

Costed Adaptation Plan

AUGUST 2026

**NANUMBA SOUTH
DISTRICT**



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Acronyms

AAP	Annual Action Plan
ACMAD	African Centre of Meteorological Applications for Development
BAC	Business Advisory Centre
BoQ	Bill of Quantities
CAP	Costed Adaptation Plan
CAPEX	Capital Expenditure
CSA	Climate-Smart Agriculture
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organisation
CWSA	Community Water and Sanitation Agency
DA	District Assembly
DACF	District Assembly Common Fund
DDF	District Development Facility
DPU	District Planning Unit
EPA	Environmental Protection Agency
EPA	Environmental Protection Agency (Ghana)
FAO	Food and Agriculture Organisation of the United States
FC	Forestry Commission
GASIP	Ghana Agricultural Sector Investment Programme
GCF	Green Climate Fund
GHS	Ghana Cedis / Ghana Health Service (dependent context)
GIDA	Ghana Irrigation Development Authority
GMet	Ghana Meteorological Agency
GoG	Government of Ghana
M&E	Monitoring and Evaluation
MCA	Multi-Criteria Analysis
MDA	Ministry, Department and Agency
MEL	Monitoring, Evaluation, and Learning
MESTI	Ministry of Environment, Science, Technology, and Innovation
MLGDRD	Ministry of Local Government, Decentralisation and Rural Development
MLNR	Ministry of Lands and Natural Resources
MMDA	Metropolitan, Municipal and District Assembly
MoE	Ministry of Education
MoF	Ministry of Finance
MoFA	Ministry of Food and Agriculture
MoGCSP	Ministry of Gender, Children and Social Protection
MoH	Ministry of Health
MRV	Monitoring, Reporting and Verification
MSWR	Ministry of Sanitation and Water Resources
MTDP	Medium-Term Development Plan
NADMO	National Disaster Management Organisation
NAP	National Adaptation Plan

NDPC	National Development Planning Commission
NGO	Non-Governmental Organisation
NMCP	National Malaria Control Program
NSDA	Nanumba South District Assembly
O&M	Operations and Maintenance
PPP	Public-Private Partnership
PWD	Person with Disabilities
RCC	Regional Coordinating Council
SIGRA	Strengthening Investments in Gender-Responsive Climate Adaptation
WASH	Water, Sanitation and Hygiene
WATSAN	Water and Sanitation (Unit)
WRC	Water Resources Commission

EXECUTIVE SUMMARY

The Nanumba South District Costed Climate Adaptation Plan (CAP) presents a practical and strategic roadmap for strengthening the District's resilience to climate change over a three-year implementation period. Developed under the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project implemented by Cowater International, the Plan translates the findings of the District Climate Risk and Vulnerability Assessment (CRVA) into a set of prioritised, costed, and actionable interventions that respond to local climate risks while supporting the District's broader development agenda.

The CAP was developed through a participatory planning process that brought together the Nanumba South District Assembly, decentralized sector departments, traditional authorities, community representatives, women and youth groups, civil society organisations, and other key stakeholders. This inclusive approach ensured that the proposed adaptation actions reflect the lived experiences of local communities, build on institutional knowledge, and align with national climate and development policies. As a result, the Plan enjoys strong local ownership and provides a realistic basis for coordinated implementation.

The **Climate Risk and Vulnerability Assessment** revealed that climate change is already having significant impacts across the District. Increasingly frequent droughts, erratic rainfall, floods, prolonged dry spells, extreme temperatures, bushfires, and growing water scarcity are affecting agricultural production, food security, water resources, public health, biodiversity, infrastructure, and local livelihoods. These impacts are most severe among smallholder farmers, women, young people, persons with disabilities, and other climate-sensitive households whose livelihoods depend heavily on natural resources.

In response to these challenges, **the CAP identifies twenty (20) priority adaptation actions across five sectors: Biodiversity, Disaster Risk Reduction, Agriculture, Water and Sanitation, Human Health, and Gender and Social Inclusion.** The priority actions were selected through a structured Multi-Criteria Analysis (MCA) that assessed adaptation options against criteria including climate risk reduction potential, technical feasibility, cost-effectiveness, sustainability, institutional capacity, alignment with district development priorities, and gender and social inclusion. Each intervention was subsequently subjected to detailed costing, financing analysis, implementation scheduling, and institutional responsibility mapping to ensure that it is technically feasible, financially realistic, and ready for investment.

The **Disaster Risk Reduction sector** accounts for the largest share of the proposed investment, reflecting the significant infrastructure required to address flooding, improve drainage systems, and develop climate-resilient transport infrastructure. These investments will reduce damage to settlements, public infrastructure, farmlands, and economic assets while improving the District's capacity to withstand extreme weather events.

The **Agriculture sector** focuses on strengthening climate-smart agricultural practices through improved irrigation, sustainable land management, enhanced agricultural value chains, access to climate information services, and livelihood diversification. These interventions are designed to improve agricultural productivity, strengthen household food security, and increase farmers' resilience to drought, rainfall variability, and other climate-related production risks.

Priority investments under the **Water and Sanitation sector** aim to improve access to reliable and climate-resilient water supply systems through the construction and rehabilitation of boreholes, rainwater harvesting facilities, and community-based water resource management initiatives. These interventions will enhance water security for domestic, agricultural, and institutional use while reducing vulnerability during prolonged dry periods.

