact with you during the implementation of this project will continue to support you after the end of the project? If so, which ones?	Yes, the deconcentrated technical services, the defense and security forces, the Special Delegation and the communal authorities will remain involved for several reasons. It's all part of their regalian mission. What's more, the various training courses have reinforced this sense of accountability to the communities.	They continue to receive alerts from the Meteorological Office and the General Directorate for Water Resources, which frequently carry out maintenance and data collection on the hydrometeorological devices, even after the project has ended.
D- Do you think your community will continue to work with the authorities to prevent the consequences of flooding and drought in the years to come?	Yes As long as there is a risk of flooding in the area.	Yes, Municipal and administrative authorities will still be involved (as observed during the previous flood). The drafting of a letter of thanks expressing recognition of the management committee's efforts in dealing with the past flood. Words of encouragement for the community from the project authorities (ABV).
E- Are there any networks or groups of women created thanks to the project that could continue to work together/collaborate to manage climate risks?	No	There are women in the office, but there's no group set up for this purpose. They are involved and will remain involved in the management committee.

Criteria	Pâ / Hèredougou	Bama / Badara
F- What mechanisms have been put in place to ensure the continuity of project activities after its completion?	ORSEC emergency organization plan A dynamic system exists that can be activated and mobilized at any time to deal with disasters (CODESUR).	Order issued by the town hall for the benefit of the management committee. Setting up a whatsapp group. The existence of the Badara management committee office
6. Lessons learned and best practices		
A- What project activities have been most useful for you and your community? Why or why not?	Capacity building (on seasonal forecasts) to plan their farming activity according to the information received, the techniques and knowledge received (applied fertilizer). An established cycle of flooding in the locality seems to be 2 years makes preparation easier.	The installation of ladders in the upstream localities of Djarabadougou and Sandimisso makes it easier to monitor rising water levels. The installed flagpole provides the community with instant intelligence on Bama's disaster situation. Meteorological station contributes to risk forecasting and management Community capacity-building activities play a key role in disaster preparedness and resilience
B- What did you like best about the project?	Only the simulation exercise and associated training topics were delivered to the community. They were also provided with rescue equipment for the rescue operations. Coordinating stakeholders to manage flooding. Capacity-building for local populations to empower them to prepare for flood warnings.	The actions carried out as part of the project have greatly contributed to improving the community's preparedness for flood risks. The simulation exercises were particularly praised for their decisive role in the absence of loss of life this year, as well as in reducing the damage caused during the floods of 2024, despite the collapse of vital infrastructure such as the Badara bridge.
C- What good gender practices have you observed during project implementation? Do you think they could be replicated in other communities?	No particular appreciation. All categories of people were involved.	The entire community was involved, without distinction of specific groups. All categories of people were taken into account and treated fairly, without giving preferential treatment to any particular group. Each group participated actively and received equal treatment, while taking care not to marginalize minorities. Situations requiring gender-specific intervention were discussed at meetings and decisions were taken by consensus. This approach fostered a collective commitment to a common cause.
D- What didn't you like about the project? What did you dislike about the project?	The opportunity for capacity-building is limited to the village of Hèredougou, rather than on a wider scale, that of the commune. Lack of support for women, such as income-generating activities. Lack of investment in dedicated water management infrastructures	Lack of planning of activities, resulting in their implementation too close together, hindering effective assimilation of all the concepts and cases presented during training sessions. The members of the management committee deplored the speed with which certain activities considered strategic for the community were implemented.

Criteria	Pâ / Hèredougou	Bama / Badara
	Lack of support for setting up a rescue unit (local rescue committee). Weak equipment support Lack of action to take care of disaster victims in the event of a climatic event (flooding)/ a disaster reception center. Limited and incomplete provision of rescue equipment at project level. The equipment kit received did not enable it to be deployed in time (during the flood of August 2024).	
E- Is there anything you would like to see changed or improved in the way similar projects are implemented in the future? Are there any aspects of the project that you see as models of good practice in climate risk management?	Coordinating stakeholders to manage flooding. Capacity-building for local populations to empower them to prepare for flood warnings.	Support for adapted equipment (ambulance, motorized dugout canoe, construction of storage facilities for agricultural produce, stretchers, wheelchairs for disabled people, tricycle vehicle, etc.). Financial support for risk preparedness and management initiatives Need for capacity building in areas not yet covered for the benefit of the community.
F- How could similar projects better involve women or better meet their needs in the future?	Capacity building for duplication Interest in information to be disseminated on alerts and taken into account. Raising awareness of the need to avoid flood-prone areas (construction - rural activities - choice of crops according to soil and climate characteristics).	Building a borehole for the Bama community Provide financing mechanisms for women.
G- Do you have any suggestions for better preparing other communities for floods and drought, based on what you've learned from the project?	Speed up evacuation of flood-prone areas as soon as warnings are received.	For an intervention in a given locality, they suggest starting with the simulation exercise, which is central to understanding the other types of project activity to be carried out. This result alone amply justifies the project's relevance.
H- Are there elements of the project that could be improved to better respond to the specific challenges faced by certain categories of people (such as the elderly or the disabled)?	The existence of a rescue and relief unit (e.g. a Red Cross unit) in areas at risk of flooding is a necessity. This is the lesson learned by the community.	Adapted equipment for evacuating disabled people (wheelchairs and stretchers) and the elderly.

IMAGES COMMUNES DE PA / Village of Hèredougou	IMAGES COMMUNES DE BAMA / Badara
	
	



Evaluation finale du projet UFDM.
Rencontre dans le village de Hérédougou Pâ (Burkina Faso)

Liste de presence Date : 26/09/2024

N°	Noms et Prénoms	structures	Genre	contacts
01	Lamien Georges	Mairie	M	75021665
02	Samandoulgou Alassane	SDEnvironnement	M	76648758
3	Lamien Bienvenue	Président des jeunes	M	77-16-03-25
04	KAWANE EVARISTE	CSPS/PA	M	64371913
05	COMPAORÉ Abdoul Aziz	Commissariat/Pâ	M	57-22-54-61
06	Ouattara Abdoulaye	"	M	75 47-34-28
07	Savadogo Abdoulaye	"	M	75.11.63.87
08	PAFADNAM Karim	Gendarmerie Pâ	M	76.47.97.56
09	YONLI Evariste	-"-	M	66-39-53-46
10	OUATTARA Alassane	-"-	M	65.90.15.66
11	HIEN S. Thomas	Mairie Pâ	M	76 20 94 35
12	ZONGO Abdoul Fatahou	Mairie Pâ	M	71823253
13	Niampa Mahamadi	Cultivateur	M	76538735
14	Sankara Yacouba	cultivateur	M	76265732
15	Bafiogo Sita	"	M	54831417
16	Konaté Manguiro	"	M	67683783
17	Konaté Noctar	"	M	65388231
18	Sankara Abdoulaye	"	M	67246175
19	Niampa Madi	"	M	75983723
20	Konaté Ibrahim	"	M	74831057
21	Konaté Ali	" (CVD)	M	05856564
22	Konaté Moussa	" (chef)	M	76916094
23	Bafiogo François	"	M	77624496
24	Bafiogo Yaya	"	M	75218402
25	Niampa Salimata	Ménagère	F	
26	Sana Awa	"	F	
27	Sankara Kaligueta	cultivateur	F	
28	Kinda Fatimata	Ménagère	F	
29	Kaboré Fatimata	Cultivateur	F	
30	Savadogo Halimata	Ménagère	F	
31	Niampa Rismatou	Ménagère	F	
32	Kinda Salimata	Ménagère	F	
33	Kinda Kotim	"	F	
34	Traoré Barkissa	"	F	
35	Kinda Mamounata	"	F	
36	Ouédraogo Nathalie	"	F	
37	Konfé Mariam	"	F	
38	Traoré Rounira	"	F	
39	Belem Korotimi	"	F	
40	Traoré Fatimata	"	F	
41	Sanfo Safiatou	"	F	
42	Traoré Aissa	"	F	
43	Traoré Zoenabo	"	F	
44	Zongo Zenabo	"	F	
45	Bafiogo Salimata	"	F	
46	Soré Rissanata	"	F	
47	Gansoré Habibou	"	F	
48	Karé Kaligueta	"	F	
49	Kinda Bibata	"	F	
50	Roamba Asseton	"	F	
51	Bamogo Mariam	Ménagère	F	
52	Konkobo Ram Minata	Ménagère	F	
53	Tientega Zoénabo	"	F	
54	Savadogo Mariam	"	F	
55	Bobga Kadidiata	"	F	
56	Gansoré Latifata	"	F	
57	Kindo Ramata	"	F	
58	Traoré Dramane	cultivateur éleveur	M	
59	Sankara Karim	cultivateur éleveur	M	
60	Niampa Mahamadi	cultivateur	M	
61	Sankara Aslama	Cultivateur	M	
62	Yaméogo Harouna	cultivateur	M	
63	Sankara Bakaré	cultivateur	M	
64	Niampa Hamado	cultivateur éleveur	M	
65	Yaméogo Abdoulaye	cultivateur	M	
66	Traoré Moussa	"	M	
67	Bafiogo Wend-penga	cultivateur	M	
68	Traoré Yacouba	Cultivateur	M	
69	Bafiogo Sado	"	M	
70	Niampa Karim	cultivateur	M	
71	Niampa Noaga	cultivateur	M	
72	Zongo Rihanata	Ménagère	F	
73	Kinda Habibou	Ménagère	F	
74	TOE Boucaïma	chef VATE	M	
75	NANA Djakaridja	chef SDARAH	M	
76	OUATTARA B. Pascal	Chauffeur	M	

Attendance list for the interview with the Pâ community in Burkina-Faso

REGION DES HAUTS-BASSINS
PROVINCE DU HOUET
COMMUNE RURALE DE BAMA
MAIRIE
SECRETARIAT GENERAL

BURKINA FASO
Unité – Progrès – Justice

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Bama, le 27 septembre 2024

LISTE DE PRESENCE

Rencontre ..Evaluation afinale du projet V.F.D.M. sur le site pilote de Bama/Badara.

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Attendance list for the interview with the Badara community in Burkina-Faso

29 Annex W: Visit to Daoudè community in Togo, October 4, 2024

The meeting brought together representatives of the Daoudè community in Togo, including committee members from all 11 villages, women, youth, members of the project management committee, as well as the community chief and local government officials. The main objective was to evaluate a climate resilience project aimed at strengthening the community's capacity to adapt to the impacts of climate change. This VFDM project, implemented over a 4-year period, focused on climate risk awareness, training and the installation of infrastructure to support community resilience. During the discussions, participants shared their experiences and views on the effectiveness of the project, while identifying areas for improvement.

Criteria	Daoudé Community
Project realization	
A- What are the main actions your community has benefited from within the framework of the project and what did they consist of?"	Key actions include flood and drought risk management training, flood evacuation simulations, water level beacons and the installation of a weather station. These activities enabled community members to acquire essential skills to better prepare for and respond to natural disasters.
B- Which people or categories of people (farmers, herders, fishermen, women, etc.) have participated in the project in your community?	The project brought together a wide range of stakeholders, including farmers, community leaders, herders, women, youth, members of women's community groups and others.
C- Have the most vulnerable populations (such as single women, the elderly, the disabled) benefited directly from the project? If so, how?	Yes, vulnerable populations have benefited from the project thanks to tailored training and specific actions. For example, awareness-raising sessions have been organized for women and men, enabling them to better manage water resources and gain access to more sustainable farming techniques.
D- Which local institutions or partners did you work with on the project? How did you interact with them?	Administrative structures (ANAMET, ANPC (Agence nationale de protection civile), OMM, Direction en eau, Direction de l'environnement). Local NGOs, JVC, Collaboration with several local institutions, including: • **Daoudé town council:** They provided us with data on the community's vulnerabilities and helped us mobilize the population. • **Traditional chiefs:** They played an essential role in communicating the project's messages and resolving conflicts. • **Schools:** We have organized awareness-raising workshops in schools to educate young people about the risks associated with climate change. • **Women's organizations:** These organizations have been key partners in the implementation of women-specific activities, such as the creation of vegetable gardens.

