



ADAPTATION FUND

Project Completion Summary

Section A: Project result and performance

1. Basic information

Title of project/programme	Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin (VFDM)
Project/Programme category	Regional
Project period (if the project was granted an extension, include the original as well as the revised completion date)	Original- 25/06/2019 - 25/06/2023 Revised - 25/06/2019 - 25/06/2024
Country(ies)	Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Togo
Sector(s)	Disaster risk reduction and early warning system
Implementing entity name	World Meteorological Organization (WMO)
Type of implementing entity (MIE, NIE or RIE)	MIE
Executing entity(ies)	World Meteorological Organization (WMO), Volta Basin Authority (VBA) and Global Water Partnership West Africa (GWP-WA)
Amount of financing approved (USD)	7,920,000
Project contact(s)	Ramesh Tripathi, Project Manager, WMO (rtripathi@wmo.int)
Date of report	20 August 2025

2. VFDM Key milestones

Project inception	Inception report submitted on 24 July 2019 https://fifspubprd.azureedge.net/afdocuments/project/6324/6324_Inception%20workshop%20and%20Executing%20Partners%20report%20Volta%20Project%20WMO%2024%20July%202019.pdf
Mid-term review (if applicable)	MTR submitted on 30 June 2022- https://fifspubprd.azureedge.net/afdocuments/project/6324/6324_MTE%20report_draft-final-UK_VFDM%20.pdf
Project completion	Project Completion Report https://fifspubprd.azureedge.net/afdocuments/project/6324/AF00000122_PPR5_Web.pdf
Terminal evaluation (PTE)	PTE- 30 December 2024 https://fifspubprd.azureedge.net/afdocuments/project/6324/Independent+Final+Evaluation+of+the+VFDM+project+ final report final 30122024 Update.pdf

If any, delay in implementation and reasons for delay	During the five years of implementation, some delays were encountered during the implementation of activities due to the below reasons: - the VFDM project implemented the planned activities with the delays encountered due to the Global Covid-19 Pandemic situation and civil security issues in the three countries. During Covid-19 pandemic situation, there were restrictions on travel within or outside the countries, so many of the stakeholders requested to delay the implementation of the workshops or filed visits to collect data and information for the establishment of the VOLTALARM EWS in the Volta Basin region. - A considerable gender imbalance still exists at all levels, albeit some progress to improve this situation has been achieved. The imbalance is especially noticeable due to the technical project focus area (hydrology, meteorology and disaster management etc.) for which there are limited women staff or experts at the national agencies and at the regional coordination level, however there was gender inclusive approach implemented at the community level where women, men, youths, elderly etc. were involved. - There was an overall lack of conscience at the regional executive entity level and at national hydro-meteorological agencies, concerning the fact that ownership of observing equipment sponsored by the project needs to be transferred to national agencies and needs to be maintained and integrated into national networks. A letter of cooperation was shared between the regional and national level agencies to improve the coordination, responsibilities and ensure sustainability. - The project is mainly Nationally focused and driven and involves consultation, engagement, and agreement with various national and sub-national stakeholders. These engagements sometimes take time and can result in delays (availability of stakeholders to participate or organize workshops at national and regional levels); however, they are necessary to ensure the sustainability, ownership, and ultimate success of the project. - One of the six countries is English-speaking and others are francophone. So, all the concept notes, ToR, and other reporting documents are developed in both English and French language in order to ensure National stakeholders are provided documents in their respective languages and their continuous support and participation are received. This sometimes causes a delay in the implementation of the activities. - The involvement of stakeholders from different National agencies requires proper coordination and support in terms of defining proper roles and responsibilities for each of them. The project involved all the stakeholders and based on the mandates, roles and responsibilities were defined.
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3. VFDM Project overview and description

The geographic setting of the Volta Basin, covering an area of about 400,000 km² and extending from semi-arid to sub-humid areas, is highly vulnerable to meteorological and hydrological events. Over the last 20 years, almost two million people have been affected by floods in the Volta basin. Key affected stakeholders are mainly people working in the agricultural sector as around 68% of the population in the basin is largely dependent on agriculture.

The main objective of the project is to assist the six countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo) in the implementation of coordinated and joint measures to

improve their existing management plans at regional, national and local level and to build on the lessons learned from the past and current projects related to disaster risk reduction and climate adaptation. As droughts and floods are a common feature in the Volta basin region, integrated water resources management, risk maps and development of early warning systems must be implemented to increase resilience to floods and droughts to ensure socio-economic sustainable development. Equilibrated management of the water resources will be sought to make better use of the water surplus during floods to be stored in view of drought events. Furthermore, at local scale, agricultural production will be tailored to these challenges with provision of knowledge and early warnings that will enable farmers to adapt their production methods.