Within the **Human Health sector**, the Plan prioritises strengthening climate-sensitive disease surveillance, improving environmental sanitation and hygiene, expanding community-based disease prevention programmes, and enhancing the capacity of health institutions to respond effectively to climate-related health emergencies. These interventions will help reduce the growing health risks associated with changing climatic conditions.

The **Biodiversity sector** seeks to protect and restore degraded ecosystems through afforestation, landscape restoration, sustainable natural resource management, and community-led conservation initiatives. These measures will improve ecosystem services, reduce land degradation, enhance carbon sequestration, and strengthen the ecological resilience of the District.

Recognising that climate change disproportionately affects vulnerable groups, the **Gender and Social Inclusion sector** promotes targeted interventions to strengthen the adaptive capacity of women, youth, persons with disabilities, and other marginalised populations. Key actions include support for women-led producer cooperatives, green skills development, climate-resilient enterprises, financial inclusion, and alternative livelihood opportunities. These interventions will help ensure that the benefits of climate adaptation are shared equitably across all sections of society.

The **total estimated investment required to implement the CAP over the three-year planning period is GHS 6,199,262.00**. While climate-resilient infrastructure accounts for the largest proportion of investment due to its high capital requirements, the Plan also includes several cost-effective interventions in agriculture, water resources, biodiversity, health, and social inclusion that offer substantial resilience benefits and contribute directly to sustainable local development.

Given that the required investment exceeds the routine fiscal capacity of the Nanumba South District Assembly, the CAP adopts a phased and blended financing strategy. Implementation will draw on multiple funding sources, including District Assembly resources, national government programmes, climate finance mechanisms, bilateral and multilateral development partners, philanthropic organisations, private sector investment, and community contributions where appropriate. The Plan also promotes the mainstreaming of climate adaptation into existing planning and budgeting processes while positioning larger infrastructure projects for external climate finance and development funding.

Beyond identifying priority investments, the CAP has strengthened the District's institutional capacity to plan, prioritise, finance, and implement climate adaptation interventions. The participatory planning process improved stakeholders' understanding of climate risks, strengthened cross-sectoral collaboration, and enhanced their ability to translate climate vulnerability assessments into practical and investable adaptation actions. In addition, the Plan establishes a robust framework for implementation, monitoring, evaluation, learning, and adaptive management to ensure that adaptation efforts remain responsive to emerging climate risks and evolving development needs.

The Nanumba South District Costed Climate Adaptation Plan provides an evidence-based, locally owned, and investment-ready framework for building long-term climate resilience. By integrating adaptation into district development planning, protecting vulnerable populations, strengthening livelihoods, conserving natural ecosystems, and mobilising diverse sources of finance, the Plan positions the District to reduce climate-related risks while advancing sustainable and inclusive socio-economic development. Its successful implementation will not only improve the wellbeing of current residents but also contribute to Ghana's national climate commitments and the achievement of the Sustainable Development Goals.

Sectoral Investment Summary: The CAP comprises 20 prioritised adaptation actions across five sectors: Biodiversity, Disaster Risk Reduction, Agriculture, Water and Sanitation, and Human Health and Wellbeing. Disaster Risk Reduction receives the largest allocation (GHS 1,891,456; 30.5%), followed by Human Health and Wellbeing (GHS 1,354,428; 21.8%), Water and Sanitation (GHS 1,062,730; 15.2%), Agriculture (GHS 1,052,590; 17.0%), Biodiversity (GHS 838,058; 13.5%).

1. PURPOSE, SCOPE, AND USE OF THE COSTED ADAPTATION PLAN

1.1 Background and Rationale

The Nanumba South District is increasingly experiencing the effects of climate variability and change, including seasonal flooding, prolonged dry spells, water scarcity, environmental degradation, and growing climate-related health risks. These challenges place significant pressure on livelihoods, infrastructure, service delivery, and overall wellbeing, with the greatest impacts felt by vulnerable groups such as women, children, persons with disabilities (PWDs), smallholder farmers, and low-income households.

Addressing these risks requires proactive and well-coordinated adaptation planning to strengthen resilience across climate-sensitive sectors and support sustainable economic development (Darjee et al., 2023). To this end, the Nanumba South District Assembly conducted a CRVA to systematically identify key climate hazards, exposed sectors, vulnerable groups, and geographic hotspots (see: <https://sigraghana.org/resources/>). While the CRVA provides a robust evidence base for understanding climate risks, it does not specify which adaptation actions should be prioritised, their associated costs, or how they can be effectively integrated into district planning and budgeting processes.

To address this gap, a Costed Adaptation Plan (CAP) was developed to bridge the transition from risk assessment to implementation. The CAP translates CRVA findings and stakeholder inputs into clearly defined, prioritised, and costed adaptation actions that are feasible for implementation by the District Assembly and its partners.

Specifically, the CAP seeks to:

- Move adaptation planning from broad recommendations to investment-ready actions;
- Enable evidence-based allocation of limited district resources;
- Strengthen institutional capacity for costing, planning, and implementation of adaptation measures; and
- Promote accountability, transparency, and coordination in climate-related decision-making.