Criteria	Daoudé Community
	The communities interacted regularly with these partners through meetings, workshops and field visits. These exchanges enabled us to better understand the community's needs and adjust our interventions accordingly.
E- Were there any specific challenges encountered during project implementation? How were they overcome?	The involvement of community leaders, as well as community and neighborhood development groups, was crucial in encouraging buy-in to the project and facilitating acceptance of the changes. Some remote villages had difficulty receiving information in time. This was overcome by setting up relay points to improve communication.
F- How was communication between the various project stakeholders (community, authorities, partners) facilitated? What tools or methods were used to ensure good communication?	Initially, some members of the community were not fully aware of climate issues. To remedy this, awareness-raising sessions were stepped up, using participative approaches and practical demonstrations to better involve residents (such as a simulation exercise in the face of innodation).
1. Relevance	
A- Before the project, what were your main concerns about flooding and drought? Has the project addressed these concerns? How has it helped you?	Prior to the project, communities' main concerns included the protection of children on their way to school, rural exodus, guaranteed income, access to basic services, access to drinking water, food insecurity due to frequent droughts, and crop loss caused by flooding. The project responded to these concerns by providing training in resilient agricultural practices and setting up warning systems to prevent flooding. This enabled communities to better prepare their crops and minimize losses.
C- Did you feel that the issues addressed by the project really corresponded to the difficulties you were encountering in terms of flooding and drought?	Yes, the issues addressed by the project corresponded perfectly to the difficulties faced by the communities. The training courses on water management and cultivation techniques adapted to climatic conditions were particularly relevant. The communities were able to see an improvement in our farming practices thanks to this.
D- Do you feel that the project has taken your needs and those of your community into account?	Yes, the communities feel that the project has taken into account some of their needs, particularly in terms of training and awareness of flood and drought management.
Are there other needs that have not been taken into account? Which ones?	However, there are still essential unmet needs, such as improving access to drinking water and developing irrigation infrastructure to manage water for agriculture. Communities appreciate the efforts made, but it would be beneficial to broaden the scope of action to address the full range of community concerns.

Criteria	Daoudé Community
F- Were the training courses offered as part of the project adapted to the specific needs of women and men?	Yes, the training courses offered as part of the project were well adapted to the specific needs of women and men. Separate sessions were organized for each group, covering topics such as water management and cultivation techniques. This approach encouraged balanced participation and met everyone's needs. What's more, the use of local languages greatly facilitated participants' understanding and commitment.
G- Did you have opportunities to express your needs and concerns during the project? How was this feedback taken into account?	Yes, communities have had several opportunities to express their needs and concerns at meetings and workshops. However, not all feedback was fully taken into account, particularly with regard to the need to improve access to storage, irrigation and drinking water infrastructure. Although some concerns were incorporated into project activities, other important aspects remained unresolved, limiting the overall impact on the community.
2. Efficacity	
A- During the project implementation period, did you receive any flood or drought warnings? Did these alerts help you prepare?	Yes, during the project implementation period, communities received flood and drought alerts. These alerts were very useful in terms of preparation, as they enabled preventive measures to be taken, such as reinforcing shelters and adapting farming practices. However, it has been observed that these alerts are not always timely. To improve this situation, it would be beneficial to train more community members on how to respond effectively to alerts and emergencies.
If not, what adjustments would you suggest?	-
B- How do you receive these alerts and from whom?	Alerts are mainly transmitted by radio (such as Radio Ouada Soli), by word of mouth and sometimes via WhatsApp messages. The community also seems to have integrated traditional signals such as the observation of animal behavior and weather conditions to anticipate seasonal changes. Some remote villages had difficulty receiving information in time. This problem was solved by installing relay points to improve communication.
C- Do you think the information provided by the alerts is clear and easy to understand?	The information provided by the alerts is generally clear, but needs to be adapted to the local context to make it easier to understand.
D- Have you taken part in any training courses or activities organized by the project to better cope with climate risks? If so, what did you learn?	Yes, community members have taken part in training courses organized by the project to better cope with climate risks. They have acquired knowledge of water management, agricultural practices adapted to climatic variations, risk indicators and flood prevention strategies. This knowledge is essential for strengthening the protection of our community.

Criteria	Daoudé Community
E- Have the women in your community been invited to these training courses?	Yes, the women of our community have been invited to take part in these training courses.
F- Are the tools or materials/equipment provided by the project for climate data collection used? If so, by whom and how?	Yes, the tools and materials provided for climate data collection are being used, mainly by farmers and community groups. They use them to monitor weather conditions and adjust their farming practices, thus helping to reduce drowning incidents.
G- Were there any extreme weather events during the project implementation period? Please describe these periods.	No, there were no extreme weather events during the project implementation period.
H- If so, how was coordination between the various players (local authorities, organizations, etc.) achieved?	Coordination between the various players was achieved through regular meetings and exchanges of information. Neighborhood and community development groups played a crucial role in this process, facilitating collaboration between local authorities, organizations and the community.
I- Have you noticed any improvement in the management of these events compared with the years preceding the project?	Yes, communities have noticed an improvement in the management of these events compared with pre-project years, thanks in particular to better preparation and awareness within the community.
J- How are alerts integrated into the community's daily practices? Have there been any improvements in preparation or response following the implementation of the project?	Yes Warnings are now integrated into the daily practices of the community, particularly in the planning of agricultural activities and the management of water resources. Since the implementation of the project, we have seen a significant improvement in our preparedness and ability to respond to risks.
K- How has feedback from community members been incorporated into the development of strategies for responding to climate risks?	Feedback from community members was used to fine-tune strategies for responding to climate risks. During meetings and workshops, participants shared their experiences and concerns. This information has helped to improve risk management methods, adapt training and set up more effective prevention systems.

Criteria	Daoudé Community
3. Efficiency	
A- Have you noticed any changes in your village (infrastructure, support for farmers, etc.) since the project began?	Yes, we have seen significant changes in our village since the project began. Infrastructure has been improved, notably through the construction of dykes and drainage channels. In addition, increased support has been provided to farmers through training and adapted resources.
B- In your opinion, were the project's actions implemented quickly and efficiently?	Yes, project actions were implemented quickly and efficiently. The teams in the field coordinated the activities well, enabling the objectives to be achieved on schedule.
C- Do you think the funds allocated to this project have been well invested in the various projects carried out in your community?	Yes, I think the project funds have been well invested. For example, the installation of ablise and the renovation of infrastructure have improved our living environment, thus meeting the community's needs in terms of flood protection. In addition, training has been offered to farmers to help them adopt sustainable farming techniques. However, it would be beneficial to invest more in a drinking water system, such as the installation of wells or reservoirs. It is also important to develop water management infrastructures for agriculture, such as efficient irrigation systems, as well as water retention projects and dams to ensure a stable water supply. Nevertheless, we have encountered maintenance problems with some infrastructures, notably bridges that threaten to collapse, requiring particular attention to ensure their long-term durability and efficiency.
D- Have the decision-making processes for project implementation been transparent and inclusive?	Decision-making processes concerning project implementation were not always seen as transparent and inclusive. Indeed, WMO (World Meteorological Organization) representatives made few visits to the field, which sometimes created a feeling of exclusion among local stakeholders who wanted to be more involved in the process.
E- Have there been any significant variations in the quality or speed of services provided compared with initial expectations? If so, how were these variations managed?	No, there were no significant variations in the quality or speed of the services provided compared with initial expectations. The implementation teams were able to maintain a high level of service quality. In the event of minor problems, adjustments were quickly made to meet the needs of the community. An illustrative example is the weather station, which was initially connected to Belgium instead of directly to Anamet in Lomé. This problem was quickly identified and resolved, ensuring that weather data could be accessed locally in a timely manner.
4. Impacts (Effects)	
A- Since the project began, have you observed any changes in the way your community prepares for floods or drought?	Yes, there have been significant improvements in the community's preparedness for floods and drought, thanks in particular to training, simulation exercises and the infrastructure put in place.

Criteria	Daoudé Community
B- Have you seen a change in the way women participate in community decision-making, particularly on issues related to floods and drought?	Yes, women's participation in decision-making has increased, and they are now more involved in discussions concerning climate risk management.
C- Has the project helped your community to better protect its crops, property or animals in the event of flooding or drought?	Yes, the project has improved crop and property protection thanks to prevention infrastructures and adapted farming practices.
D- Have you observed any unexpected advantages/benefits linked to the implementation of the project? If so, which ones?	Yes, we've seen some unexpected benefits, such as greater community solidarity and increased environmental awareness, notably through reforestation projects.
E- Have you noticed an improvement in your quality of life since the project began?	Yes, quality of life has improved thanks to better access to water, training and more resilient infrastructures.
F- Has the project made you feel safer in the face of extreme weather events?	Yes, the project has increased community members' sense of security in the face of extreme weather events. Here are a few elements that illustrate this change: 1. **Training and awareness-raising:** Training sessions on climate risk management have given residents a better understanding of extreme events, such as flooding or drought, and how to prepare for them. 2. **Implementing preventive measures:** Thanks to the project's recommendations, protective infrastructures, cultivated at a distance of over 100 meters from the river, have been established, reducing the risk of damage during bad weather. 3. **Access to resources and information:** The project has facilitated access to resources and information crucial to agricultural planning, enabling farmers to make more informed decisions. 4. **Strengthening community solidarity:** The project has encouraged collaboration between villages, improving communication and collective response to climatic crises. 5. **Raising awareness of resilience:** Tree-planting and reforestation initiatives have raised awareness of the importance of preserving the environment, which contributes to resilience in the face of climate change. In short, the project not only provided practical tools for dealing with climatic events, but also boosted residents' confidence in their ability to manage such situations.
G- Has the project helped to strengthen solidarity or cooperation between community members in the	The project has made a major contribution to strengthening solidarity between members of our community. Thanks to training and awareness-raising activities, residents have become more involved in flood and drought risk management. We have set up local disaster management committees that enable all community members to participate in decision-making.

Criteria	Daoudé Community
face of floods or droughts? If so, how?	**Creating social links:** "The project has helped to create social links between different groups in the community. Activities organized as part of the project, such as collective landscaping work, enabled residents to meet, share experiences and develop a sense of belonging to a closer-knit community." **Improved communication:** "Thanks to the communication tools put in place by the project, such as WhatsApp groups and regular meetings, we have been able to improve communication between the various players in the community. This has enabled us to better coordinate our efforts in the face of extreme weather events.
H- Have you observed any changes in the behavior of community members regarding agricultural practices or climate risk management strategies?	We can't talk in concrete terms about changes in behavior, as the main activities are focused on the flood simulation exercise. However, the training received by the communal, customary and religious authorities and the communities has enabled coordinated action by the commune's players. Also during the meeting, some disaster victims admitted that they had learned from the restrictions imposed and would henceforth avoid flood-prone areas after their crops and homes had been destroyed.
I- Has the project influenced the way local authorities plan and manage responses to climate-related disasters?	Yes, we are currently observing - Alert reception to facilitate preparation; - A coordinated response through greater involvement of local authorities, decentralized technical services, defense and security forces, specialized first-aid teams and humanitarian actors, - Real-time information sharing ; - Reinforce a commitment to accountability to authority through the development of rapid reporting to line management; - Dissemination of voltalarm information via rapid communication channels such as social networks, which surpass the communication efficiency of town criers.
5. Sustainability	
A- Do you think the changes brought about by the project will continue to help you after the project is over? If so, how?	Yes, the changes brought about by the project will continue to help us after it's over. Here's how: 1. **Awareness-raising and training**: The training received on climate risk management has enabled community members to acquire valuable knowledge and skills. These skills will be put into practice during future crises, such as floods or droughts. 2. **Sustainable infrastructure**: Infrastructure such as dykes and drainage channels will continue to protect our farmland and homes from extreme weather events. Their presence will help reduce material losses and ensure the safety of residents. 3. **Improved farming practices**: Introducing sustainable farming practices and raising awareness of the need to cultivate at a safe distance from rivers will enable farmers to better manage their crops in the face of climatic hazards. 4. **Solidarity between communities**: The project has strengthened solidarity between community members, fostering a collective response to future challenges. This collaboration will be essential to effectively manage climate crises.