The three specific objectives of the project are to:

1. Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making;
2. Develop concrete adaptation and environmentally friendly actions with an integrated approach;
3. Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels.

Component 1. Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making	US\$ 1,500,000
Component 2. Develop concrete adaptation and environmentally friendly actions with an integrated approach	US\$ 4,000,000
Component 3. Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels	US\$ 1,000,000
Project execution cost	US\$ 750,000
Total project cost	US\$ 6,500,000
Implementing Entity Project Cycle Management Fee	US\$ 670,000
Grant Amount	US\$ 7,920,000

For more information on the VFDM project, please find below links to the VFDM project website and project page under the Adaptation Fund Website

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

Adaptation Fund website: <https://www.adaptationfund.org/project/integrating-flood-droughtmanagement-early-warning-climate-change-adaptation-volta-basinbenin-burkina-faso-cotedivoire-ghana-mali-togo/>

4. **Results and key outcomes (Alignment with the Adaptation Fund core impact indicators – Number of Direct Beneficiaries reached including women; Trainings conducted including women trained, Early Warning Systems (EWS); Assets Produced, Developed, Improved, or Strengthened; Natural Assets Protected or Rehabilitated i.e. hectares of natural habitats/ meters of coastlines)**

Results and key outcomes of the VFDM projects are provided below aligning with the Adaptation Fund core impact indicators

All the VFDM project deliverables (including key results) are available at the below link:

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

Component 1 Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making	Adaptation Fund Core Indicators	Alignment with VFDM outputs under the Component 1	Key activities	Indicative Target
	Number of beneficiaries	Output 1.1.1, Output 1.1.2, Output 1.1.3, Output 1.2.1, and Output 1.2.2	Yes, participation to the co-development of the risk maps activities including data collection, technical trainings in developing risk layers etc.	More than 60 technicians from the national agencies and academia were involved in the development of the risk maps
	Early warning systems	Output 1.1.2, Output 1.2.1	Yes, impact related information is available for the forecasts and warning services	80% of the warnings are impact based and disseminated to the populations including women
	Assets produced, developed, improved or strengthened	Output 1.1.2, Output 1.1.3, Output 1.2.1, Output 1.2.2	Risk Maps developments for the Volta Basin region long term risk prevention and management strategies are available Targeted countries have strengthened capacities to response and become resilient to climate change events	Flood and Drought Risk Maps developed and available for the Volta Basin region One long term risk prevention and management strategies have been developed for future development policies and planning
	Increased income or avoided decrease in income	Output 1.1.2, Output 1.2.1, Output 1.2.2	Yes, the knowledge and skills developed through various risk maps will support in professional carriers	More than 60% of the population benefits from development planning and initiatives

			Risk Management strategies will be useful for development planning and initiatives	
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Component 2 Develop concrete adaptation and environmentally friendly actions with an integrated approach	Adaptation Fund Core Indicators	Alignment with VFDM outputs under the Component 2	Key linkages to activities	Indicative Target
	Number of beneficiaries	Output 2.1.2, Output 2.1.6 Output 2.2.1 Output 2.2.3 Output 2.3.1 and Output 2.3.2	Yes, VOLTALARM EWS co-designed with the national and local stakeholders of the six countries Community based flood and drought management implemented in the Pilot locations including Nature based solutions and simulation exercises to improve coordination and collaborations	More than 50% of the national and local agencies are involved in co-design and/or co-create the EWS 70% of the participants benefits from the self-help capacities on CBFM developed with more than 40% of the beneficiaries are expected to be women
	Early warning systems	Output 2.1.1, Output 2.1.2	Yes, EWS VOLTALARM developed for the monitoring, impact based forecasting and warning services of the floods and drought events	More than 80% of the population of the targeted areas (more than 60% women) receive timely warning or advisory messages for anticipatory actions or responses measures for saving lives, livelihoods and environment
	Assets produced, developed, improved or strengthened	Output 2.1.1, Output 2.1.2, Output 2.1.3 Output 2.1.5	EWS is developed for the regional visualization platform with global satellite products and national information products	More than 80% of the climate change events will be monitored and forecasted at national and regional levels in advance and informed to the population
	Increased income or avoided decrease in income	Output 2.2.3	Warning and advisory services for the climate change events or hydro-meteorological status and outlooks will support in better planning for hydro-power generation, water utility, agriculture practices etc.	More than 50% of the population including women have better livelihoods and economic activities