The Costed Climate Adaptation Plan (CAP) contributes directly to the implementation of Ghana's National Adaptation Plan (NAP) (2025–2030) by translating national adaptation priorities into practical, locally relevant, and investment-ready interventions for the Nanumba South District. As Ghana's overarching framework for enhancing climate resilience, reducing vulnerability, and mainstreaming adaptation across national, sectoral, and sub-national development planning, the NAP provides the strategic foundation upon which this CAP is built. Accordingly, the CAP aligns with the NAP's priority areas, including climate-smart agriculture, sustainable water resource management, disaster risk reduction, climate-resilient infrastructure, public health, biodiversity and ecosystem conservation, and gender-responsive, socially inclusive adaptation. By embedding these priorities within district planning, budgeting, and implementation processes, the CAP operationalises national adaptation policy while addressing the District's specific climate risks, development priorities, and institutional capacities. Furthermore, it provides a coordinated implementation framework that supports the Nanumba South District Assembly and its development partners in prioritising investments, mobilising climate finance, strengthening institutional coordination, and monitoring adaptation outcomes. Through these mechanisms, the CAP not only enhances local adaptive capacity and resilience but also contributes to Ghana's commitments under the National Adaptation Plan, the Paris Agreement, and the Sustainable Development Goals by advancing inclusive, climate-resilient, and sustainable development at the local level. Overall, the CAP represents a strategic step towards embedding climate adaptation within routine district development planning, rather than treating it as a stand-alone or externally driven initiative.

1.2 Linkages to the CRVA, SIGRA and District Planning Cycles

This CAP is rooted within, and aligned to, three interrelated processes: the Nanumba South District CRVA, Ghana's Adaptation Plan (NAP), the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project framework, and Ghana's district planning and budgeting cycles.

1.2.1 Linkage to the Nanumba South CRVA

The CRVA provided the foundational evidence that informed this CAP. Key linkages include:

- Identification of dominant climate hazards (flooding, drought, heat stress);
- Mapping of vulnerable sectors and communities;
- Analysis of differential vulnerability across gender, age, disability, and livelihoods.

All adaptation actions prioritised and costed in this CAP are explicitly linked to risks and vulnerabilities identified in the CRVA, ensuring coherence between assessment and action.

1.2.2 Alignment with the SIGRA Project

The CAP was developed under the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project, which aims to support districts to move beyond climate diagnostics toward gender-responsive, costed, and implementable adaptation planning.

The CAP reflects SIGRA's core principles by:

- Applying participatory and inclusive prioritisation processes;
- Embedding gender and social inclusion as explicit criteria in decision-making;
- Building district-level capacity in costing, appraisal, and implementation planning; and
- Producing outputs that are directly usable for budgeting, proposal development, and investment mobilisation.

1.2.3 Integration with District Planning and Budgeting Cycles

The CAP is intentionally designed to support and complement existing district planning instruments (Table 1), including:

- Medium-Term Development Plans (MTDPs);
- Annual Action Plans;
- Composite Budgets; and
- Sectoral investment plans.

Rather than creating parallel planning processes, the CAP provides wholistic climate-informed inputs that can be mainstreamed into these instruments.

Table 1: Alignment of the costed adaptation plan with key planning instruments

Planning Instrument	How the CAP Supports
Medium-Term Development Plan (MTDP)	Provides prioritised, evidence-based adaptation actions aligned with district development objectives
Annual Action Plan	Supports annual selection and sequencing of adaptation investments
Composite Budget	Supplies indicative cost estimates to inform budget ceilings and allocations
Climate finance proposals	Provides structured action descriptions, cost breakdowns, and justification
Sector plans	Help sector departments integrate climate risks and adaptation actions

1.3 Intended Users of this CAP

This document is designed as a practical working tool, not merely a policy reference. It is intended for a broad range of users involved in planning, financing, and implementing development actions in the Nanumba South District Assembly (Table 2).

Table 2: Primary users and how they are expected to use the CAP

Users	Intended Purpose
District Planning Officers	Integrate costed adaptation actions into MTDPs and Annual Action Plans
Budget and Finance Officers	Inform budget preparation, costing assumptions, and funding prioritization
Engineers and Works Departments	Support design, costing, and supervision of climate-resilient infrastructure
Sector Heads (Health, Agriculture, WASH, Gender, NADMO)	Guide sector-specific adaptation programming and coordination
Assembly Members and Management	Support informed decision-making and resource allocation
Development partners and NGOs	Identify priority investment areas and partnership opportunities
SIGRA and national stakeholders	Monitor implementation progress and support scaling

1.4 Scope and Coverage of the CAP

The CAP focuses on priority adaptation actions identified through participatory processes across key climate-sensitive sectors, including:

- Agriculture and Food Security,
- Health and Wellbeing,
- Water and Sanitation,
- Biodiversity and Ecosystem,
- Gender targeted options,
- Infrastructure

For each priority action, the Plan provides:

- A clear description of the intervention;
- The climate risk addressed;
- Target locations and beneficiary groups;
- Institutional roles and partnerships;
- An indicative cost breakdown; and
- A proposed implementation timeline.

The CAP does not replace detailed engineering designs or Bills of Quantities (BoQs), but rather provides credible, decision-ready estimates that can be streamlined during detailed project preparation.

1.5 How the CAP Should Be Used

The CAP is intended to serve multiple interconnected functions across the adaptation planning and implementation cycle:

- **Strategic Prioritisation:** Helping the District Assembly decide what to do first, what can wait, and why such a decision.
- **Budgeting and Resource Allocation:** Providing indicative cost figures that support realistic budgeting and investment planning.
- **Capacity Building:** Strengthening district staff understanding of costing, appraisal, and climate-responsive planning.
- **Coordination and Accountability:** Clarifying institutional responsibilities, partnerships, and safeguards.
- **Learning and Iteration:** Serving as a living document that can be updated as implementation lessons, costs, and climate risks evolve.

