



## CASE STUDY

# Ghana: Promoting Innovative Technologies and Alternative Livelihoods for Climate-Resilient Local Development in White Volta Basin

The Global Water Partnership, under the Water Climate and Development Programme in Africa (WACDEP) implemented from 2015 to 2016, riverbanks restoration interventions and alternative livelihoods in multiple communities along the White Volta Basin and some catchment areas in Upper East region, Ghana. The initiative contributed to strengthening climate resilience at community level.

## **Background**

In Ghana, climate change impacts are visible and particularly detrimental because of the country's reliance on climate sensitive sectors such as agriculture, water resources, energy, and health. Various climate variability and change assessment shows that the northern parts of the country are more vulnerable to becoming climate change hot-spots. An analysis of national data spanning four decades (1960– 2000) suggests a mean temperature rise of 0.21°C over a decade in Northern Ghana to the overall national average. Also, the Northern regions are projected to experience more erratic rainfall patterns with prolong dry spells whereas the general rainfall pattern over the four decades tend to decrease from South to North.

The White Volta River Basin in the Upper East region experiences perennial flooding. This condition often leads to loss of life and property (crops) in communities along the river course in Bawku Municipal, Binduri, and Bongo districts. The region's economy is agrarian in nature (about 70% of the economy), producing mainly crops and livestock. Crops grown include maize, sorghum, millet, guinea-corn, onion, and tomatoes. Agriculture is largely rain fed and vegetable farming is irrigation driven. Livestock and poultry raised by individuals and households include cattle, goat, and guinea-fowl.

However, climate change is impacting the availability and accessibility of water for domestic and productive uses, and for ecosystem services that communities depend on. Also, access to market and financial services remain critical for local communities' resilience as well as investments in climate-resilient technologies, to ensure the preservation of the ecosystem services and improve their livelihoods. In the face of these climatic challenges, GWPWA and CWP-Ghana developed an initiative aiming to promote water security and climate resilience in vulnerable communities, under the WACDEP Programme. The initiative was implemented in three districts in the Upper East region: Bawku Municipal, Binduri, and Bongo Districts, and focused on demonstrating water security and climate resilient interventions.



The demonstration project sought to improve livelihoods of households through pro-poor, gender sensitive “green” solutions whilst improving the ecosystems along the White Volta Basin and catchment areas. Results from the field demonstration contributed to meeting the water security mainstreaming requirements of the District Medium Term Development Plan Guidelines. The intervention was implemented based on the GWP Water Security and Climate Resilient Development Framework (Figure 1).

Figure 1. Framework for Water Security and Climate Resilient Development.

Source: GWP (2014)

## **Actions taken**

### **Understanding the Problem via Assessments**

A baseline study («Impacts and Vulnerability assessment of Climate Change in the Upper East Region of Ghana: Pathways to Creating Green Solutions and Integrating Climate-Smart Interventions into development Planning and promoting climate-smart interventions for building community resilience») was carried out. It highlighted climate-related hazards such as floods, droughts, high temperature and windstorms. These hazards often contribute to crop failure, uncertainty in the cropping calendar, land degradation, food and livelihood insecurity, loss of property and life, migration, and social stress. Gender considerations also revealed that women, children, and the aged were more vulnerable to the climate variability and impacts.

### **Identifying and Appraising Options**

The following twelve actions at no/low investments were identified: (i) ecosystem restoration through buffer zone protection; (ii) Formation of committees for sustainable management of water resources; (iii) soil and water conservation practices; (iv) developing models to predict on-set of rainy season; (v) water quality control; (vi) construction of water harvesting schemes; (vii) water harvesting for irrigation; (viii) flood water harvesting and storage; (ix) livestock rearing; (x) dry season farming; (xi) improved agricultural technologies; and (xii) improved seed variety.

### **GWP Contributions to Building Community Resilience**

The livelihood resources needed to implement each action were ranked with respect to the actions and analysed. If resources are locally and readily available in good quantity and quality, adaptation options could be implemented easily by a community. Otherwise, the community would have to rely on external sources and may prove challenging to effectively implement the option(s). Thus, screening of the actions focused on availability of livelihood resources in communities towards maximizing the potential for economic, social, and environmental gains. Based on the perceived viability of the livelihood resources, options were ranked from the most to least easily applicable as follows: (1) water harvesting and irrigation; (2) watershed committee formation and/or activation for sustainable water management; (3) dry seasoning farming; (4) improved agricultural technologies, including improved seed varieties; and (5) soil and water conservation.