Component 3 Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels	Adaptation Fund Core Indicators	Alignment with VFDM outputs under the Component 3	Key linkages to activities	Indicative Target
	Number of beneficiaries	Output 3.1.2, Output 3.1.3, Output 3.3.1, Output 3.3.2	Yes, stakeholders at all levels will be able to contribute in sharing their needs, experience and for better development planning and decision making process	More than 70% population (half of them are women) from the targeted areas are consulted to share their experience and be part of the decision-making process
	Early warning systems	Output 3.1.1, Output 3.2.1, Output 3.2.2	Yes, Inclusive process is established for the EWS through MoU's and agreement between the countries linking with policies, plans and guidelines on Climate Change Adaptation (CCA) and Disaster Risk Management (DRM)	More than 10 agencies benefit from joint collaboration with more than Millions benefitting indirectly through collaboration at national and regional levels
	Assets produced, developed, improved or strengthened	Output 3.1.1, Output 3.1.2, Output 3.2.1, Output 3.2.2	Policies, plans and guidelines are refined or developed based on the experience gained from the VFDM project	More than 10 national and regional policies on CCA and DRM are updated or refined based on the experience and local collaboration ensuring Millions benefits indirectly through development planning and programmes
	Increased income or avoided decrease in income	Output 3.1.1, Output 3.1.2, Output 3.2.1, Output 3.2.2	Yes, based on the revised or updated policies, new development programmes or process will be established by the governments	More than Thousands (Million indirectly) will directly benefit with increased livelihoods options

5. Issues, challenges and mitigation measures (Environmental and social risks, gender considerations and other risks)

During the five years of the implementation, IE continuously monitored for the potential risks and impacts through the VFDM Risk Matrix (prepared by WMO with mitigation measures) <https://wmoomm.sharepoint.com/:x/s/Services/Eee2xcKpaYNHq3Pl1CzWwBwBQly8lser9lbpbwMy7lzHFA?e=X1fMb1>

Also, the Implementing Partner conducted regular risk monitoring and evaluation of the implemented activities, and the results were tracked and reported in WMO's internal monitoring system. In addition to this, a dedicated Monitoring and Evaluation (M&E) expert was hired to prepare a project risk monitoring framework. In case of delays in the implementation, or possible risk occurrence, risk mitigation measures as indicated above were executed as and when needed, ensuring that the likelihood of occurrence of any risks remained the same or lower than at the time of project submission and did not affect the

project implementation. The implementation of first-year, second-year, and third-year activities was severely impacted by the COVID-19 pandemic situation and civil security issues in two countries of the Volta Basin. Delays are encountered to complete the agreed current activities as well as future upcoming activities (many activities are linked with each other). However, the impact of COVID-19 was not visible in the fifth year of implementation but the political situation allowed some restrictions for the partners. A contingency plan or approach was defined and adopted so as to ensure continuation in the implementation of the activities (virtual consultations with the Countries, Email communication, and WhatsApp groups are created for quick communication, Identification, and capacity development of local staff or partners to execute the activities and remote assistance by Implementing Partner and External consultants). The management of risks has been facilitated through close and open lines of communication with the project stakeholders as well as with regular interaction among project partners at the regional and national levels.

As stated above, risk mitigation measures proved efficient so far, including those addressing the COVID-19 imposed risks, and as a result, the implementation of project activities was not halted but maintained and gained momentum, especially from the first half of 2022. Together with the use of virtual meeting platforms, measures such as the identification and capacity building of local and national staff or consultants allowed to carry out activities as planned. During the reporting period, the VFDM risk matrix was updated to identify the risks under each outcome and associated treatment measures to have better monitoring and accountability to the project partners and Adaptation Fund.

No grievances were reported during the reporting period of the project (June 2019 - June 2024)

Some of the key risks identified during the project implementation and steps taken to mitigate the risks

Identified Risks	Status	Steps taken to mitigate risk
The outbreak of covid-19 pandemic (at national, regional and Global) or political crisis which caused travel restrictions for the project partners and stakeholders	High	As there was no travel possible to the Countries in 2020 and 2021, the meetings were held virtually through Zoom, Teams or telephone and discussion documents are shared via emails. As a measure, National agencies professions or consultants were hired and trained so as to provide technical support in the implementation. Whatsapp groups are created so as to share project information directly with the National stakeholders or to receive information from them
On-going Civil war/civil security risks in Mali and Burkina Faso (also the northern part of Benin) (https://wmoomm.sharepoint.com/:b:/s/Services/ERuhyRnAiWNDgtKlwSG7riwBUrqOjCYGd4)	High	Most of the National workshops to present the project activities or finalize the reports are carried out virtually with the project team. In case of organizing and participating to the regional workshops, the workshops are moved