2. CLIMATE RISKS AND PRIORITY ADAPTATION NEEDS

2.1 Introduction

This section presents the climate risk profile of the Nanumba South District, highlighting the key climate hazards, the sectors and communities most at risk, and what these mean for future development. Based on the CRVA, it shows that the district's climate challenges result from the combined impacts of erratic rainfall, drought, flooding, heat stress, bushfires, fragile infrastructure, and climate-sensitive livelihoods. The findings provide a clear basis for prioritising adaptation investments that improve water security, safeguard livelihood resilience, and strengthen community livelihood resilience.

The objective is to present the information in a clear and practical manner, enabling district officials and partners to easily understand the most pressing risks, where they are concentrated, and the types of responses required. This provides a solid foundation for prioritising adaptation options in Chapter Three and estimating associated costs in Chapter Four.

2.2 Key Climate Hazards Affecting Nanumba South District

The CRVA for the Nanumba South District shows that climate risks are not isolated occurrences but arise from multiple interactions of climate hazards. These hazards interact with existing development challenges, creating a reinforcing cycle in which climate variability progressively weakens key climate-sensitive sectors—particularly agriculture, health and water systems.

The district is exposed to a range of climate hazards, including erratic rainfall, prolonged droughts, rising temperatures and heat stress, periodic flooding, and recurring dry-season bushfires. These risks are further compounded by land and vegetation degradation, such that even moderate climate shocks can result in significant environmental and livelihood losses (<https://sigraghana.org/resources/>).

Agriculture is the most climate-sensitive and highly exposed sector in the Nanumba South District, underpinning the livelihoods of the majority of households and serving as the principal source of employment and income. The sector is increasingly vulnerable to a range of climate hazards, including prolonged dry spells and rising temperatures, all of which significantly reduce crop yields and livestock productivity. These climate-induced impacts are further exacerbated by recurrent pest infestations, particularly termite outbreaks stemming from poor storage practices, intensifying production losses and undermining farm resilience. Consequently, climate-related shocks in the agricultural sector have far-reaching socio-economic implications, including reduced household incomes, heightened food insecurity, and increased livelihood vulnerability. These pressures often trigger adverse coping strategies, such as the depletion of productive assets, reduced household consumption, and seasonal or permanent migration, thereby reinforcing the district's overall climate vulnerability (SIGRA, 2025).

Water, sanitation and health represent another major climate vulnerability cluster in the Nanumba South District. Rising temperatures accelerate evapotranspiration, reducing the availability of surface water and intensifying seasonal water scarcity. At the same time, flooding increases water contamination of water resources, thereby elevating public health risks. Climate-induced water scarcity also increases the time and physical effort required to collect water, disproportionately affecting women and girls, who bear primary responsibility for household water provision. This additional burden reduces opportunities for education, income-generating activities, and productive labour while increasing exposure to health and safety risks. Collectively, these challenges exacerbate existing inequalities and undermine household resilience and adaptive capacity to climate change (SIGRA, 2025).

Nanumba South is therefore facing increasing climate pressures—droughts, floods, bushfires, extreme heat, and deforestation—that are disrupting agriculture, health systems, and local livelihoods. These impacts are unevenly distributed, with vulnerable communities bearing a disproportionate burden.

Consequently, the assessment focuses on five priority sectors, alongside the most at-risk population groups and geographic hotspots within the district (Table 3).

Table 3: Key climate hazards in Nanumba South District

Key Climate Hazard	Description	Observed Impacts
Drought	Delayed onset of rains, irregular rainfall patterns, increased temperatures affect women and girls in making water available for household use	Crop failure, reduced yields, water scarcity, livelihood stress, burden on women and girl-child
Flooding	Seasonal flooding along low-lying and riparian areas affect crops, buildings, and livestock	Damage to homes, roads, sanitation facilities; displacement of households; increased disease outbreaks
Bushfire	Frequent bushfires pose threat to farmlands especially in dry season exposing to soil erosion.	Loss of finances, reduce soil fertility, destroying grazing areas.

Source: NSDA CRVA (<https://sigraghana.org/resources/>).

Table 4: Current climate overview and impacts

 Nanumba South District has a relatively high temperature peaking at 35.7 °C in January.  The district has a unimodal rainfall pattern, with one major cropping season spanning between May and August. The mean annual rainfall is usually averaged at 1200 mm.		
	Agriculture	Erratic rainfall prolonged droughts, soil salinity, low crop yields, and declining livestock productivity.
	Water	Water scarcity, seasonal variability, reliance on rainwater harvesting and unclean water sources.
	Health	Extreme heat, increased prevalence of respiratory tract infections, skin heat rashes, cholera, and malaria.
	Infrastructure	Poor resilience to climate extremes, deteriorating houses, inadequate roads
	Forestry	Loss of biodiversity and ecosystem services through dry season fires.