Criteria	Daoudé Community
	5. **Access to information**: Thanks to the mechanisms put in place to disseminate information, communities will continue to have access to resources and alerts on climate risks, facilitating better preparedness. In short, the changes brought about by the project have created a solid foundation that will continue to benefit communities for years to come.
B- <Will members of your community continue to use the new practices taught by the project to cope with climate risks? How do you plan to perpetuate the use of these practices?	Yes, community members will continue to use the new practices. We plan to perpetuate their use by organizing follow-up and capacity-building sessions, as well as training community leaders to encourage the transmission of knowledge.
C- Do you think that the various authorities who were in contact with you during the implementation of this project will continue to support you after the end of the project? If so, which ones?	Yes, we believe that some authorities, such as the local departments of agriculture and the environment, will continue to support us. They have shown a commitment to working with the community to build resilience in the face of climate risks.
D- Do you think your community will continue to work with the authorities to prevent the consequences of flooding and drought in the years to come?	Yes, our community is motivated to maintain an engagement with these authorities to prevent the consequences of flooding and drought. Increased awareness and established partnerships will facilitate this collaboration.
E- Are there any networks or groups of women created thanks to the project that could continue to work together/collaborate to manage climate risks?	Yes, women's groups have been set up as part of the project. These groups will continue to work together to manage climate risks, share information and promote sustainable practices within the community.
F- What mechanisms have been put in place to ensure the continuity of project activities after its completion?	Follow-up mechanisms have been put in place, such as community committees responsible for infrastructure management and ongoing training. In addition, partnerships with NGOs and local authorities will ensure ongoing support for ongoing initiatives.
6. Lessons learned and best practices	
A- What project activities have been most useful for you and your community? Why or why not?	The activities that have most strengthened our community's resilience to flooding and drought include: - **Early warning systems:** These have enabled us to effectively prevent climatic hazards, avoiding loss of life and property.

Criteria	Daoudé Community
	- **Weather station:** Provides accurate and timely information, enabling you to better anticipate weather conditions. - **Flood simulation exercise:** Reinforced our collective response capability, testing our reactions and improving our preparedness. - **Training in resilient farming practices:** Helped farmers adapt to periods of drought, increasing productivity. - **Infrastructure works (dykes and drainage channels):** have protected our homes and farmland from flooding, minimizing the risk of damage.
B- What did you like best about the project?	**Community involvement**: The fact that community members' opinions and needs were taken into account at every stage of the project was greatly appreciated. Residents felt listened to and involved. **Training and awareness-raising**: Practical training courses, notably on water management and sustainable agriculture, have provided practical tools for dealing with climate change.
C- What good gender practices have you observed during project implementation? Do you think they could be replicated in other communities?	The project has encouraged women's participation in decision-making and training, strengthening their role in resource management. These good practices could indeed be replicated in other communities, as they promote greater inclusion and empowerment of women.
D- What didn't you like about the project? What did you dislike about the project?	Although the project has brought improvements, some aspects have not been satisfactory. For example, there was a lack of communication on certain decisions and few follow-up visits by project managers, which sometimes created a sense of isolation within the community. In addition, the infrastructures put in place require regular maintenance, but there was no clear plan in this respect.

Criteria	Daoudé Community
E- Is there anything you would like to see changed or improved in the way similar projects are implemented in the future? Are there any aspects of the project that you see as models of good practice in climate risk management?	For future projects, it would be beneficial to improve communication and ensure greater transparency in the decision-making process. Greater involvement of community members from the outset is essential. On the other hand, farmer training and protective infrastructure are models of good practice that should be continued.
F- How could similar projects better involve women or better meet their needs in the future?	To better involve women, it would be useful to organize specific training courses that take into account their roles in the community. Involving women in decision-making and enabling them to participate actively in discussions on climate risk management strategies would reinforce their impact.
G- Do you have any suggestions for better preparing other communities for floods and drought, based on what you've learned from the project?	ere are a few suggestions for better preparing other communities for floods and drought, based on lessons learned from the project: 1. **Raising awareness**: It is essential to organize regular awareness campaigns on climate risks and preventive measures. This can include workshops, training courses, and the dissemination of information via local media to inform the population about best practices. 2. **Setting up early warning systems**: Develop early warning systems to inform communities of upcoming extreme weather events. This would enable community members to take preventive measures in good time. 3. **Adapted infrastructure**: Invest in resilient infrastructure, such as efficient drainage systems and dykes, to protect vulnerable areas. These infrastructures should be designed taking into account local specificities and potential risks. 4. **Promoting sustainable agriculture**: Encourage sustainable agricultural practices, such as agroecology, growing drought-resistant varieties, and using water-saving irrigation techniques. Training can be provided to raise farmers' awareness of best practices. 5. **Strengthening community cooperation**: Encourage the creation of community groups focusing on climate risk management. This will strengthen solidarity and improve coordination during crises. 6. **Access to drinking water**: Work on sustainable solutions to guarantee access to drinking water, in particular by building reservoirs or wells, and developing water management systems for agriculture. 7. **Ongoing evaluation and adjustment**: Set up mechanisms to regularly evaluate the effectiveness of the strategies implemented. This will enable actions to be adjusted in line with feedback and the evolving needs of communities. By implementing these suggestions, other communities will be able to better prepare for and adapt to floods and drought, strengthening their resilience in the face of climate challenges.
H- Are there elements of the project that could be improved to better	Despite the many positive aspects of the project, certain needs have not been fully met, including :

Criteria	Daoudé Community
respond to the specific challenges faced by certain categories of people (such as the elderly or the disabled)?	• **Flood protection infrastructure**: Some particularly hard-hit areas have not benefited from the same level of protection (e.g. bridges or roads at high risk of damage have not been reinforced). • **Support for small-scale livestock farmers**: Some livestock farmers have expressed the need for better solutions to protect their livestock during periods of drought or flooding. • **Logistics and temporary shelter for disaster victims**: Storage and temporary shelter facilities for people displaced by disasters were still lacking in some parts of the community.

Conclusion

The evaluation of the climate resilience project revealed several key results. The project succeeded in raising community awareness of climate change risks and empowering them to take action. However, the community still faces significant challenges, particularly with regard to access to drinking water and improving agricultural infrastructure. In the future, it is recommended that future interventions focus on addressing these unmet needs, building on the project's successes and strengthening partnerships between the community, government and development organizations.

Photographic material



Photos of the meeting with the Daoudè community / prefecture of Bafilo in the region of Kara

METEO STATION OF DAOUDE



Photos of the Daoudè weather station

30 Annex X: Visit to the Tabota community in Benin, October 10, 2024

The exchange session was attended by members of the flood and drought management committee set up at Tabota in the commune of Boukoumbé, Benin. Also present were village craftsmen, school principals, as well as the village chief and two of his councillors. The main objective of this interview was to obtain the community's point of view on the project. More specifically, the aim was to gather information on the communities' feedback on the project's activities, to assess the extent to which their needs had been taken into account, to identify success and failure factors from their perspective, and finally, to formulate recommendations to meet their needs and enable future projects to capitalize on the VFDM experience while generating greater impact.

The session began with an introduction of each participant, followed by a review of the VFDM project by the consultant. Participants then expressed their points of view, which were structured according to the questions posed throughout the discussion.

Criteria	Municipality of Tabota
Project realization	
A- What are the main actions your community has benefited from within the framework of the project and what did they consist of?"	The community has benefited from a number of capacity-building initiatives thanks to the NGO ALPHA OMEGA. These training sessions covered a number of key topics: - Hygiene, - Reforestation, - Income-generating activities (including hibiscus cultivation and making improved fireplaces). Awareness campaigns were also conducted on : - The fight against open defecation - Preventing the uncontrolled cutting of trees - Recognizing flood zones A local committee was formed to identify these at-risk areas and inform the population about the dangers of activities in these zones. Finally, a simulation exercise in the form of a role-playing game enabled residents to learn how to react in the event of flooding.
B- Which people or categories of people (farmers, herders, fishermen, women, etc.) have participated in the project in your community?	The categories of people involved in the project are: craftsmen, farmers and market gardeners.
C- Have the most vulnerable populations (such as single women, the elderly, the disabled) benefited directly from the project? If so, how?	Yes, vulnerable populations have benefited from the project through the awareness-raising campaigns that have been carried out and which have focused on: - The fight against open defecation

	- Preventing the uncontrolled cutting of trees - Recognizing flood zones
D- Which local institutions or partners did you work with on the project? How did you interact with them?	The collaboration involved several key players: - ALPHA OMEGA NGO - The Town Hall - Village chief, member of the flood and drought management committee - Benin's National Meteorological Agency - National Civil Protection Agency - Water Resources Department, focal point of the Volta Basin Authority (ABV) The communities have regularly exchanged with these partners during training/awareness workshops and also during the simulation exercise that was carried out.
E- Were there any specific challenges encountered during project implementation? How were they overcome?	Yes, the main challenge faced by the community is the maintenance of the melina seedlings planted with the support of the NGO ALPHA OMEGA to combat erosion.
F- How was communication between the various project stakeholders (community, authorities, partners) facilitated? What tools or methods were used to ensure good communication?	Communication has mostly been facilitated through the various whats app groups set up to disseminate information. The chairman of the Comité de Gestion des Inondations et des Sécheresses (CGIS) is in an information-sharing group with Météo-Bénin technicians and other key players involved in the project at national level. At local level, a dissemination group has also been set up to facilitate the sharing of information conveyed on the whats app group of key project players. It should also be noted that the President of the CGIS is in regular communication with the Director General of Météo-Bénin.
1. Relevance	
A- Before the project, what were your main concerns about flooding and drought? Has the project addressed these concerns? How has it helped you?	The main concerns were: - access to drinking water - destruction of crops during flooding - access to water for agricultural production (market gardening) The project has responded to just one of these concerns, namely the destruction of crops by the accumulation of rainwater. The identification of areas at risk of flooding has enabled the population to avoid planting crops in these areas, and in turn to avoid the loss of crops as a result of flooding.
C- Did you feel that the issues addressed by the project really corresponded to the difficulties you were encountering in terms of flooding and drought?	Yes, the issues addressed by the project corresponded perfectly to the communities' difficulties. The training sessions, awareness-raising session and simulation exercise touched on the realities that people face, especially when it comes to flooding.

D- Do you feel that the project has taken your needs and those of your community into account?	Yes, but the project didn't dwell on other real needs of the population that are being overlooked.
Are there other needs that have not been taken into account? Which ones?	Yes, among the needs not taken into account by the project are: access to drinking water and water for off-season production, the creation of income-generating activities to strengthen people's resilience, and the redevelopment of certain bridges that flood during the rainy season, making it difficult for pupils to get to school.
F- Were the training courses offered as part of the project adapted to the specific needs of women and men?	Yes, the training courses offered as part of the project were well adapted to the specific needs of men and women. Farmers were targeted by the problem of crop destruction during floods. The same applies to the WASH aspects, in particular open defecation, which can lead to water-borne diseases in the event of flooding.
G- Did you have opportunities to express your needs and concerns during the project? How was this feedback taken into account?	Yes, the needs were expressed during the training and awareness-raising sessions that were organized. Nevertheless, these needs have not been taken into account, since the realities of access to drinking water and the availability of water for agricultural production in the event of late rains or dry spells have remained. It should be noted that there is only one functional source of drinking water in the village. This is the one installed in the Tabota A-B school complex.
2. Efficacity	
A- During the project implementation period, did you receive any flood or drought warnings? Did these alerts help you prepare?	Yes, these alerts have enabled us to better organize our farming activities, to choose when to plant crops so that we can harvest before the rains start.
If not, what adjustments would you suggest?	-
B- How do you receive these alerts and from whom?	These alerts are distributed via WhatsApp groups, community radio stations (such as Radio Dinaba in local languages) and also by word-of-mouth.
C- Do you think the information provided by the alerts is clear and easy to understand?	Yes

D- Have you taken part in any training courses or activities organized by the project to better cope with climate risks? If so, what did you learn?	Yes, we took part in training, awareness-raising and a simulation exercise organized by the project. We learned a number of things, including: - The importance of avoiding certain activities to limit losses for people living in high-risk areas - The benefits of reforestation - How to set up melina nurseries for reforestation - Planting melina to combat erosion - The consequences of open defecation and latrine construction
E- Have the women in your community been invited to these training courses?	Yes, the women of our community have been invited to take part in these training courses.
F- Are the tools or materials/equipment provided by the project for climate data collection used? If so, by whom and how?	A megaphone was received to disseminate information in the event of an alert. Tools for making improved fireplaces were also supplied. In addition, the meteorological station is used by agents of the Meteorological Agency.
G- Were there any extreme weather events during the project implementation period? Please describe these periods.	No. However, there has been some flooding. It's worth noting that the cold rains flood the access roads to the village, preventing people from moving around easily.
H- If so, how was coordination between the various players (local authorities, organizations, etc.) achieved?	There were no extreme events.
I- Have you noticed any improvement in the management of these events compared with the years preceding the project?	Yes, communities are now better organized to prepare and carry out their farming activities.
J- How are alerts integrated into the community's daily practices? Have there been any improvements in preparation or response following the implementation of the project?	Warnings are now integrated into the community's daily practices, particularly in the planning of agricultural activities. Improved preparedness includes marking at-risk areas with stakes, as well as identifying appropriate times to plant and harvest in time, to avoid crops being destroyed by rain.
K- How has feedback from community members been incorporated into the development of strategies for responding to climate risks?	Feedback from community members is shared during training and awareness-raising sessions. However, not all feedback is incorporated into the development of strategies for responding to climate risks. One example is the difficulty of moving people after heavy rains, which was reported but not taken into account.
3. Efficiency	