PXV_HfPxrmig?e=sh1AIL) https://wmoomm.sharepoint.com/:b:/s/Service s/EdU2ZQRpKBFPj1lI9IXEXuEBX4jpliTF0CmpvpnqFm6JHg?e=S2kDJt), and also in the parts of Benin which led to travel restrictions for the National stakeholders for attending the regional workshop in both the countries and also for project partners to travel to the countries.		to other Volta Basin with minimum financial implications and ensuring right numbers of stakeholders are invited. The two project executing partners VBA and GWP-WA are based in Ouagadougou, Burkina Faso and during project design, most of the regional workshop was expected to be organized in Ouagadougou but as we need to move to other countries, the costing for additional travel of the project EEs resource persons have increased.
Volta Basin's vulnerability to natural hazards, capacity and resource limitations could constrain sustainability of the project achievements. Even if the Project succeeds in developing resilience and capacities at National level through EWS and Risk maps, it may not be enough for preparedness to climate change events in general.	High	The Project Team had been regularly informing the benefits of the project and how National investments could help in building resources and capacities at local, national and regional level. The increase vulnerability through socio-economic situations of the population should be supported with other development projects in the countries by national agencies, International or non-government organizations. The project team was continuously building synergies with the on-going initiatives and complementarities with the future projects and initiatives so that a joint effort for preparedness is developed.

During the implementation period, the IEs and EEs continuously identified considerable gender imbalance at the level of regional and national technical agencies. On the contrary, female involvement in activities on climate adaptation measures (e.g. nature-based solutions) at the level of rural or urban communities, is much more balanced (1/3 to 1/2 of participants are female). There was also a clear difference between social science and technical professions, with women represented much stronger in the former. The lack of women in technical professions at the level of national and regional agencies is mainly attributable to fewer women following or considering science or technology related study curricula across all Volta basin countries. As a result, there exist fewer female candidates for recruitment in technical professions. Although there is awareness of this issue among the project executive entities, however, the problem was not rapidly solvable as there is a prior need to prepare more women in technical and scientific disciplines. Another non-negligible reason for female under-representation in responsibility positions, especially at the community level, is of cultural type.

The project partners have undertaken the following measures in relation to gender considerations in the VFDM project until the completion report:

- ToR for hiring gender experts was reviewed by WMO gender experts and had the inclusion of profiles from the Volta Basin region,

- The project team always aimed to have 50% participation of men and women in all the consultation meetings, training, and project activities at ground level (including as participants and trainers). However, most of cases its was not possible
- The project team ensured equal participation of men and women in institutions and decision-making processes related to the project. However, it is not always possible to ensure equal participation of men and women in some technical activities due to lack of technical background or expertise, social and cultural barriers existing in the countries, however, efforts for such are being made.

Some lessons emerging from the project relating to gender include the following:

- Based on the implementation experience, women in the Volta Basin are participating in training workshops and decision-making processes and want to be part of the development of resilience in some of the regions. The project has taken a commitment from the decision makers to involve women groups in mainstreaming gender into E2E-EWS-FF as well as ensure budgets are allocated for their participation.
- At the national levels, the project is providing products and services for managing extreme events. Very few countries have female staff in their Hydrological and Meteorological services. Hopefully, this will be improved now after the completion of the National workshops on mainstreaming gender in E2E-EWS-Floods and Integrated flood management.

To keep track of issues and lessons learned over the course of the project, the evaluation reports for the project included questions and responses disaggregated by gender as well as gender-specific questions on the impacts (positive and negative of project activities).

- The number of staff trained to use VOLTALARM EWS and issue impact-based warnings on the impact of, climate-related events (by gender).
- Percentage of women, girls, and youths receiving timely early warnings for floods and drought events and the associated impacts
- Percentage of local volunteers (male and female) who are integrating disaster risk reduction and adaptation strategies at the community level
- Number of women being part of the decision-making team at local, national and regional levels.
- Number of youth sessions for taking study in STEM-related subjects including hydrological, meteorological, disaster management etc.)

6. Lessons learned (Best practices, adaptive management, what worked during the implementation and what did not, what corrective actions were taken during implementation, what are the ways to improve the intervention)

The VFDM project demonstrated that **inclusive, participatory engagement**, especially via national working groups and local NGOs, was instrumental in building ownership, fostering legitimacy, and ensuring that solutions were regionally, nationally and locally appropriate and

sustainable. The **step-by-step, co-production approach**—particularly in developing and deploying the myDewetra–VOLTALARM early warning platform and flood/drought bulletins—enabled rapid operationalization, stakeholder autonomy, and smoother rollout. Integrating technical, institutional, social, and environmental aspects into a coherent system—aligned with the “Early Warning for All” initiative—was a clear success, raising resilience across the six Volta Basin countries. However, gaps remained: the need for **further densification** of hydromet observation networks and data sharing and continued **capacity strengthening** of local flood- and drought-risk management committees were repeatedly noted during the implementation. Mid-term and terminal evaluations, undertaken by WMO along with VBA and GWP-WA, helped detect shortcomings (e.g. uneven readiness across national agencies or pilot sites), which prompted adaptive measures such as tailored training for under-resourced countries and mobilizing additional technical assistance where needed. Throughout implementation, corrective actions included reinforcing stakeholder engagement, adjusting pilot rollouts based on feedback, and securing MOUs for ongoing collaboration—such as between VBA and CIMA Research Foundation to improve the VOLTALARM system post-project. For future scaling, consolidating results through the VBA Council’s adoption of the regional flood-and-drought risk reduction strategy, mobilizing additional financing, and launching a second project phase (presently submitted to the Adaptation Fund for endorsement) are critical for embedding resilience and institutionalizing gains.