2.3 Priority Risk Areas and Affected Groups

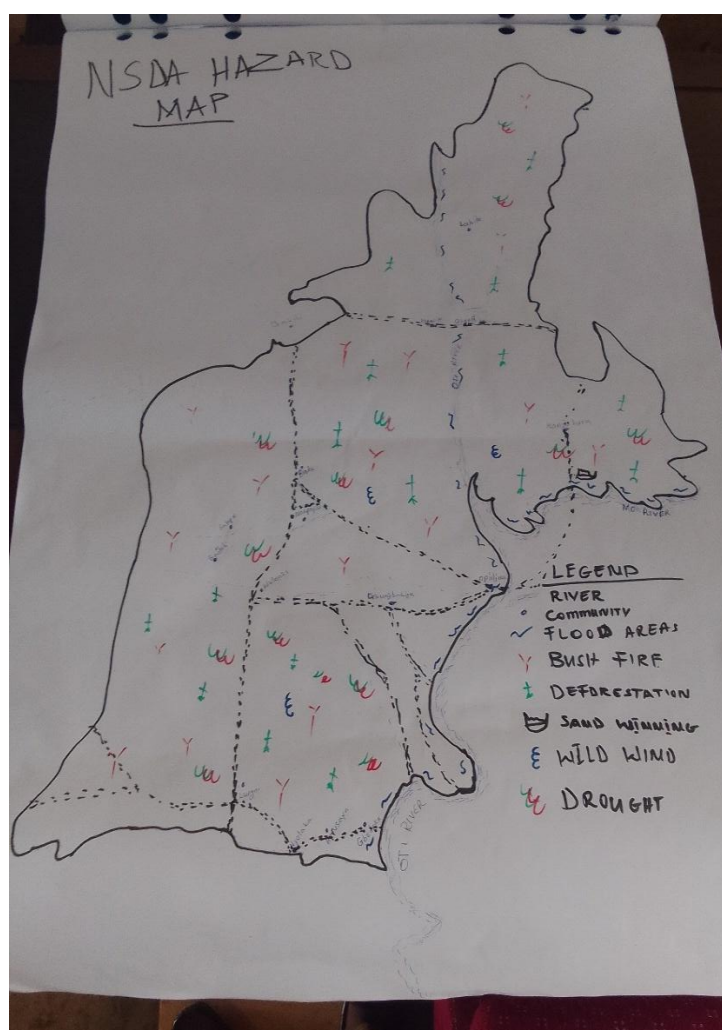
The CRVA findings and discussions from Workshop 1 revealed that climate risks are not evenly spread across sectors. Instead, certain sectors experience deeper, interconnected, and compounding vulnerabilities. Table 5 and Figure 1 highlight the priority sectors alongside the key climate impacts affecting the Nanumba South District Assembly (NSDA).

Table 5: Impacts of changing climate on livelihoods by various groups

Community	Climate Hazards	Women	Men	Youth	PWD
<i>Bondalikadibu Area Zone</i>					
Bandiyili Tampoaya Tanbahimi	Drought Flood Bushfires Erratic rainfall	Increased time collecting water and managing household shortages.	Difficulty accessing irrigation and fertilizers. Resources diverted to rebuilding efforts.	Challenges in finding affordable resources. Healthcare challenges	Reliance on others for water and mobility.
<i>Dachamba Area Zone</i>					
Nakpayili Gaunguni Nabayili	Drought Deforestation Bushfires Temperature variations	Competing needs for shared water resources. Struggles to secure consistent water for households. Compromised access to health and agricultural resources.	Difficulty managing water for livestock and irrigation. Difficulty maintaining irrigation and crop systems.	Limited access to climate-adaptive tools. Reduced involvement in education due to infrastructure impacts.	Reduced mobility to collect essentials.
<i>Sunkuli Area Zone</i>					
Lungni Kotoya Kukuo Gbungbaliga	Droughts Flood and River Oti Overflow Soil erosion	Struggle to secure water for households. Restricted access to household and community water.	Difficulty maintaining irrigation and crop systems. Loss of agricultural access routes and farm produce	Limited economic diversification. Education is affected	Heightened vulnerability to resource scarcity. Difficulty navigating damaged infrastructure.

Source: NSDA CRVA (<https://sigraghana.org/resources/>).

Figure 1: Stakeholders participatory mapping of priority risks hotspots



2.4 Priority Affected Groups

The Climate Risk and Vulnerability Assessment (CRVA) identifies the most climate-vulnerable groups in Nanumba South District as those whose livelihoods and well-being depend largely on climate-sensitive natural resources and fragile infrastructure. These groups experience high exposure to climate hazards, strong dependence on vulnerable livelihood systems, and limited capacity to cope with and recover from recurring climate-related shocks.

Men's Vulnerability: Men who depend on rain-fed agriculture are highly vulnerable to climate variability, particularly erratic rainfall patterns, prolonged dry spells, and drought conditions. Water scarcity during drought periods disrupts farming activities, reduces crop productivity, and undermines household income stability. Declining agricultural outputs directly affect their livelihoods and financial security, especially where alternative income opportunities are limited.

Women's Vulnerability: Women in the Nanumba South District experience heightened vulnerability to climate change due to their socioeconomic roles, dependence on subsistence agriculture, and limited access to productive resources, financial services, and decision-making opportunities. Climate-related stresses, including droughts, floods, and declining agricultural productivity, intensify existing gender inequalities and negatively affect women's livelihoods, health, food security, and overall well-being.

Youth Vulnerability: Youth in the Nanumba South District face increasing exposure to climate risks, including erratic rainfall, prolonged droughts, and flooding, which threaten their livelihood opportunities,

particularly in the agriculture sector. Limited access to land, financial resources, skills development, infrastructure, and institutional support reduces their capacity to adapt to climate impacts and increases the risk of unemployment, economic insecurity, and migration.