A- Have you noticed any changes in your village (infrastructure, support for farmers, etc.) since the project began?	Yes, this can be seen in the planting of Melina seedlings to combat erosion, the identification of at-risk areas where farmers no longer plant their crops, and also the identification of favourable periods for planting crops to enable harvesting in good time to avoid losses following torrential rains.
B- In your opinion, were the project's actions implemented quickly and efficiently?	Yes.
C- Do you think the funds allocated to this project have been well invested in the various projects carried out in your community?	Yes, the project funds have been well invested. We can list the training courses that have been carried out for the establishment of tree nurseries by the local population, the construction of improved stoves, the construction of latrines to avoid open defecation and, last but not least, all the capacity-building sessions that have been carried out.
D- Have the decision-making processes for project implementation been transparent and inclusive?	Yes, if we take the example of setting up the flood and drought management committee, this process included the representation of women, the elderly and other categories of stakeholders present in the community.
E- Have there been any significant variations in the quality or speed of services provided compared with initial expectations? If so, how were these variations managed?	No.
4. Impacts (Effects)	
A- Since the project began, have you observed any changes in the way your community prepares for floods or drought?	Yes, thanks to the awareness campaigns carried out and the identification of areas at risk of flooding, the community is better able to cope with extreme climatic events, especially floods.
B- Have you seen a change in the way women participate in community decision-making, particularly on issues related to floods and drought?	There has been little change in women's involvement in community decision-making on flood and drought issues.
C- Has the project helped your community to better protect its crops, property or animals in the event of flooding or drought?	Yes, we can list advice on how to avoid planting crops in areas prone to flooding, and the climatic information we use to plant crops at the right time and harvest before the arrival of heavy rains, which can cause losses.

D- Have you observed any unexpected advantages/benefits linked to the implementation of the project? If so, which ones?	Yes, thanks to the project, people have learned how to build latrines and produce Melina plants, which can be turned into a generative activity for some people if they are given access to seeds.
E- Have you noticed an improvement in your quality of life since the project began?	Yes, this improvement involves the reduction of open-air defaction and also the reduction of crop losses following heavy rains.
F- Has the project made you feel safer in the face of extreme weather events?	Yes, the project has increased community members' sense of security in the face of extreme weather events. However, access to schools remains a source of concern for parents, especially when pupils have to use flooded roads after heavy rains. It is therefore necessary to reinforce these aspects in order to increase the population's sense of security.
G- Has the project helped to strengthen solidarity or cooperation between community members in the face of floods or droughts? If so, how?	Yes, the project has strengthened solidarity within the community by facilitating information sharing between members. Members are now able to relay information and are better prepared to deal with extreme climatic disasters.
H- Have you observed any changes in the behavior of community members regarding agricultural practices or climate risk management strategies?	The few changes observed are linked to the fact that some people no longer plant crops in flood-prone areas.
I- Has the project influenced the way local authorities plan and manage responses to climate-related disasters?	Yes, the simulation exercise showed us how the authorities can react in the event of a climatic disaster. What's more, the sharing of weather bulletins and information is something we're seeing more and more these days.
5. Sustainability	
A- Do you think the changes brought about by the project will continue to help you after the project is over? If so, how?	Yes, it's important to avoid open defecation and not to sow everywhere, especially in high-risk areas. The knowledge acquired will stay with you.
B- Will members of your community continue to use the new practices taught by the project to cope with climate risks? How do you plan to perpetuate the use of these practices?	Yes, they plan to build on what they've learned by continuing to apply the concepts taught about flood management, as well as using the information broadcast by the weather to find out when and where to plant crops.

C- Do you think that the various authorities who were in contact with you during the implementation of this project will continue to support you after the end of the project? If so, which ones?	Yes, the village chief is a member of the committee set up to manage floods and droughts, and takes an active part. Even after the end of the project, the meteorological authorities continue to provide information by sending out weather reports.
D- Do you think your community will continue to work with the authorities to prevent the consequences of flooding and drought in the years to come?	Yes, it's in our interest to protect our families and our property.
E- Are there any networks or groups of women created thanks to the project that could continue to work together/collaborate to manage climate risks?	No. Although women's networks have not been created, existing groups can be revitalized and supported to gain access to production equipment, such as drying tarpaulins. These cooperatives could then rent out this equipment to generate income.
F- What mechanisms have been put in place to ensure the continuity of project activities after its completion?	Some people have been trained to make improved stoves, which they can sell. Similarly, the production of melina seedlings for reforestation is one of the skills acquired. Training in latrine construction has also been provided. These skills, which have been passed on to the community, are long-lasting and a matter of continuity. Finally, the flood and drought management committee set up by the project is also part of the continuity of the project's actions.
6. Lessons learned and best practices	
A- What project activities have been most useful for you and your community? Why or why not?	Among the project activities that were used for the community were : - Training courses - Raising awareness - Climatic information - Planting trees to combat erosion - training in the installation of latrines to combat open-air defecation - the simulation exercise
B- What did you like best about the project?	The most appreciated elements include the installation of latrines, the simulation exercise, the dissemination of climatic information, as well as training in the creation of nurseries, which communities can manage themselves and market as an income-generating activity.

C- What good gender practices have you observed during project implementation? Do you think they could be replicated in other communities?	Women's participation in training/awareness-raising sessions and training in the construction of improved stoves, which targeted women only.
D- What didn't you like about the project? What did you dislike about the project?	The project did not take into account certain key needs such as access to drinking water, which is crucial in the area.
E- Is there anything you would like to see changed or improved in the way similar projects are implemented in the future? Are there any aspects of the project that you see as models of good practice in climate risk management?	Projects should first identify the real needs of the population and define concrete actions that can genuinely improve their living conditions. It would also be useful to set up evaluation mechanisms during the course of the project to ensure that these needs are taken into account, and, if necessary, to adjust actions before the end of the project.
F- How could similar projects better involve women or better meet their needs in the future?	To better involve women in similar projects in the future, it would be important to build the capacity of women's groups to set up income-generating activities (IGAs). Specific actions could be dedicated solely to women.
G- Do you have any suggestions for better preparing other communities for floods and drought, based on what you've learned from the project?	To better prepare other communities for flooding and drought, several actions can be considered: • **Avoid open defecation**, which can cause water-borne diseases during floods. • **Plant trees** to combat erosion. • **Do not sow near marshes and stagnant water** during flooding periods to avoid crop destruction. • **Install water reservoirs** to guarantee access to water during periods of drought. • **Extend** similar **support** over 2 to 3 years, while building community capacity and organizing regular refresher courses. • **Support women** by transforming melina production into an income-generating activity, enabling them to contribute more to the community's economic resilience. • Providing people with life-saving equipment (life jackets, lifeboats, buoys)
H- Are there elements of the project that could be improved to better respond to the specific challenges faced by certain categories of people (such as the elderly or the disabled)?	To better respond to the specific challenges faced by certain categories of people, such as the elderly or the disabled, it would be beneficial to organize training and awareness-raising sessions specially designed for these target groups.

Conclusion

The discussions held with the community as part of the VFDM project FE highlight the importance of a participatory, tailored approach to building community resilience to flood and drought. It is essential to identify people's actual needs and implement concrete actions, while actively involving women and supporting existing groups. In addition, targeted training for specific groups, such as the elderly and people with disabilities, is necessary to ensure optimum inclusion. Finally, knowledge sharing and ongoing monitoring of projects are key to ensuring their long-term sustainability and effectiveness.

Photographic material



Photos of the visit to the Tabota community


Photos of the flooding of some bridges and access roads to the village

Photos of the village's only hand-driven pump, installed in Tabota's A-B public school.

Photos of the Tabota weather station

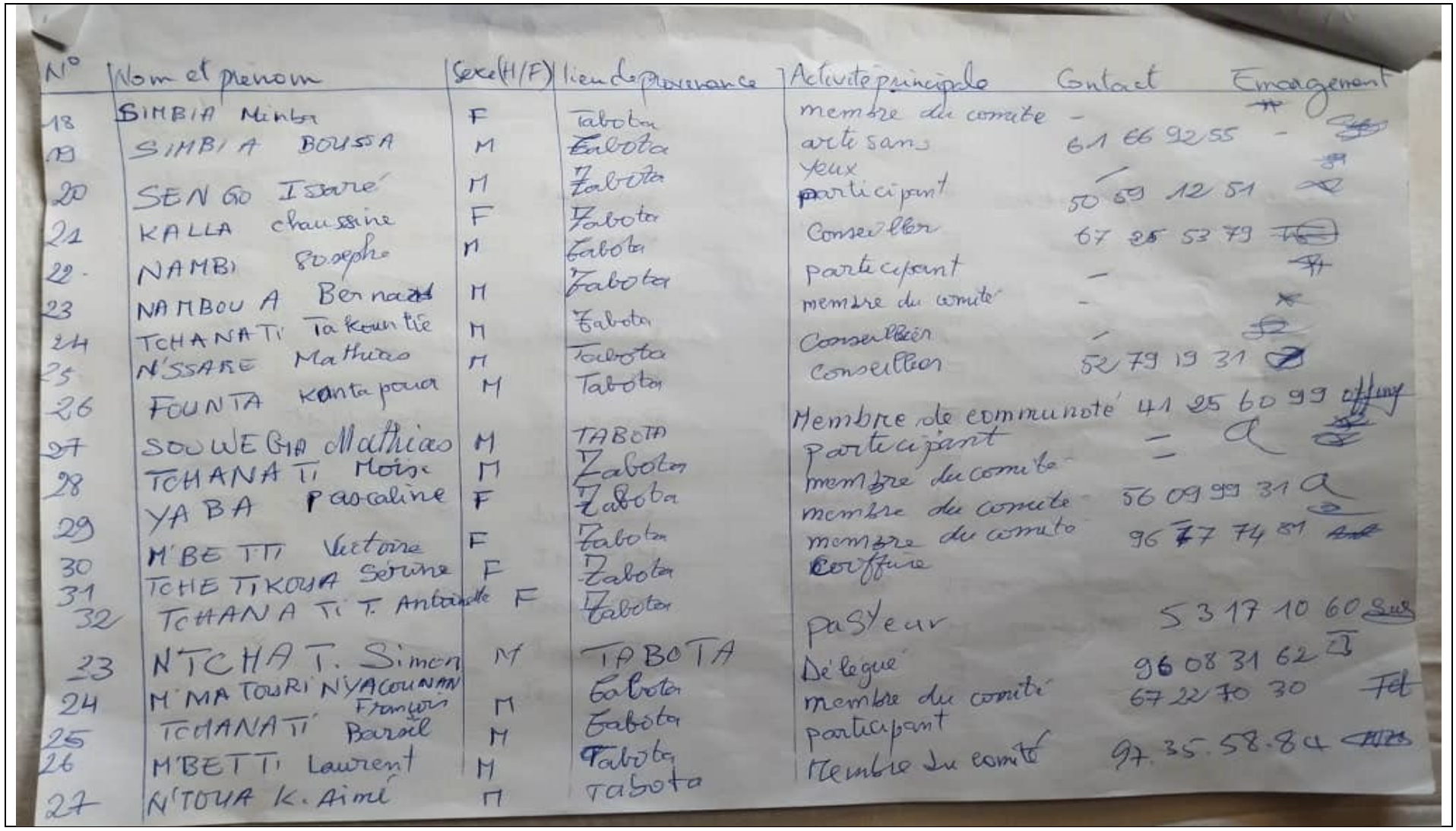
Photo of the flooding of an access road leading to Tabota via the commune of Cobly