Here are some of the key results, issues and challenges, adaptive management etc. for the VFDM project

1. Establishment and operationalization of the VOLTALARM Early Warning System (EWS)

The co-development of the myDewetra–VOLTALARM platform (<https://volta-staging.mydewetra.world/>) with the National Meteorological and Hydrological Services (NMHSs) proved to be a major success, enabling real-time monitoring, forecasting, and dissemination of flood and drought alerts across six riparian countries. The collaborative approach enhanced ownership and operational capacity, and the user-friendly interface facilitated rapid decision-making. However, the accuracy of alerts was constrained in some areas by sparse hydrometeorological observation networks and uneven technical capacity among NMHSs. Mid-course corrective actions included targeted capacity-building for under-resourced agencies and securing a post-project maintenance partnership between VBA and CIMA Research Foundation. To further improve impact, expansion of observation networks and integration of mobile-based alert delivery systems to reach communities directly are recommended.

2. Risk Mapping for current and future scenarios

Participatory development of hazard, exposure, and vulnerability maps greatly improved planning for flood and drought risk management. Local knowledge integration ensured that mapping products reflected on-the-ground realities and past hazard experiences, thereby increasing their utility for both national authorities and communities. Limitations arose from incomplete baseline data in certain transboundary zones, which were addressed through the use of proxy indicators and validation workshops. Future interventions should institutionalize periodic updates to the maps, linking them to live EWS data and incorporating climate change scenario modeling to enhance forward-looking risk assessment.

3. Community-Based Flood and Drought Management in the Six countries

The establishment and training of local flood and drought risk management committees empowered communities to take early action, implement low-cost resilience measures, and strengthen local preparedness. Successful examples included improved water storage practices and adaptive agricultural techniques. However, sustainability risks emerged where committees lacked formal mandates or steady resources. The project mitigated this by linking local committees with district disaster management offices to ensure institutional support. A key recommendation is to introduce small-grant schemes to sustain and scale community-led interventions beyond the project's life.

4. Gender Mainstreaming into flood management

Integrating gender considerations into planning and capacity-building was instrumental in ensuring inclusive participation and more equitable benefits. Women's involvement in community committees enriched decision-making and improved the adoption of practical adaptation measures, especially in agriculture and water use. Despite progress, cultural barriers in some areas continued to limit women's full participation. In response, the project partnered with women's associations to co-host awareness and training activities. Moving forward, embedding gender quotas in community committee structures and mainstreaming gender in all training and communication materials will further enhance equity and effectiveness.

5. Regional and National Policies and Plans refinement for development planning and investments

The project's policy engagement successfully influenced the Volta Basin Authority's regional strategy on flood and drought risk reduction and contributed to the alignment of national adaptation plans with transboundary priorities. By framing interventions within the global "Early Warnings for All" initiative, the project leveraged additional political will and visibility. Some challenges remained in securing rapid policy uptake and harmonizing data-sharing protocols across all riparian states. Targeted advocacy with key ministries helped to accelerate some commitments, but a formalized, binding agreement on data sharing and emergency coordination remains a critical next step.

Overall Adaptive Management Insights

The project's iterative approach—combining technical innovations with policy integration and community engagement—proved effective in responding to emerging challenges. Mid-term evaluations and regular stakeholder feedback loops enabled the identification of gaps and the timely adjustment of activities, such as scaling training in underperforming areas and enhancing cross-sectoral collaboration. The key to sustaining and scaling the achievements lies in institutionalizing the tools and mechanisms developed, ensuring continuous capacity-building, and mobilizing long-term financing for basin-wide resilience programs.

Best Practices Identified

- **Co-production of tools** (e.g., VOLTALARM EWS, risk maps) with national agencies and communities to ensure ownership and long-term use.
- **Participatory risk mapping** to integrate scientific data with local knowledge for context-appropriate solutions.

- **Community-based governance structures** for flood and drought management linked to formal disaster management systems.
- **Gender-responsive design** in capacity-building and decision-making to improve inclusiveness and adaptation outcomes.
- **Alignment with regional and global frameworks** (e.g., VBA strategy, “Early Warnings for All”) to leverage political support and funding opportunities.
- **Adaptive management through continuous feedback loops** to adjust implementation in real time and address capacity gaps.