Migrants' Vulnerability: Migrants, who represent a significant population group in the district, face increased vulnerability to climate change due to insecure livelihoods, limited access to productive resources, weak social protection systems, and inadequate institutional support. Their reliance on climate-sensitive economic activities, particularly agriculture and informal employment, increases their exposure to climate-related shocks and reduces their ability to recover from disruptions.

Vulnerability of Persons with Disabilities: Persons with disabilities in the Nanumba South District face disproportionate impacts from climate change due to intersecting social, economic, and environmental barriers. Climate hazards such as floods, droughts, and erratic rainfall can further restrict mobility, limit access to essential services and resources, and reduce their capacity to adapt. Disruptions to agriculture and other livelihood activities increase their economic vulnerability, while gaps in healthcare access, accessible infrastructure, and inclusive disaster risk management systems heighten their exposure to climate-related risks.

2.5 Implications for District Investment Decisions

Climate-related risks in the Nanumba South District are not abstract concerns; they have direct implications for how the District Assembly plans, allocates resources, and prioritises investments. These risks influence which projects are selected, the timing of implementation, and the communities that require urgent support to strengthen resilience and sustain development. It is therefore essential to integrate climate considerations fully into district planning and budgeting processes. All expenditures including infrastructure, routine operations, and development partner-funded projects—should be guided by evidence from CRVAs. This approach will enable the the Nanumba South District Assembly to target the most at-risk communities, that safeguard livelihoods, and ensure that critical infrastructure is resilient to climate impacts.

A key implication of the CRVA is that investments in water resources serve as both climate adaptation measures and development multipliers. The district depends on a limited network of community dams, notably the Wulensi and Nakpayili dams, which frequently dry up during the dry season. This significantly constrains domestic water supply, livestock watering, and the reliability of irrigation for agricultural production. Consequently, investment priorities should focus on developing climate-resilient water infrastructure, including the construction of new small reservoirs, dugouts, and solar-powered boreholes, as well as the rehabilitation and desilting of existing dams to enhance their storage capacity and functionality. These infrastructure investments should be complemented by sustainable operation and maintenance financing mechanisms and strengthened community-based water governance structures to ensure long-term functionality and service delivery. Particular attention should be given to expanding potable water access through borehole development in Lungni and constructing additional dams to support dry-season vegetable production and improve livelihood resilience.

Furthermore, adaptation investments should be explicitly gender-responsive to address the unequal exposure and adaptive capacities of different population groups. The CRVA highlights that women are disproportionately affected by climate change because of their central roles in agriculture, household water collection, and caregiving. These responsibilities increase their vulnerability to water scarcity and climate-related livelihood disruptions. Accordingly, investment strategies should incorporate targeted interventions that reduce women's time burden while strengthening their adaptive capacity through improved access to productive resources, including land, agricultural inputs, credit, climate information services, and extension support. Such measures will enhance women's participation in climate-resilient livelihoods and contribute to more inclusive and equitable adaptation outcomes, consistent with the district's Medium-Term Development Plan (MTDP 2023–2025).

Strengthening ecosystem resilience and promoting sustainable land management require strategic investments in landscape restoration and community capacity development. Priority interventions

should include afforestation and reforestation programmes, coupled with community-based training on sustainable natural resource management practices to curb land degradation, improve soil fertility, and restore biodiversity. A practical investment opportunity is the establishment of community-managed teak and cashew plantations in Nabayili and Lungni, which would enhance vegetation cover, provide long-term livelihood opportunities, and contribute to climate change adaptation and environmental conservation.

2.6 Priority Geographical Areas for Adaptation Investment

The climate risk assessment and stakeholder consultations identified several geographic areas within the district that face disproportionately high levels of climate vulnerability. Communities experiencing recurrent drought, flooding, bushfires, environmental degradation and livelihood insecurity should be prioritised during implementation of the Costed Adaptation Plan. Priority consideration should be given to communities located within the Bondalikadibu, Dachamba and Sunkuli planning zones, where climate impacts on agriculture, water availability, health and ecosystem services are particularly significant. These areas should receive targeted investments and enhanced technical support during annual planning and budgeting processes to maximise adaptation benefits and reduce climate-related risks. The prioritisation of geographic areas does not exclude support to other communities but provides a practical basis for sequencing investments and allocating limited resources to locations facing the highest adaptation needs.

2.7 Link to Subsequent Chapters

This chapter establishes why adaptation action is urgent and necessary in Akatsi North District.

- **Chapter Three** builds on the climate risk profile by describing the participatory process and Multi-Criteria Analysis (MCA) used to identify and prioritise adaptation options.
- **Chapter Four** translates the prioritised adaptation options into fully costed adaptation actions, providing a practical investment framework that the district can implement, budget for, and use to mobilise financial resources.
- **Chapter Five** presents the implementation and capacity development framework required to effectively operationalise the priority adaptation actions, outlining institutional roles, coordination mechanisms, and capacity-building needs.
- **Chapter Six** examines financing, implementation phasing, and resource mobilisation strategies. It demonstrates how the district can sequence adaptation investments over time, align priorities with potential funding sources, and leverage support from government, the private sector, development partners, and local stakeholders.
- **Chapter Seven** outlines the Monitoring, Evaluation, Learning, and Adaptive Management framework, providing mechanisms for tracking progress, assessing outcomes, facilitating learning, and enabling adaptive management throughout implementation, and by presenting the way forward for implementation, scaling up successful interventions, and strengthening the district's long-term climate resilience.