Evaluation finale du Projet VFDM

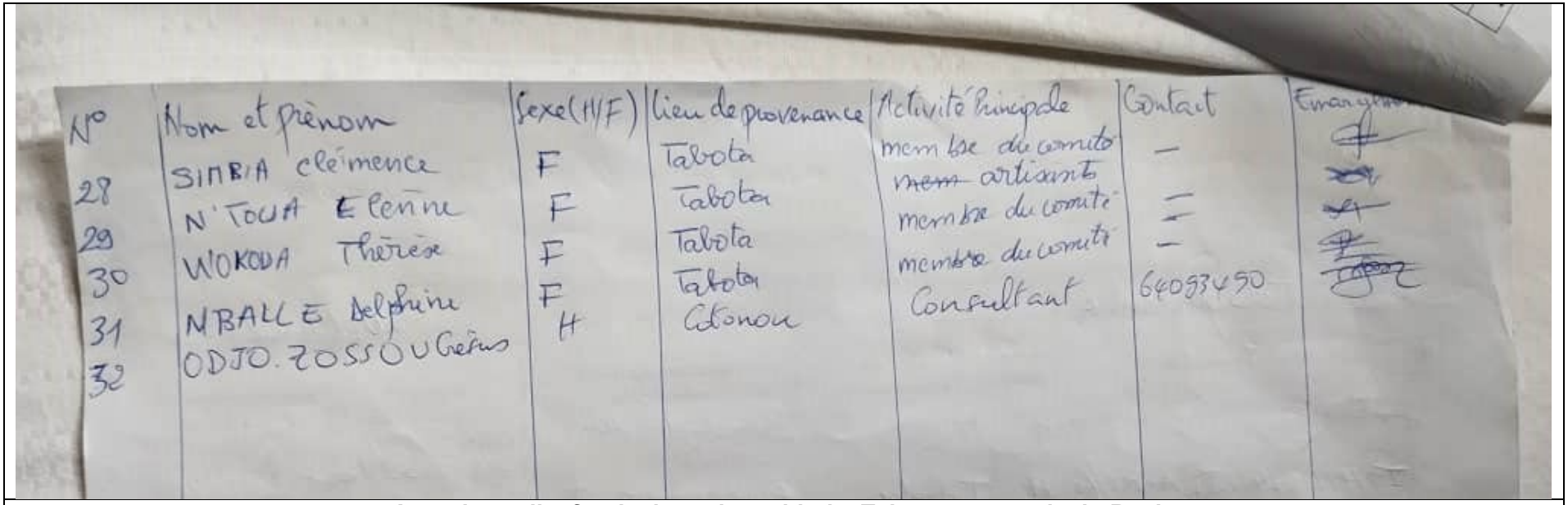
Liste de présence de la rencontre avec la communauté de Tabota

Lieu : Tabota centre

N°	Nom et prénom	Sexe (H/F)	Lieu de provenance	Activité Principale	Contact	Emargement
1	SENGO N. Armel	H	Tabota	Enseignant / Président du comité	66478191	
2	N'TOVAMA Marcelline	F	Tabota	Membre du comité	50591410	
3	TCHANATI Kouagou	M	Tabota		56696413	
4	NAMBOUA Emmanuel	M	Tabota	Membre du comité	–	
5	N'TANGOU Monique	F	Tabota	membre du comité	–	
6	TOUMOUDAGOU Moïse	M	Tabota	membre du comité	–	
7	SIMBIA Daniel	M	Tabota	membre du comité	–	
08	NEKOUA I. Marcel	M	Tabota	Enseignant	96888988	
09	TCHHOUNDJI A. Koffi	M	Tabota	Directeur A	66248770	
10	SOHOUDJI Julien	M	Tabota	Enseignant	91870427	
11	OUSSOU M. Pierrette	F	Tabota	Enseignante	94550726	
12	TCHANATI Amadou	M	Tabota	Enseignant	97981674	
13	N'WE Alphonse	M	Tabota	Maçon	66203534	
14	MEKA Kouagou	M	Tabota	membre du comité	–	
15	TOUMOUDAGOU Catherine	F	Tabota	membre du comité	–	
16	KALLA Julienne	F	Tabota		42132950	
17	NAMBI Elénne	F	Tabota	membre du comité	–	



N°	Nom et prenom	Sexe(H/F)	lieu de provenance	Activite principale	Contact	Emargement
18	SIMBIA Minba	F	Tabota	membre du comite	-	
19	SIMBIA BOUSSA	M	Tabota	artisans	61 66 92 55	-
20	SENGO Issaré	M	Tabota	yeux participant	/ 50 69 12 51	
21	KALLA chaussine	F	Tabota	Conseiller	67 25 53 79	
22	NAMBI Joseph	M	Tabota	participant	-	
23	NAMBOUA Bernard	M	Tabota	membre du comité	-	
24	TCHANATI Takountie	M	Tabota	Conseiller	/	
25	N'SSARE Mathias	M	Tabota	Conseiller	52 79 19 31	
26	FOUNTA Kantapour	M	Tabota	Membre de communoté	41 25 60 99	
27	SOUWEGA Mathias	M	TABOTA	participant	-	
28	TCHANATI Moise	M	Tabota	membre du comité	-	
29	YABA Pascaline	F	Tabota	membre du comité	56 09 99 31	
30	M'BETTI Victoire	F	Tabota	membre du comité	96 77 74 51	
31	TCHETIKOUA Sérine	F	Tabota	Coiffeuse		
32	TCHANATI T. Antoinette	F	Tabota	pasteur	53 17 10 60	
23	NTCHAT. Simon	M	TABOTA	Délégué	96 08 31 62	
24	M'MATOURI NYACOUNAM François	M	Tabota	membre du comité	67 22 70 30	Tel
25	TCHANATI Barnabé	M	Tabota	participant		
26	M'BETTI Laurent	M	Tabota	Membre du comité	97. 35. 58. 84	
27	N'TOUA K. Aimé	M	Tabota			



N°	Nom et prénom	Sexe (M/F)	lieu de provenance	Activité Principale	Contact	Evangé
28	SIMBIA Clémence	F	Tabota	membre du comité	—	
29	N'TOUA Eléonne	F	Tabota	~~mem~~ artisante	—	
30	WOKODA Thérèse	F	Tabota	membre du comité	—	
31	NBALLE Delphine	F	Tabota	membre du comité	—	
32	ODJO. ZOSSOU Gérus	H	Cotonou	Consultant	64093450	

Attendance list for the interview with the Tabota community in Benin

31 Annex Y: Visit to Sangabili community, Ivory Coast, November 3, 2024

The visit to the Sangabii community took place on the 3 of November 2024. The consultant Mr. Reggiani was assisted by the NGO LaCIBES, which provided logistic support and translation services.

Criteria	Sangabili Community
Project realization	
A- What are the main actions your community has benefited from within the framework of the project and what did they consist of?"	The main benefits are the improvement of communication means during emergencies. This improves the recue capabilities of people that are trapped during floods. Signalling marks have been introduced at important points such as river crossings of roads. The social cohesion has improved considerably through the emergency simulation exercises. A satellite antenna has been installed thanks to the project, which assures telecommunication connection with the outside world also in cases when Sangabili is cut off from the outside world because of flooding of the access roads. Loudspeakers have been installed. The project has also contributed to efforts towards tree planting to stop the deforestation (nature-based solutions)
B- Which people or categories of people (farmers, herders, fishermen, women, etc.) have participated in the project in your community?	The entire village across all categories of people have benefited.
C- Have the most vulnerable populations (such as single women, the elderly, the disabled) benefited directly from the project? If so, how?	YES, people of all categories have benefited, especially vulnerable persons
D- Which local institutions or partners did you work with on the project? How did you interact with them?	The rural community has been working with the NGO LaCIBES, with the Forestry and Water Ministry, with the provincial government, the local prefecture, the national civil protection office and with SODEXAM.
E- Were there any specific challenges encountered during project implementation? How were they overcome?	He mobile network has been weak to be used reliably. One of the main weak points remains the poor road conditions during the wet seasons, which lead to a cut-off of the villages from the outside. The high-water levels have lef to the drowning of village inhabitants. This leads to the death of villagers in the case of illness because there is no way of getting them out of the area into hospital care.

Criteria	Sangabili Community
F- How was communication between the various project stakeholders (community, authorities, partners) facilitated? What tools or methods were used to ensure good communication?	Communication occurs with technological means like WhatsApp, Megaphone installations in the village, traditional means of communication like drums, coloured flags and different types of signalling with markings. These means work also in case of electricity cuts.
1. Relevance	
A- Before the project, what were your main concerns about flooding and drought? Has the project addressed these concerns? How has it helped you?	YES. The community of Sangabili is well known to the outside world. The communication among the community and neighbouring communities has been improved.
C- Did you feel that the issues addressed by the project really corresponded to the difficulties you were encountering in terms of flooding and drought?	YES. Also, with respect to cropping, farmers are better informed because through the flood and drought predictions they can better plan the seeding period for her plants. Also, bushfires, which reach large economic damage to farmers due to loss of harvest (e.g. cashew nuts etc) can be better prevented or controlled due to drought warning.
D- Do you feel that the project has taken your needs and those of your community into account?	YES, definitely.
E- Are there other needs that have not been taken into account? Which ones?	YES. If there are floods and there are sick people, they cannot be brought to hospital. In these cases, there is also lack of drinking water. Some pumps may not work and the hand pumps are insufficient. During the flood the schools was closed. The building has been built in a low part of the area, where it was made inaccessible by flood water. The access road to the community is not viable during flood periods. This a large impediment.
F- Were the training courses offered as part of the project adapted to the specific needs of women and men?	YES, they were and should be continued.
G- Did you have opportunities to express your needs and concerns during the project? How was this feedback taken into account?	YES. The first requirement is the quality of the access road. One collateral effect is that aid or technical help cannot reach the rural community. Before the project there was no good cohesion in the community.

Criteria	Sangabili Community
2. Efficacity	
A- During the project implementation period, did you receive any flood or drought warnings? Did these alerts help you prepare?	YES, the warning messages were well received, but not everybody was equally well informed. It worked well only for android based mobile phones. The warning messages were received by telecommunication from SODEXAM. Markings on trees allowed the messages to be transferred to the periphery of the community.
If not, what adjustments would you suggest?	Not applicable.
B- How do you receive these alerts and from whom?	WhatsApp groups, mobile phone.
C- Do you think the information provided by the alerts is clear and easy to understand?	The warnings are not spatially exact, but only approximative at a regional level.(it was explained by the consultant that meteorological warnings are always affected by spatial and temporal uncertainties)
D- Have you taken part in any training courses or activities organized by the project to better cope with climate risks? If so, what did you learn?	YES
E- Have the women in your community been invited to these training courses?	YES
F- Are the tools or materials/equipment provided by the project for climate data collection used? If so, by whom and how?	YES
G- Were there any extreme weather events during the project implementation period? Please describe these periods.	Yes, there have been some extreme events. For example, in the rain season in 2024.

Criteria	Sangabili Community
H- If so, how was coordination between the various players (local authorities, organizations, etc.) achieved?	Coordination between the various players was achieved through regular meetings and exchanges of information. Neighbourhood and community development groups played a crucial role in this process, facilitating collaboration between local authorities, organizations and the community.
I- Have you noticed any improvement in the management of these events compared with the years preceding the project?	YES, communities have noticed an improvement in the management of these events compared with pre-project years, thanks in particular to better preparation and awareness within the community.
J- How are alerts integrated into the community's daily practices? Have there been any improvements in preparation or response following the implementation of the project?	YES, Warnings are now integrated into the daily practices of the community, particularly in the planning of agricultural activities and the management of water resources. Since the implementation of the project, we have seen a significant improvement in our preparedness and ability to respond to risks.
K- How has feedback from community members been incorporated into the development of strategies for responding to climate risks?	Feedback from community members was used to be better prepared against climate risks. During meetings and workshops, participants shared their experiences and concerns. This information has helped to improve risk management methods, adapt training and set up more effective prevention systems.
3. Efficiency	
A- Have you noticed any changes in your village (infrastructure, support for farmers, etc.) since the project began?	YES, see previous answers.
B- In your opinion, were the project's actions implemented quickly and efficiently?	YES, definitely.
C- Do you think the funds allocated to this project have been well invested in the various projects carried out in your community?	YES.
D- Have the decision-making processes for project implementation been transparent and inclusive?	YES, the processes have been participative and clear.