7. Innovation: description of any innovative practices or technologies that figured prominently in this project

The development and installation of the VOLTALARM EWS is a clear technological innovation with cost-effectiveness for Volta Basin transboundary flood and drought management strategies. This innovative tool can provide support in monitoring and forecasting floods and drought events at the same time in the country or at regional levels (it is observed that in several countries at one time of the year, there is a flooding situation in one part and a drought situation in another part so there is a need for an integrated approach to flood and drought warning services). The Transboundary VOLTALARM EWS can support in joint monitoring of the hazards and issuing of advisory/warning services to various stakeholders in the Six countries (which was a challenge). Also considering floods and drought as transboundary events, the sharing of experiences and information exchange between national agencies of the six countries is important and will ensure the timely saving of lives, livelihoods and infrastructures.

8. Description of the vulnerable communities and social groups affected by the project, and how they have been engaged and empowered

Projects had a greater impact at the rural community level, with interventions made by the local NGOs especially with the climate adaptation measures to manage floods and drought events (Previously before the project, there was limited knowledge and skills available with the communities and also lack of coordination between communities and local authorities etc.). These have the capability in particular with respect to climate vulnerability and adaptation in agricultural activities, which they consider priority for socio-economic development. Vulnerabilities include loss of lives, agricultural yields, access to seeds for sowing, particular cultivation techniques to counter the effects of drought, agricultural credits and the fight against diseases that ravage livestock were shared and solutions were identified and implemented based on the budget availability, capacity and sustainability.

During the community based activities, communities are trained and made aware of flood level markings in the community, risk and safer areas, gender mainstreaming, flood and drought management plans, strengthening of the flood and drought management committees etc. Considering the flood warning marking together with the warning messages from the local authorities, communities can carry out evacuation to the safer places. Flood marking is also used for raising the level of houses (for future construction). In future meteorological warnings

will be useful in understanding the crop changing patterns, timely cutting and drying of crops etc. which will be useful for livelihood and economical activities.

9. **Description of how long-term institutional and technical capacity for effective adaptation has been strengthened**

The VFDM Project made significant contributions to reinforcing the institutional and technical foundations required for sustained climate change adaptation in the Volta Basin.

Institutionally, the project strengthened the Volta Basin Authority's (VBA) coordination role by embedding a basin-wide, transboundary framework for flood and drought risk management within its operational strategy. National Working Groups—bringing together ministries, hydrometeorological services, disaster management agencies, research institutions, and civil society—were established and capacitated in all six riparian countries, creating enduring multi-sectoral platforms for decision-making and policy alignment. These bodies now serve as focal mechanisms for integrating climate risk considerations into water resources management, disaster preparedness, and development planning. The project also supported the adoption of the *Regional Strategy for Flood and Drought Risk Management in the Volta Basin*, providing a shared policy reference for long-term collaboration and harmonized response including investments from the national ministries and international financing mechanism.

Technically, the co-development and operationalization of the myDewetra–VOLTALARM Early Warning System (EWS) significantly enhanced the forecasting, monitoring, and cross-border information-sharing capacities of NMHSs of the Six project countries. Staff were trained in hydrological and meteorological modeling, hazard mapping, impact-based forecasting, and the use of geospatial platforms for decision support and warning services for saving lives, livelihoods and environmental degradation. The participatory production of flood and drought hazard, exposure, and vulnerability maps, flood management plans including simulation exercises—validated through local and community workshops—has equipped both national agencies and local authorities with practical tools for risk-informed planning and preparedness for climate change events. Additionally, the establishment and training of community-based flood and drought risk management committees, linked to district and national disaster management structures, has extended technical capacity to the grassroots level.

The project's emphasis on **gender-responsive training** and inclusive participation has expanded the diversity of technical and institutional actors engaged in the climate change adaptation planning. By aligning with global initiatives such as “Early Warnings for All” and fostering ongoing partnerships—most notably the VBA–CIMA Research Foundation agreement for post-project maintenance and enhancement of the EWS—the VFDM has created pathways for continuous innovation, resource mobilization, and scaling of good practices. Collectively, these institutional and technical gains ensure that the Volta Basin is better equipped to anticipate, prepare for, and adapt to climate-induced flood and drought risks in a sustainable and coordinated manner.

10. An overview of complementarity and/or coherence of with other climate finance sources in the context of this project (synergies with other projects, national plans etc.)

The project is building synergies with other on-going projects such as recently funded REWARD project funded by the GEF, World Bank funded hydro-met project in Burkina Faso, CREWS project of West Africa, Burkina Faso, Togo and Benin (under development).