3. ADAPTATION PRIORITISATION PROCESS AND LEARNING OUTCOMES

3.1 Introduction

This chapter describes how the Nanumba South District progressed from a broad range of potential adaptation options to a focused set of practical, prioritized, and costed actions. It outlines the collaborative efforts of district stakeholders during the SIGRA-supported workshop, where a participatory approach and the MCA tool were used to systematically evaluate and identify the most relevant interventions. The chapter also highlights the key lessons gained and demonstrates how the process strengthened the capacity of district staff and other participants.

3.2 Overview of the Prioritisation Approach

The prioritisation approach drew on multiple sources of evidence and expertise, including:

- Findings from the CRVA, covering key hazards, vulnerabilities, hotspots, and affected groups;
- Sector-specific technical inputs from district departments and decentralised agencies;
- Community knowledge and lived experiences reflected in stakeholder consultations; and
- Structured prioritisation methods, including selection exercises and MCA.

This combined approach ensured that selected actions are not only necessary but also technically sound and feasible within existing district systems. The process also ensured alignment with institutional capacity, responsiveness to gender and social inclusion considerations, and suitability for costing and integration into district planning and budgeting frameworks (Ngara, 2011).

The adaptation action framework is tailored to the district's specific context, with the aim of strengthening the resilience of communities, ecosystems, and infrastructure to climate risks (Table 6). It integrates climate adaptation into overall district planning and focuses on the following key areas:

Climate Risk Identification: Identifying major climate hazards such as flooding, rainfall variability, and heat stress—and assessing their impacts on livelihoods, agriculture, and infrastructure.

Community Participation: Engaging farmers, traditional authorities, women's groups, and youth in the design and implementation of locally relevant solutions.

Targeted Interventions: Implementing practical measures such as improving irrigation systems, promoting agroforestry, strengthening drainage infrastructure, and protecting vulnerable ecosystems.

Capacity Strengthening and Knowledge Sharing: Building the skills of district staff, community leaders, and residents through training and information sharing to support effective climate adaptation.

Monitoring and Adaptive Learning: Establishing systems to track progress, assess outcomes, gather feedback, and refine strategies to enhance resilience across sectors.

Table 6: Prioritisation of adaptation options approach

Step	Objective	Method	Output
Step 1	Translate CRVA findings into practical adaptation measures	Sector option development	Longlist of adaptation options
Step 2	Refine and organise options by sector	Sector consultation and consolidation	Five sector adaptation lists
Step 3	Compare and rank options	Multi-Criteria Analysis	Ranked priorities per sector
Step 4	Prepare actions for costing and planning	Reflection on scores and feasibility	Shortlisted priority interventions

3.3 Sector Group Formation for Adaptation Listing

3.3.1 Basis for the Long List

A long list of adaptation measures was extracted from the CRVA findings, stakeholder consultations, and district perspective realities. The long list reflected both measures already been practiced in the district and possible new options that can respond to emerging risks and identified gaps. The long list served as a structured guide for group selection, ensuring that decisions remained grounded in local evidence rather than adhoc preferences.

3.3.2 Sector Group Composition and Inclusion

Participants worked in sector groups aligned with district planning and service delivery functions. Each group comprised about 7 members, composing of members from district:

- Departments,
- Decentralized agencies,
- Technical officers and planners,
- Participants (male and female), with inclusivity such as Persons with Disability.

Sector groups included:

- Agriculture and Food Security
- Water and Sanitation
- Human Health and Wellbeing
- Biodiversity (forest and ecosystem)
- Gender and Social Inclusion

This structure promoted cross-cutting reflection while allowing each sector to prioritize interventions aligned with its mandate.

3.3.3 Why Sector-Based Prioritisation Matters for Costing and Implementation

Sector-based prioritisation provides a structured approach to identifying and sequencing adaptation actions within clearly defined areas of responsibility. By grouping interventions by sector, it becomes easier to estimate costs with greater accuracy, as resource needs, technical requirements, and implementation pathways are more coherent and comparable. This approach also strengthens alignment with existing institutional mandates, enabling district departments to take ownership of actions within their respective sectors.

In addition, sector-based prioritisation enhances coordination and reduces duplication, ensuring that investments target the most critical vulnerabilities while maximizing impact. It further supports effective budgeting and resource mobilisation by linking priority actions directly to sector plans and expenditure frameworks. Overall, this approach improves feasibility, accountability, and the likelihood of successful implementation.

3.4 Step 2: Sector-Based Shortlisting of Priority Measures

3.4.1 Exercise Overview

In the first prioritisation exercise, each sector group selected the top three or four adaptation measures they considered most relevant and implementable for their sector. This step was critical for narrowing down several options to a manageable set for structured scoring and costing. The session lasted about 40 minutes, during which groups discussed and agreed on:

- The priority measures,

- The climate hazards addressed,
- Key beneficiary groups,
- Lead and supporting institutions.

3.4.2 Examples of Sector Shortlist Outputs

The output of this exercise will feed in to a sector-specific summaries identified under:

- What actions were prioritized,
- Why they were prioritized,
- Who they would benefit,
- Who would lead implementation.