Criteria	Sangabili Community
E- Have there been any significant variations in the quality or speed of services provided compared with initial expectations? If so, how were these variations managed?	NO.
4. Impacts (Effects)	
A- Since the project began, have you observed any changes in the way your community prepares for floods or drought?	YES, there have been significant improvements in the community's preparedness for floods and drought, thanks in particular to training, simulation exercises and the infrastructure put in place.
B- Have you seen a change in the way women participate in community decision-making, particularly on issues related to floods and drought?	YES, women's participation in decision-making has increased, and they are now more involved in discussions concerning climate risk management.
C- Has the project helped your community to better protect its crops, property or animals in the event of flooding or drought?	YES, the project has improved crop and property protection thanks to prevention infrastructures and adapted farming practices.
D- Have you observed any unexpected advantages/benefits linked to the implementation of the project? If so, which ones?	YES, we've seen some unexpected benefits, such as greater community solidarity and increased environmental awareness, notably through reforestation projects.
E- Have you noticed an improvement in your quality of life since the project began?	YES, quality of life has improved thanks to better predictability of risks, training and better warnings.
F- Has the project made you feel safer in the face of extreme weather events?	YES
G- Has the project helped to strengthen solidarity or cooperation between community members in the face of floods or droughts? If so, how?	YES, community solidarity has been strengthened.

Criteria	Sangabili Community
H- Have you observed any changes in the behavior of community members regarding agricultural practices or climate risk management strategies?	YES, the community plans agricultural practices according to information provided by the warning services, e.g. SODEXAM.
I- Has the project influenced the way local authorities plan and manage responses to climate-related disasters?	YES. There has been an involvement of the national civil protection agency, the prefecture, the under-prefecture, across all authority levels. Also, the Red Cross, local health authorities and the Department of Forestry and Water have been involved.
5. Sustainability	
A- Do you think the changes brought about by the project will continue to help you after the project is over? If so, how?	Capacity building is a lasting achievement. The measuring station will also be used over a long period.
B- Will members of your community continue to use the new practices taught by the project to cope with climate risks? How do you plan to perpetuate the use of these practices?	Yes, community members will continue to use the new practices. We plan to perpetuate their use by organizing follow-up and capacity-building sessions, as well as training community leaders to encourage the transmission of knowledge.
C- Do you think that the various authorities who were in contact with you during the implementation of this project will continue to support you after the end of the project? If so, which ones?	Yes, we believe that some authorities, such as the local departments will continue to support us. They have shown a commitment to working with the community to build resilience in the face of climate risks.
D- Do you think your community will continue to work with the authorities to prevent the consequences of flooding and drought in the years to come?	YES, they surely will.
E- Are there any networks or groups of women created thanks to the project that could continue to work together/collaborate to manage climate risks?	YES, the women in the community are strongly involved in all the activities. Hey have participated in the trainings and will also be part of future activities that are in the interest of improving the security of the community.
F- What mechanisms have been put in place to ensure the continuity of project activities after its completion?	The experience acquired during the project

Criteria	Sangabili Community
6. Lessons learned and best practices	
A- What project activities have been most useful for you and your community? Why or why not?	- Training courses - Raising awareness - Climatic information - improving communication - emergency simulation exercise
B- What did you like best about the project?	Making the community known to the outside world.
C- What good gender practices have you observed during project implementation? Do you think they could be replicated in other communities?	Women's participation in training/awareness-raising sessions and training in the construction of improved stoves, which targeted women only.
D- What didn't you like about the project? What did you dislike about the project?	The project has only brought advantage for our rural community.
E- Is there anything you would like to see changed or improved in the way similar projects are implemented in the future? Are there any aspects of the project that you see as models of good practice in climate risk management?	The antenna transmits the data, which are hidden to the community. The community would like to be also able to access the data Due to the warning lives van be saved, less casualties Bush fires are prevented which leads to less loss of harvest and less economic damage. Through improved preparation and warning damage can be reduced even further.
F- How could similar projects better involve women or better meet their needs in the future?	Additional specific training courses for women.
G- Do you have any suggestions for better preparing other communities for floods and drought, based on what you've learned from the project?	The example of Sangabili should be extended to other communities with similar problems.
H- Are there elements of the project that could be improved to better respond to the specific challenges faced by certain categories of people (such as the elderly or the disabled)?	To better respond to the specific challenges faced by certain categories of people, such as the elderly or the disabled, it would be beneficial to organize training and awareness-raising sessions specially designed for these target groups.

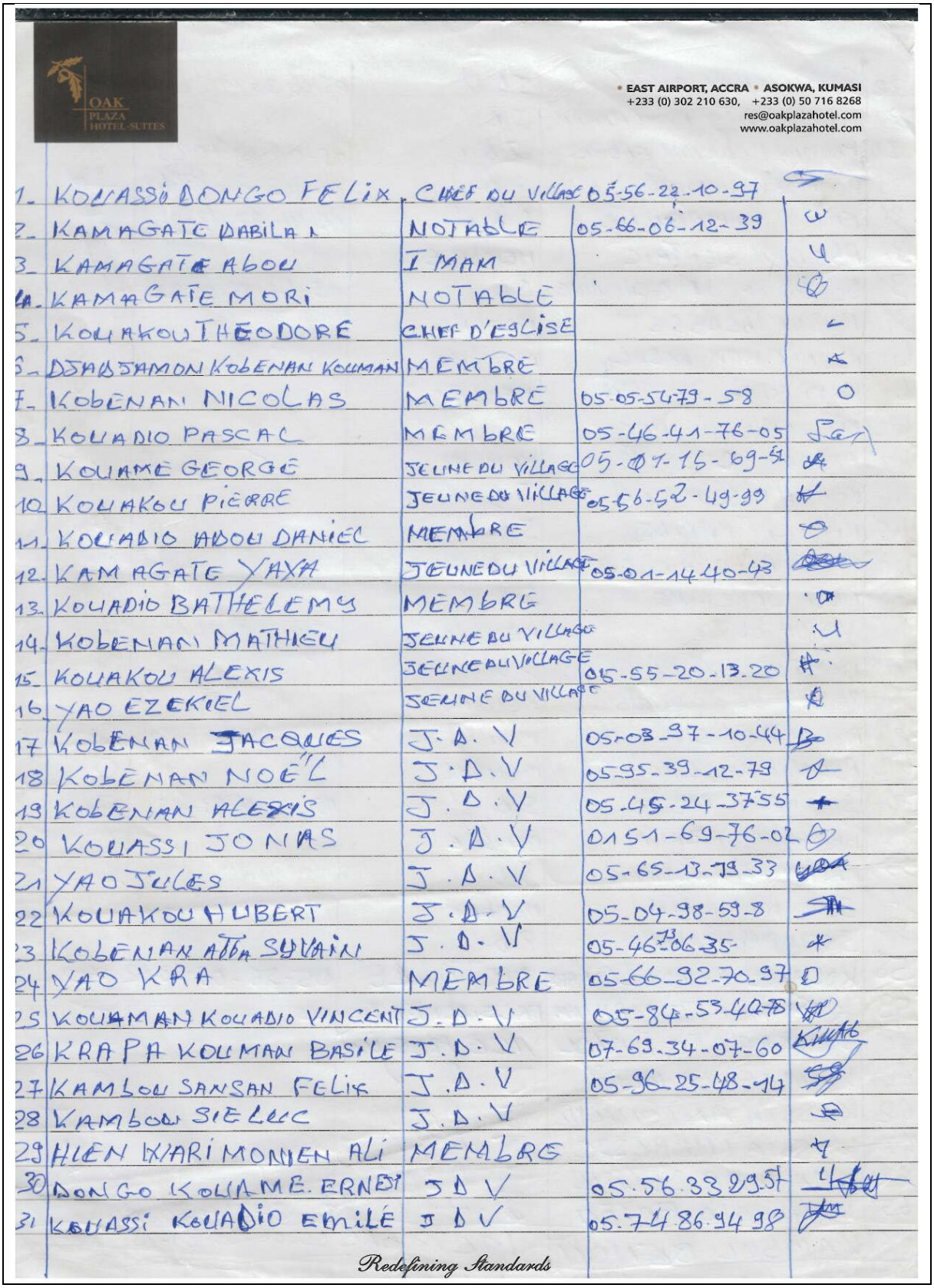
Conclusions

The discussions held with the SANGABILI community has shown that there are several remote communities in the fringe areas of the Volta basin that suffer from flood and drought related hazards. Floods lead to cut-off from the outside world with direct and indirect casualties. Drought leads to bush fires and large economic damages as a result, because important cash-generating produce is lost. The communities in Ivory Coast are however connected to the electricity grid. Road access to the community poor and fails during the rain season.

The selection of Sangabili as a pilot site for the VFDM project has led to better cohesion within the community and improved dissemination of warnings with neighboring villages. Sangabili has been equipped with a meteorological station, which transmits data to SODEXAM. The meteorological station is part of the VoltAlarm basin observing network. Data from the station are exploited for the VoltAlarm forecasting platform. The community has been the focus of an extensive emergency simulation led by the national agency for civil protection and the local prefecture.

Impressions during the visit to the Sangabili community: Meeting with community, Water level marker

Impressions during the visit to the Sangabili community: Poor road infrastructure, measurement station, flood marks



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1.	KOUASSI DONGO FELIX	CHEF DU VILLAGE	05-56-22-10-97	
2.	KAMAGATE DABILA I	NOTABLE	05-66-06-12-39	
3.	KAMAGATE ABOU	IMAM		
4.	KAMAGATE MORI	NOTABLE		
5.	KOUAKOU THEODORE	CHEF D'EGLISE		
6.	DJADJAMON KOBENAN KOUMAN	MEMBRE		
7.	KOBENAN NICOLAS	MEMBRE	05-05-5479-58	
8.	KOUADIO PASCAL	MEMBRE	05-46-41-76-05	
9.	KOUAME GEORGE	JEUNE DU VILLAGE	05-07-15-69-51	
10.	KOUAKOU PIERRE	JEUNE DU VILLAGE	05-56-52-49-99	
11.	KOUADIO ABOU DANIEL	MEMBRE		
12.	KAMAGATE YAYA	JEUNE DU VILLAGE	05-01-14-40-43	
13.	KOUADIO BATHELEMY	MEMBRE		
14.	KOBENAN MATHIEU	JEUNE DU VILLAGE		
15.	KOUAKOU ALEXIS	JEUNE DU VILLAGE	05-55-20-13-20	
16.	YAO EZEKIEL	JEUNE DU VILLAGE		
17.	KOBENAN JACQUES	J.D.V	05-03-97-10-44	
18.	KOBENAN NOEL	J.D.V	05-95-39-12-79	
19.	KOBENAN ALEXIS	J.D.V	05-45-24-3755	
20.	KOUASSI JONAS	J.D.V	0151-69-76-02	
21.	YAO JULES	J.D.V	05-65-13-79-33	
22.	KOUAKOU HUBERT	J.D.V	05-04-98-59-8	
23.	KOBENAN ATTA SYLVAIN	J.D.V	05-46-73-06-35	
24.	YAO KRA	MEMBRE	05-66-92-70-97	
25.	KOUAMAN KOUADIO VINCENT	J.D.V	05-84-53-4078	
26.	KRAPA KOUMAN BASILE	J.D.V	07-69-34-07-60	
27.	KAMLAN SANSAN FELIX	J.D.V	05-96-25-48-14	
28.	KAMLAN SIELUC	J.D.V		
29.	HIEN KARIMONIEN ALI	MEMBRE		
30.	DONGO KOUAME ERNEST	J D V	05.56.33.29.57	
31.	KOUASSI KOUADIO EMILE	J D V	05.74.86.94.98	

Redefining Standards

32	SOMKPENRÈ EVRIC	J.D.V	05.06.30.29.52	
33	KAMAGATÉ ABOUBRAMANE	J.D.V		
34	KOUMAN KOBENAN FABRIS	J.D.V	05-01-07-7023	
35	KOUAMÉKOUABIO ROGER	J.D.V	05.45.24.88.42	
36	FATOU KAMAGATÉ	J.D.V	05.96.93.13.34	
37	ABENAN BERTRIC	MEMBRE		
38	DONGO AFOUA GERMAINE	J.D.V	05.46.87.03.93	
39	KOSSIA THÉRÈSE	MEMBRE		
40	ABENAN KRA ROSALI	MEMBRE		
41	KAMAGATÉ NANIWA	MEMBRE		
42	KRA YAVA VIVIANE	MEMBRE		
43	AFFOUO ROLLÈTTE	MEMBRE		
44	KOUMAN KOSSIA MARI	J.D.V		
45	KAMAGAÏ KARIDJA	J.D.V		
46	KOUSSI AFFOUA OLGA	J.D.V		
47	ADJA JAKELINE	J.D.V		
48	YAVA OBILE	MEMBRE	05.05.91.87.65	
49	NIENI SYLVI	J.D.V		
50	YAVA VERONIQUE	MEMBRE		
51	AKOUA PATRICIA	MEMBRE		
52	ABENAN AMELINE	MEMBRE		
53	SOM KPINI ROSINE	J.D.V	05.02.76.93.15	
54	KAMAGATÉ AZARA	MEMBRE		
55	KAMAGATÉ NIMINAN	J.D.V		
56	SOM KIABIANAN	MEMBRE		
57	SOMKPINI MELANIE	J.D.V		
58	KOUAKOU AMANI LEONARD	NOTABLE	05-56-08-63-52	
59	KAMAGATE MARIAM	PRESIDENTE FEMMES		
60	KAMAGATE FATOU	VICE PRESIDENTE		
61	KAMAGATE MERI	J.D.V		
62	KOSSIA ANTOINETTE	J.D.V		
63	KOSSIA THERESSE	J.D.V		
64	AKA MARCELINE	J.D.V		
65	KAMAGATE FOTOU	J.D.V	05-84-94-60-17	
66	KAMBOU BENOIT	MEMBRE	05-06-33-81-35	

Attendance list for the interview with Sangabili community in Ivory Coast

32 Annex Z: Executive plan and staffing

VFDM Project - Final Evaluation Stakeholder Consultations Plan

Last plan update on November 6, 2024

FE- Final -term evaluation team (Paolo Reggiani, Valérie-Anne Tallandier, Ida Benagabou and Crésus Odjo).