Also, VFDM partners are developing the phase-II of the VFDM project to scale the EWS and risk maps to cover the two priority Volta Basin countries (Cote d'Ivoire and Ghana)

<https://www.adaptation-fund.org/project/scaling-up-integrated-flood-and-drought-management-and-early-warning-system-for-climate-change-adaptation-in-the-volta-basin-countries-vfdm-phase-2/>

11. Sustainability, scalability and replicability

Based on the MTE and FE, Climate resilience measures are mostly dependent on local geographic and climatic as well as social conditions. The particular measures proposed in the VFDM are mostly applicable in similar sub-Saharan contexts. The activity at the regional level, such as data acquisition and exchange as well as the implementation of early warning systems are part of trans-boundary water management practices, in line with UN sustainable development goal SDG 6.5, and therefore upscalable/applicable also outside of the project area. One of the example of the project scaling up is the Burkina Faso national hydro-met and CREWS Togo projects where flood forecasting and risk maps to cover outside the National portion of the Volta Basin region in Burkina Faso and Togo were achieved.

Also, VFDM partners (WMO and National Meteorological Services of Cote d'Ivoire and Ghana) are developing the phase-II of the VFDM project to scale the EWS and risk maps to cover the two priority Volta Basin countries (Cote d'Ivoire and Ghana)

<https://www.adaptation-fund.org/project/scaling-up-integrated-flood-and-drought-management-and-early-warning-system-for-climate-change-adaptation-in-the-volta-basin-countries-vfdm-phase-2/>

Section B: Project expenditure

IFM / IDM in Volta
Trust Fund 421282
Interim Statement of Income and Expenditure
from inception (January 2019) to 31 May 2025
(Amounts in US Dollars)

		Initial Budgeted and approved by the donor	Actual	Obligations	Total
1	Income				
1	Contributions		7'920'000	-	7'920'000
2	Interest gained		61'275	-	61'275
2	Funds available		7'981'275	-	7'981'275
3	Expenditure				
1	Direct costs at project output level				
	1.1.1 Inventory of information on vulnerabilities, capacities, exposure and risks (VCERs) for floods and drought in the Volta Basin is conducted	368'000.00	386'918	-	386'918
	1.1.2 Database of VCERs, floods and drought related risk maps are developed	490'500.00	492'739	-	492'739
	1.1.3 Capacity of stakeholders to use Floods and Drought risk maps is enhanced	274'000.00	277'995	-	277'995
	1.1.4 Reports and communication documents on vulnerabilities, capacities, exposure and risks (VCERs) and Floods and Drought risk maps of the Volta Basin	10'000.00	10'000	-	10'000
	1.2.1 Scenarios for socio-economic and environment development along with the climate change projections are collected	30'000.00	30'000	-	30'000
	1.2.2- Projected impacts on water resources, urban development, environment, and agricultural areas are analyzed on the basis of future scenarios	31'000.00	31'685	-	31'685
	1.2.3-Environment and Ecosystem Services Indicators	114'500.00	99'077	-	99'077
	1.3.1 - Awareness raising about the Future Scenarios	12'000.00	5'858	-	5'858
	1.3.2 Capacity of stakeholders to use future scenarios and to develop action plans is enhanced	170'000.00	170'000	-	170'000
	2.1.1-Development of the Training Curriculum & Capacity Building Activities	298'000.00	285'813	-	285'813
	2.1.2 The operational centre for the VoltAlarm Early Warning System is established in synergies with the NMHSs and the Volta Basin Authority	535'000.00	519'378	-	519'378
	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	325'000.00	349'557	-	349'557
	2.1.4 - Thresholds for Floods & Drought Risk Levels are selected for the Various Parts of the Volta Basin	145'000.00	137'381	-	137'381
	2.1.5 - The procedure for Producing Impact-based Forecasts for the Sub-basins & Vulnerable Areas on a Daily Basis is defined	140'000.00	134'799	-	134'799
	2.1.6 - The web-based Early Warning Dissemination Interface for VoltAlarm is designed & developed	140'500.00	115'785	-	115'785
	2.1.7 - Knowledge and awareness about VoltAlarm are increased within the user groups	65'500.00	65'000	-	65'000
	2.2.1 Pilot testing for a number of areas over the basin (Figure 8) during the monsoon and dry seasons are performed	1'182'000.00	946'571	-	946'571
	2.2.2 Feedback from the series of pilot testing is collected	212'000.00	185'077	-	185'077