GWP provided funds for the field demonstrations project. This included cost of consultancies, training of implementing partners, and undertaking implementation



activities in the communities. The project also benefited from in kind contributions from state actors such as use of conference rooms for meetings and includes the District Department of Agriculture, Bawku, and White Volta Basin Secretariat, Bolgatanga. GWP formulated the Terms of Reference to engage consultants for all studies conducted. Also, the WACDEP Project Management Unit offered technical and logistical support to the consultants recruited for both the baseline and socio-economic and environmental analysis studies. In the field, GWP facilitated joint planning with implementing partners to formalise their engagement with WRC.

GWP played an instrumental role in establishing engagement platforms to facilitate dialogue across stakeholder institutions. The formation of the 9-member committees allowed for consultations in managing the project at community level. The periodic joint meetings of technical structures implementing the activities enhanced understanding of project objectives and learning across communities. GWP also assisted in recruiting and mentoring a young water professional to develop his career in water security and climate resilient development. GWP communication was also guided by stakeholder mapping to ensure that key institutions were engaged in the implementation process, allowing unambiguous discourse and interaction.

## Outcomes

The solutions for communities' resilience building were aligned to the following five aspects of livelihood resources: (i) development of human resources with specific training and practices; (ii) increase of physical resources through the provision of appropriate equipment for water security and farming, (iii) increase of natural resources with trees growing and watershed protection, (iv) increase of financial resources through the development of value chain and linking to microfinances, and (v) increase the quality of social resources through the establishment and capacity development of community-based committees for watershed management, and for accessing agricultural inputs and outputs. After successful implementation of field intervention, the results derived can be categorized under three broad themes namely: **environment and eco-system restoration, livelihood adaptation** and **strengthening of institutional coordination**. During the 2014-2017 District Medium Term Development Plan preparation period, water security and climate change were identified as cross-cutting themes in the National Development Planning Commission (NDPC) Guidelines issued to District Assemblies to guide the process. Thus, development and implementation of the demonstration project and related interventions in the selected communities were a direct contribution to the attainment of the medium-term Development Plans in the districts involved.

In terms of the environment and eco-system restoration, approximately 5ha of land were planted with seedlings including those to stabilize the riverbanks from land degradation, fruit, and medicinal species, and woodlot for energy for households along the White Volta River. In addition, other small water catchment areas with an area of about 1ha were also planted. The project assisted to raise 20,000 seedlings nursed using indigenous capacity and grown for catchment protection in selected communities. Community members' capacities were built to raising the nursery to guarantee the sustainability of the project beyond WACDEP intervention. The tree species selection were made in consultation with community members and landowners; and it was decided to use dichro, acacia, etc. (for stabilizing riverbanks), mango, mahogany, cashew etc. (for economic purposes). These trees contribute to both the restoration of the ecosystems of the riverbanks and provide fruits that contribute to improving livelihood of farmers and reducing poverty.



The project provided direct alternative livelihood support for 300 farmers across the three beneficiary communities. These included support for both dry seasons farming technology such as water pumping machines, improved vegetable seeds, and small ruminants (goats) to specific women groups. The indirect project beneficiaries from the initiative were estimated at 3,500 people of which about 52% are women. The estimate was based on analysis of the livelihood support value chain provided to the immediate households, their extended families, and the communities in which they reside

## **Lessons Learned**

Providing alternative livelihood support to farmers incentivise them to contribute to greening the riverbank. As climate change was and is a cross-cutting issue in the national development agenda, WACDEP implementation contributed to the design of approaches to achieve community resilience.

Ensuring women participation and inclusion must be deliberate by raising open discussion involving all stakeholders. The discussion helped to reduce biases and male dominance.

The development of community members' skills served as a means of alternative livelihoods. For instance, the nursery sub-committee members, upon raising seedlings, sold some and made donations to continue with greening the buffer zone. Communities are willing to participate in natural resource governance when the overall benefit is directly linked to their livelihoods.

The joint stakeholder forum held for implementing partners and beneficiaries allowed for learning and sharing of best practices across communities.

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**Supporting Materials**

Partnership action for water security and climate resilience of populations and ecosystems in West Africa

**Related IWRM Tools**

Vulnerability Assessment

Social Assessment

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