Description	**Tasks**	**Timeline**	**Leader/ Person in charge**	**Additional comments**	**Status**
VFDM FE Preparation Review of the VFDM project website and documents available https://www.floodmanagement.info/volta-basin/ https://www.floodmanagement.info/volta-basin/project-concept/	Study of project documents/reports and develop a tool for stakeholder consultation.	August 15-31, 2024	FE Team	VFDM Project Team Provide relevant documents and web links for information	Completed
Initial planning meeting with the WMO (Implementing Partner of the VFDM project)	Discuss the expected activities, results and deliverables	August 15-August 31, 2024	FE Team (Principal consultant)	WMO provided a short update on the partners being involved in the project	Completed
Prepare the Inception report (Table of contents, methodology, list of stakeholders to consult, list of internet links or documents to review, etc.)	The document was delivered to the WMO on September 03.	September 01-September 30, 2024	FE – Principal consultant Mr. Reggiani	Inception report highlights the tasks and also is important for the first payment	Completed

Meetings and field visits with countries/organizations	**Session mode and date**			**Support for the VFDM project team**	
1st online session with VFDM project implementing partners (VBA and GWP-WA)	Virtual and physical September 4, 2024, 12-2pm CET	01 September 2024-15 September 2024	Consultants participated online	Ensure the participation of project executing partners Request to submit the FE plan and methodology to the countries	Completed
Online Session with external partners (CIMA Foundation, K&I, IUCN, UNITAR/UNOSAT, etc.)		September 1-September 30 2024	International consultants (P. Reggiani & VA. Taillandier) connected virtually		Completed
2nd session with the VFDM project implementing partners (VBA and GWP-WA)	Request for evaluation related information based on questionnaire	3rd week of September, Ouagadougou, to be specified	Consultant Ms Taillandier and consultants Ms Benagabou physical presence) VBA/GWP-WA office, Ouagadougou		
Meetings with national agencies in Burkina Faso, visit to the Meteo, Hydro and Civil Protection service department Visit to WASCAL, ECOWAS	Request for evaluation related information based on questionnaire	3rd week of September, to be specified	Consultant Ms VA Taillandier and consultants Ms Benagabou physical presence in Ouagadougou The main consultant (P. Reggiani) participates in the online session. Mr C. Odjo online participation	VBA/GWP-WA to notify agencies of visits. Possibly have a meeting at the office of VBA and GWP-WA	Completed
Field visit – Tabota Community, Benin	1st half of October, fixed		Mr. C. Odjo, physical presence		Completed
Field visit – Badara Community, Bama, Burkina	2nd half of September, fixed		Ms. Benagabou, on site presence		Completed

Field visit – Daudé Community, Togo	1st half of of October, fixed		Mr. C. Odjo Ms. Tailender, on site presence		Completed
Face to Face Meetings with national agencies in Togo and Benin and Ivory Coast	2nd half of September, 1st half of October Meetings with partners at national agencies (Meteorology, Hydraulics, Civil Protection, etc.)		National consultant C. Odjo Senior Consultant P. Reggiani online or physical presence	**VBA/GWP-WA to notify agencies of visit.**	Completed
Finalization of the VFDM FE interim report	Before October 30, 2024		FE Team	The VFDM project team will share the draft FE report with regional and national stakeholders for their review and comments.	Completed
Visit to the land – Sangabili, Ivory Coast	Beginning November		Field visit by Mr. Reggiani		Completed
Burkina Faso	End of October – End of November The purpose of these joint or country-specific sessions is to catch up on missing information.		Participants connect online Consultants P. Reggiani & VA. Taillandier	VBA/GWP WA to Inform and Invite all National Stakeholders to the Meeting (National Weather Service, Hydraulic Service, Civil Protection, Environment Dept.)	Completed

33 Annex AA: Questionnaire Template

C1 Relevance

The extent to which the objectives of the project intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.

- How relevant was the VFDM project in the countries overall action plan and strategies for the preparing and managing climate change events such as floods and drought? How relevant was VFDM project in addressing the countries' needs?
- What was the comparative advantage of VFDM project in relation to other early warning programs or projects in the countries or at the regional level?
- How relevant was VFDM project in contributing to the strategic objectives of the donor, implementing and executing partners?
- To what extent was VFDM responding to stakeholders and beneficiaries' requirements mainly contribute to long-term results and impacts?
- If there were major areas of concern, recommended actions taken for improvement.

C2 Effectiveness

- Are the project's outcomes, outputs and desired results, as laid out in the project logframe achieved or not? What had been the enabling and/or inhibiting factors in this regard?
- Review the log frame indicators against progress made towards the end-of-project targets available in the project proposal?
- How effective were VFDM project development and implementation process? how was this carried out at the regional, national and local level?
- To what extent was the project successful in targeting the end users of Early Warning Services? How was it able to design and deliver tailor-made observation, forecasting, and early warnings, adapted to the different end-users (i.e National meteorological and hydrological services, water resources, farmers, fisherfolk, civil protection, etc.)? (linked to project component 1 and 2)
- To what extent was the project successful in supporting increased access to early warnings and risk information in particular for the most vulnerable populations?
- To what degree did VFDM project managed to connect 1) assessment of risks, 2) local hazard monitoring (forecast), 3) warning service for dissemination and communication and 4) reaction of the population?
- To what extent did VFDM project foster the connections between providers of forecast and prediction products and preparedness and response plans?
- Has VFDM investments provided an environment to enhancing the hydromet infrastructure observations network?
- How has been VFDM project so far integrated aspects of gender consideration? For example, participation and involvement of women in the implementation of the project activities, capacity development, involvement in decision making? Was gender-disaggregated data collected on beneficiaries? Was gender analysis undertaken or were any targeted interventions implemented?
- Any concrete or evidence-based results of the project implementation in providing socio-economic benefits to the stakeholders? As compared to other alternate approaches?

- How effective has been the project monitoring in tracking the achievement of the desired results? Are any modifications required?
- Compare and analyse the Adaptation Fund (AF) Results Tracker within the Project Performance Report (PPR) at the Baseline with the one completed right before the MTE.

C3 Efficiency

In this section, it will be important to measure how economic resources/inputs (funds, expertise, time, human resources etc.) are converted to results.

- Was the project implemented in a cost-effective manner, considering the resources invested and the achieved outcomes?
- What were the main factors that influenced the efficiency of project implementation?
- To what extent has VFDM project delivered, results in an economic and timely way? Including: was the VFDM project development and implementation process (consultation, involvement, decision-making) adapted to respond to countries' needs?

C4 Impact

This category looks into the potential benefits of the project intervention to the regional, national and local stakeholders of the Volta Basin countries.

- What are the benefits of the VFDM project to various stakeholders especially national agencies, population, etc?
- Which factors or approaches contributed to the various positive or negative impacts and how can it be scaled or sustained?

C5 Sustainability

This category looks into the potential of the continuation of benefits from the project intervention as well as the probability of continued long-term benefits out of it. In the case of the VFDM project, it is important to look at how sustainability has been addressed in the different stages of programming and implementation.

- To which extent the net benefits of the VFDM project are likely to continue?
- What systems and structures has VFDM project put in place to sustain delivery beyond the timescales of the VFDM project?
- Which factors or approaches contributed to or impaired long-term sustainability of the project outputs and outcomes?

C6 Lesson learned and good practices

- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits?
- How did VFDM follow a comprehensive approach to risk governance, for example in contributing to enhanced capacities for strategic planning?

34 Annex AB: Terms of Reference (ToR)

Background on VFDM project and context

The consortium comprising of the World Meteorological Organization (WMO), a specialized United Nations Agency, the Volta Basin Authority (VBA) and the Global Water Partnership- West Africa (GWP-WA) are implementing the project entitled 'Integrating Flood and Drought Management and Early Warning Systems in the Volta Basin' (VFDM), funded by the Adaptation Fund. The implementation of the VFDM project started in June 2019 and will complete by the end of June 2024.

Besides the National Agencies in charge of meteorology, hydrology, water resources management, civil protection, etc., the implementation of the project activities involves regional institutions (VBA, GWP-WA, WASCAL, ECOWAS, AGRYHMET) and some WMO technical partners such as the CIMA Research Foundation, the Italian Civil Protection Department, UNITAR/UNOSAT, IUCN and Knowledge & Innovation.

Project Goal: The overall goal of the VFDM project is to strengthen target agencies and communities' resilience and adaptation capacity to the impact of climate change events (floods and drought) with an integrated approach.

Project objectives:

- Assist the six Volta River riparian countries in the implementation of coordinated and joint measures to improve environmental, social and economic development through flood and drought risk maps and future scenarios for the climate variability and change;
- Support basin stakeholders in developing appropriate End-to-End Early Warning Systems for Floods and Drought as well as capacity development activities for climate adaptation measures and mainstreaming gender;
- Provide policy and management guidance by sharing scientific information, knowledge and best practices for integrated disaster risk reduction and climate change adaptation in the Volta basin.

Project Implementing Entity (IE): World Meteorological Organization (WMO)

Project Executing Entities (EE): Volta Basin Authority (VBA), Global Water Partnership West Africa (GWP-WAF) World Meteorological Organization (WMO)

Project Targeted Countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo

Project Period: 5 years (June 2019-June 2024)

Project website: https://www.floodmanagement.info/volta-basin/

Project Components

Component 1: Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making

Component 1 will seek to identify and assess the current and future vulnerabilities, capacities, exposures and risks (VCERs). Floods and drought risk maps will be developed at local, national and regional level. Climate scenarios will be gathered and disseminated to the stakeholders, together with the risks maps, to study the possible impact of climate change on the current VCERs

during capacity building sessions. This will provide opportunities to draw recommendations for integrating climate change adaptation approaches into the current disaster risk strategies. It will also provide indicators and tools to raise awareness of stakeholders about the benefits of ecosystem functions for human well-being and the importance of protecting and restoring native ecosystems. Furthermore, these indicators will help in planning strategies for adequate consideration of preserving wetlands and other areas of transboundary importance such as biodiversity hot-spots.

Component 2: Develop concrete adaptation and environmentally friendly actions with an integrated approach

This component will provide the basis for an integrated flood and drought management approach in the region, thanks to the data systems, collaboration frameworks and early warning systems that will be put in place in the basin. The development and implementation of the End-to-End (E2E) Early Warning System for floods and drought at the scale of the Volta basin is the key output of the project. To improve sharing of information, the system will cover the global chain from vulnerability and risk mapping to forecasting, warning dissemination and decision support. The operational use of the new E2E Early Warning platform will be supported by a series of pilot tests in different sub-basins and vulnerable areas, covering different socio- environmental conditions. Capacity development activities will be carried out to ensure an adequate uptake of the new products, services or tools developed. Moreover, self-help capabilities on nature-based solutions and gender-sensitive participatory approaches will be developed at local and national level.

Component 3: Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and transboundary levels.