2.2.3 Development & Implementation of Community-based Flood & Drought Management	234'000.00	219'428	-	219'428
2.3.1 Knowledge and capacity development using the Flood Green Guide (FGG)	384'000.00	340'103	-	340'103
2.3.2 Capacity development based on the Training Manual for mainstreaming gender in the E2E-EWS-F and flood management	339'000.00	294'274	-	294'274
3.1.1 The transboundary governance plans, policies and guidelines about long term flood and drought management are evaluated	114'400.00	109'847	-	109'847
3.1.2 Capacity development and awareness of policymakers from the six countries on the key long -term strategies for floods and drought management and environment impact	303'500.00	161'475	-	161'475
3.1.3 Experiences of local communities on key long-term strategies for floods and drought management	226'500.00	211'824	-	211'824
3.2.1 Strengthened implementation of the revised, or new, climate adaptation plans (NAPA, NAP, NDC), policies and guidelines in the Volta Basin countries	57'600.00	57'000	-	57'000
3.2.2 Improved integration of national policies on long term risk reduction and climate adaptation into the transboundary Strategic Action Programme	152'000.00	135'508	-	135'508
3.3.1 Collaboration with local communities and organizations in defining the procedures and measures for CCA and DRR	45'000.00	46'090	-	46'090
3.3.2 Collaboration with local communities and organizations in finalizing policies and procedures for CCA and DRR	101'000.00	65'941	-	65'941
Total Direct Costs	6'500'000.00	5'885'123	-	5'885'123
Project Implementation Costs				
Overall coordination and management with Adaptation Fund Secretariat and Management of project implementation with the Executing agencies and project development with the Advisory Committee	360'000.00	360'000	-	360'000
Financial management, including accounting and grant management to Executing entities and third parties	50'000.00	50'000	-	50'000
Information and communication management	40'000.00	40'000	-	40'000
Quality assurance including internal and external audits	64'000.00	38'288	25'712	64'000
Participation of WMO staff and advisor committee members to the project activities	50'000.00	50'000	-	50'000
Monitoring and Evaluation	106'000.00	106'000	-	106'000
Total Project Implementation Costs	670'000.00	644'288	25'712	670'000
Project Execution Costs				
Project personnel (WMO, VBA and GWP-WA)	596'000.00	580'858	-	580'858
Administration Costs	30'000.00	30'000	-	30'000
Communication costs	20'000.00	20'000	-	20'000
Inception Meeting	60'000.00	63'236	-	63'236
Advisor/steering committee meetings	44'000.00	35'488	-	35'488
Total Project Executing Costs	750'000.00	729'582	-	729'582
4 Total Expenditure	7'920'000	7'258'992	25'712	7'284'705
Balance, 31 May 2025		722'282	-25'712	696'570*
*the unspent balance will be returned by the IE to the Adaptation Fund				

Section C: Appendices

- **Participants list of an inception workshop**

Inception workshop report with the participants list (available in the Annex of the report) is available here

https://fifspubprd.azureedge.net/afdocuments/project/6324/6324_Inception%20workshop%20and%20Executing%20Partners%20report%20Volta%20Project%20WMO%2024%20July%202019.pdf

- **Key project staff list**

The Key project staff list with the responsibilities are provided below

<https://www.floodmanagement.info/volta-basin/project-management/>

- **Reports and other publications**

Renewed Global Violence Puts Pressure on Climate Adaptation with good practices and case studies from the VFDM project countries

<https://www.adaptation-fund.org/renewed-global-violence-puts-pressure-on-climate-adaptation/>

Report of the Portfolio Monitoring Mission in the West Africa, Volta Basin – Benin, Cote D'Ivoire, Ghana

<https://www.adaptation-fund.org/report-of-the-portfolio-monitoring-mission-in-the-west-africa-volta-basin-benin-cote-divoire-ghana/>

VFDM project story

Early warning systems hold the key to disaster management in West Africa

<https://www.adaptation-fund.org/early-warning-systems-hold-the-key-to-disaster-management-in-west-africa/>

The VFDM closing workshop and final project technical advisory committee meeting were organized with the regional, national and local stakeholders. During this, WMO invited Ms. Patience DAMPTEY, Adaptation Fund Board Member, Environmental and Gender Expert to provide a key note speech during the opening ceremony of the closing workshop.

<https://www.floodmanagement.info/floodmanagement/wp-content/uploads/2025/02/PTAC-REPORT-21-June-2024.pdf>

The WMO released a press note on the closing of the VFDM project which highlights how the project makes Volta Basin more resilient to climatic hazards

<https://wmo.int/media/project-update/vfdm-project-makes-volta-basin-more-resilient-climatic-hazards>

Publications in VBA website

<https://abv.int/en/closing-ceremony-for-the-vfdm-project/>

Publications in GWP-WA website

<https://www.gwp.org/en/GWP-West-Africa/WE-ACT/News--Events/a-more-climate-resilient-volta-basin-with-the-vfdm-project/>

- **Websites**

<https://www.floodmanagement.info/floodmanagement/volta-basin/>

<https://public.wmo.int/en/projects/integrating-flood-and-drought-management-and-early-warning-climate-change-adaptation-0>

<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/>