Component 3 will explore how implementation and coordination efforts will be beneficial to the concerned institutions in order to revise or develop new policies, plans and guidelines on disaster risk reduction and climate change adaptation. Adaptation measures and strategies aligning with AF Environmental and Social Policy (ESP) and gender principles will be discussed at local level in agreement with local organizations and communities to increase the resilience to floods and drought. The participation and engagement of local stakeholders will facilitate the adoption of the strategies and subsequently result in long-term sustainability.

Final Evaluation (FE) aim and objectives

As per the guidelines and agreement with the Adaptation Fund and in line with the WMO Evaluation Policy, the implementing entity (WMO) must lead and undertake the Final Evaluation for projects/programmes that are under implementation.

The objective of the Final Evaluation (FE) is to present and discuss the overall progress towards the achievement of the project objectives and outcomes as specified in the Project Document. It will assess the overall project impact and sustainability mechanism at transboundary, national, and local levels in order to identify good practices, lesson learned, challenges etc. to achieve its intended outcomes or results.

Final evaluation will assess:

- Outputs and outcomes of the project activities implemented from the Inception to the end of the project's term;
- The quality of implementation, including stakeholders engagement, financial and risk management;
- Assumptions made during the preparation phase, in particular, objectives and agreed upon indicators, against current conditions;
- Factors affecting the achievement of objectives, and;

- Status of the Project Result framework and their implementation.
- Sustainability strategy for the developed project products and tools including capacity development.
- Project alignment with the Adaptation Fund's strategies and objectives

Expected Results
The FE study report will highlight implementation achievements against the endorsed project document, action undertaken based on the mid-term evaluation study carried out in 2022 and share good practices, challenges, updated result framework, lessons learned about project implementation and management. Findings of the review and action suggested will be incorporated in the project completion report which will be submitted to the Adaptation Fund.

Final evaluation approach and methodology
The Final evaluation must provide evidence-based information that is trustworthy, reliable and useful. As a first step, the FE consultant will review all relevant sources of information including documents prepared during the project preparation and implementation phase such as the project concept note and proposal, the inception workshop report, mid-term evaluation, donor monitoring report as well as all the project activities technical and financial reports.

Secondly, the FE consultant is expected to follow a collaborative and participatory approach ensuring close collaboration with the Project Consortium Implementation Team, government counterparts, VBA, GWP-WA, and other key stakeholders (ensure gender inclusive approach) involved in the implementation of the activities at local, national and regional levels. The involvement of stakeholders from regional to national to local levels are crucial for a successful FE; their involvement should be also based on semi-structured interviews and/or focus group discussion (virtual and/or face-to-face). Specific focus should also be ensured towards those who have been consulted and involved during the preparation and implementation phase. The FE consultant is expected to conduct field visit missions to some or all the involved National agencies of the Volta Basin countries (Benin, Burkina Faso, Ivory Coast, Ghana, Mali and Togo). Accordingly, the independent consultant should detail in his/her methodology the approach and tools to put in place for field visits or discussion with the stakeholders.

The evaluation must adhere to the standards and norms of the United Nations Evaluation Group (UNEG). All relevant data should be sex-disaggregated and different needs of women and men and vulnerable groups should be considered throughout the evaluation process.

Final evaluation scope
The consultant will assess the following six categories of project progress and implementation.

C1: Relevance
The extent to which the objectives of the project intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.
Sample questions:

- How relevant was the VFDM project in the countries overall action plan and strategies for the preparing and managing climate change events such as floods and drought? How relevant was VFDM project in addressing the countries' needs?What was the comparative advantage of VFDM project in relation to other early warning programs or projects in the countries or at the regional level?
- How relevant was VFDM project in contributing to the strategic objectives of the donor, implementing and executing partners?
- To what extent was VFDM responding to stakeholders and beneficiaries' requirements mainly contribute to long-term results and impacts?
- If there were major areas of concern, recommended actions taken for

improvement.

C2: Effectiveness of implementation

The extent to which the project objectives were achieved, taking into account their relative importance at the Regional, National and local levels and considering the mandate of key agencies or institutes involved in the management of floods and drought. The consultant will consider following aspects on effectiveness:

- Are the project's outcomes, outputs and desired results, as laid out in the project log frame achieved or not? What had been the enabling and/or inhibiting factors in this regard?
- Review the log frame indicators against progress made towards the end-of- project targets available in the project proposal?
- How effective were VFDM project development and implementation process? how was this carried out at the regional, national and local level?
- To what extent was the project successful in targeting the end users of Early Warning Services? How was it able to design and deliver tailor-made observation, forecasting, and early warnings, adapted to the different end- users (i.e National meteorological and hydrological services, water resources, farmers, fisherfolk, civil protection, etc.)? (linked to project component 1 and 2)
- To what extent was the project successful in supporting increased access to early warnings and risk information in particular for the most vulnerable populations?
- To what degree did VFDM project managed to connect 1) assessment of risks, 2) local hazard monitoring (forecast), 3) warning service for dissemination and communication and 4) reaction of the population?
- To what extent did VFDM project foster the connections between providers of forecast and prediction products and preparedness and response plans?
- Has VFDM investments provided an environment to enhancing the hydromet infrastructure observations network?
- How has been VFDM project so far integrated aspects of gender consideration? For example, participation and involvement of women in the implementation of the project activities, capacity development, involvement in decision making? Was gender-disaggregated data collected on beneficiaries? Was gender analysis undertaken or were any targeted interventions implemented?
- Any concrete or evidence-based results of the project implementation in providing socio-economic benefits to the stakeholders? As compared to other alternate approaches?
- How effective has been the project monitoring in tracking the achievement of the desired results? Are any modifications required?
- Compare and analyze the Adaptation Fund (AF) Results Tracker within the Project Performance Report (PPR) at the Baseline with the one completed right before the MTE.

C3 Efficiency of resource allocation

In this section, it will be important to measure how economic resources/inputs (funds, expertise, time, human resources etc.) are converted to results.

Sample questions:

- Was the project implemented in a cost-effective manner, considering the resources invested and the achieved outcomes?

- What were the main factors that influenced the efficiency of project implementation?
- To what extent has VFDM project delivered, results in an economic and timely way? Including: was the VFDM project development and implementation process (consultation, involvement, decision-making) adapted to respond to countries' needs?

C4: Impact

This category looks into the potential benefits of the project intervention to the regional, national and local stakeholders of the Volta Basin countries.

Sample questions:

What are the benefits of the VFDM project to various stakeholders especially national agencies, population, etc?

Which factors or approaches contributed to the various positive or negative impacts and how can it be scaled or sustained?

C5: Sustainability

This category looks into the potential of the continuation of benefits from the project intervention as well as the probability of continued long-term benefits out of it. In the case of the VFDM project, it is important to look at how sustainability has been addressed in the different stages of programming and implementation.

Sample questions:

- To which extent the net benefits of the VFDM project are likely to continue?
- What systems and structures has VFDM project put in place to sustain delivery beyond the timescales of the VFDM project?
- Which factors or approaches contributed to or impaired long-term sustainability of the project outputs and outcomes?

C6: Lesson learned and good practices

- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits?
- How did VFDM follow a comprehensive approach to risk governance, for example in contributing to enhanced capacities for strategic planning?

Independent Evaluator: required skills and qualifications

- The Independent evaluator will be responsible for:
- Producing all the evaluation deliverables;
- Recommending additional experts (at national or local levels) for recruitment, as needed, for the purposes of this evaluation, such as:
- Technical expert in climate, or early warning, or preparedness and response
- Technical expert in strategic planning and development programming.
- Ensuring the quality of data (validity, reliability, consistency, and accuracy) throughout the analytical and reporting phases. It is expected that the report will be written in an

evidence-based manner.

- Minimum qualifications for the Independent Evaluator:
- A Master's degree or equivalent in Social Science, or other closely related fields
- A minimum of 8 years' experience in design, management and evaluation of development or climate change adaptation projects, experience in designing evaluation tools that fit the need of the exercise, conducting desk reviews and evaluation missions, drafting of evaluation reports;
- Experience in evaluations of the Adaptation Fund, World Bank and/or UN programmes and projects;
- Experience in the technical areas of climate and early warning, preparedness and response, strategic planning and development programming;
- Experience and knowledge of LDCs
- Ability/experience to facilitate consultation meetings or workshops,
- Knowledge in gender and vulnerability issues is also preferable; -
- Ability to write and speak fluently in both English and French

Expected outputs and deliverables deliverables

The following documents/events will be required at the proposed times:

1. FE Inception Report: Evaluator clarifies objectives and methods of Final Evaluation. The inception report must be containing the evaluation framework, refined objectives, detailed evaluation methodology including questionnaire, consultations processes, evaluation matrix, work plan, list of key stakeholders to be interviewed and logistical arrangements for the field visits. Identify any limitations to the evaluation and propose mitigation measures.
2. Prepare report and PowerPoint presentation with main findings and tentative recommendations upon data collection and field visits (expected to visit 3-4 countries and two countries virtually).
3. Debriefing workshop (1/2 day) with WMO to discuss the findings, lessons, and proposed recommendations (two days after completing the field trip)
4. Draft Final evaluation report in English: Draft report (using guidelines on the content outlined in Annex B) with annexes;
5. Final version of the evaluation report, including an executive summary, in English and French: Finalize the report with comments from stakeholders and management responses. Some of interview or meeting tasks may be conducted via skype or video conference. All deliverables are subject to the validation by the WMO in respect with the schedule of tasks assigned to the Evaluator.

Payment modalities and specifications

The overall level of effort estimated is 50 person/days spread over 4 months. The daily rate will be discussed with the shortlisted candidate. The payment will be made by WMO to the account

The Consultant will travel to 3-4 Volta Basin countries for the purpose of the mission.
The consultant will take in charge airfare tickets, local travel costs for the mission including accommodations and daily allowances.
The WMO and VFDM Project Teams will be responsible for liaising with the consultant to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

Schedule of Payments

a) 30% of payment upon approval of the FE Inception Report detailing the adopted methodology

b) 40% of payment upon submission and validation of the draft Final Evaluation Report

c) 30% of payment upon sharing of the final FE Report

Technical and Financial Proposals Presentation

The application package must include the following:
Signed Curriculum vitae (in English) with contact details of 3 clients for whom you have rendered preferably the similar service.
Methodological note (3 pages maximum) describing the approach to be used by the consultant for the mission execution including a work schedule that specifies the activities, dates, and timeframe.
Two writing samples/reports in English.
Minimum of three letters of professional references, contracts, certificates, etc

Financial Proposal

The overall budget proposal should be presented for the below timelines table.

Work stages	Description	Days proposed
1	Desk review of the project – related documents	5
2	Drafting and submission of the FE Inception Report	3
3	Data Collection, Meetings, consultations (face to face) and field visits in 3-4 Volta Basin countries Virtual discussion with other countries	20
4	Report of key findings and tentative recommendations upon field visits	7
5	Draft FE Report (English)	10
6	Final FE Report (English and French)	5
	Total Days	50 days

Important Note 1- The interested consultant should have not participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

2- The project document is also downloadable via Adaptation fund website : https://www.adaptation-fund.org/project/integrating-flood-drought-management-early- warning-climate-change-adaptation-volta-basin-benin-burkina-faso-cote-divoire-ghana- mali-togo/

The M&E manual and other documents including result framework for the VFDM project are available here:
https://www.floodmanagement.info/volta-basin/monitoring-and-evaluation/

Application modalities and deadline

Complete applications should be submitted through the official WMO recruitment page.
Interested applicants must submit all documents as described in the above item entitled " **Technical and Financial Proposals Presentation** " for the eligibility of their applications.

Annexes

Annex 1: Final Evaluation Report incorporating feedback from stakeholders, for the review and approval of the WMO.
The total length of the FE report should be a maximum of 50 pages for the main report, excluding annexes. Annexes can provide background and further details on specific components of the project evaluated.

The evaluation report template:

1. Title page
2. Table of contents
3. Executive summary
4. Acronyms
5. Background and description
6. Purpose of FE
7. Evaluation methodology and evaluation questions
8. Findings per criteria
9. Lessons learnt and potential good practices and models of intervention
10. Updated project result framework with baseline, KPI, target achieved, means of verification
11. Conclusions and recommendations
12. Annexes (ToR, list of interviews, overview of meetings, proceedings stakeholder meetings, other relevant information)

35 Annex AC: Monitoring and Evaluation Table

The Excel table with the **Monitoring & Evaluation content** for the project is accessible through **this link**.