3.5 Step 3: Introduction of MCA Criteria and Justification Logic

3.5.1 MCA Criteria Used

To transition to ranked priorities from several adaptation measures, groups applied an MCA framework based on six criteria agreed during the workshop:

- **Relevance:** Alignment with key climate risks and vulnerability drivers;
- **Feasibility:** Practicality given district resources, capacity, and constraints;
- **Impact:** Potential to reduce climate risks and improve resilience outcomes;
- **Sustainability:** Likelihood that benefits persist beyond initial investment;
- **Gender and Inclusivity:** Extent to which the action benefits women and vulnerable groups and reduces inequities; and
- **Institutional Fit:** Alignment with mandates, systems, and implementation pathways.

These criteria ensure that actions selected are not only technically appropriate but also implementable and responsive to social needs, consistent with SIGRA's focus on inclusive, gender-responsive adaptation.

3.5.2 Exercise Logic

Secondly, the groups selected their top four options from the shortlisted list and assessed how strongly each option aligned with the six criteria. The purpose was to build a shared foundation before scoring. This step strengthened decision quality by encouraging groups to articulate why each option matter, checking on actions that produce high impact but low feasibility, and centering gender and inclusion as an explicit decision dimension.

3.6 Step 4: MCA Weighted Scoring and Ranking

3.6.1 Weighting Approach

Following criteria clarification, an agreed weight was assigned to each of the ranked action. The use of weights ensured that priority decisions reflected what matters most for district resilience and SIGRA objectives. Table 7 indicates the scoring process applied the weights consistently across sector groups to produce a total weighted score for each option, a final ranking from 1 to 4 (highest to lowest prioritized option), and key assumptions or success conditions.

Table 7: MCA criteria and weights used in Nanumba South District

Criterion	Weight (%)	Interpretation based on Nanumba South Context
Relevance	25	Direct response to priority climate risks and vulnerabilities
Feasibility	15–20	Practicality within district capacity and systems
Impact	25	Potential to significantly reduce climate risk
Sustainability	10–15	Longevity of benefits beyond initial investment
Gender & Social Inclusion	10	Benefits to women, youth, PWDs, vulnerable groups
Institutional Fit	5	Alignment with mandates and implementation structures

3.6.2 Scoring Procedure

The various groups performed the following activities:

- Scored each of their three options against each criterion,
- Multiplied scores by the agreed criterion weights,
- Summed the weighted values to obtain total scores,
- Ranked options 1–4 based on scores.

Table 8 showed MCA scoring sheets that produced sector-level ranked outputs, forming the technical basis for the costed actions as presented in Chapter Four.

Table 8: Sector MCA results summary

Sector 1: Biodiversity

Rank	Action	Total Score	Lead Department	Key Justification
1	Promote community-based forest management and sensitization campaigns	57	DA/NGO	Complementary biodiversity sustenance
2	Implement reforestation programs/training using climate-resilient tree species	53	MoFA/Forestry	Enforcing laws
3	Adopt sustainable land management practices to combat soil degradation/wildfire	48	DA	Enforcing bye-laws
4	Establish wildlife corridors to connect fragmented habitats	42	Forestry	Enforcing laws

Sector 2: Disaster Risk Reduction

Rank	Action	Total Score	Lead Department	Key Justification
1	Implementation of early warning systems	68	GMeT	Onset and cessation of rain
2	Community-based flood risk awareness campaigns	64	DA	High flood protection value
3	Planting shade trees in communities and farms	52	DA	Complement flood management
4	Improved community preparedness and emergency response plans	45	DA	Preventive measures

Sector 3: Agriculture

Rank	Action	Total Score	Lead Department	Key Justification
1	Encourage the use of drought-tolerant crop varieties	95	Agric Dept.	Yield improvement & resilience
2	Providing farmers with timely weather forecast and climate-related information and calendars	93	Agric Dept., BAC	Women-led income security
3	Train farmers in CSA practices	84	Agric Dept., GIDA	Year-round production
4	Promote small-scale irrigation facilities	78	Agric Dept.	Livelihood resilience

Sector 4: Water and Sanitation

Rank	Action	Total Score	Lead Department	Key Justification
1	Construct & maintain boreholes	92	DA	Water security
2	Educating communities about water conservation practices	86	GoG	Health protection
3	Installing rainwater harvesting/collecting systems	83	DA	Drought resilience
4	Improve sanitation in flood-prone areas	78	DA	Water security

Sector 5: Human Health and Wellbeing

Rank	Action	Total Score	Lead Department	Key Justification
1	Promote hygiene campaigns water, sanitation and hygiene	79	Health Directorate	High impact on disease prevention
2	Construct shaded public spaces (markets/clinics/schools)	74	DA, Forestry Commission	Heat stress reduction
3	Support community-based malaria control	69	Health Directorate	Strong health impact
4	Establish heat-health awareness programs	58	Health Directorate	Curtail impact of climate-related issues

3.6.3 Sector Ranking Outputs

Across sector groups, the ranked priorities generally favored actions that:

- Address multiple risks,
- Explicitly target vulnerable groups,
- Pathways that is realistic for implementation through district systems,
- Can be costed clearly (capital + O&M + capacity + M&E).

The MCA results further indicated that certain actions were ranked as high priority despite having moderate to low feasibility, highlighting the need for targeted capacity development and implementation support to enable their effective delivery.

3.7 Participatory Decision-Making and Gender Integration

3.7.1 Participation Quality and Representation

The workshop was structured to facilitate active and informed engagement of district staff and stakeholders throughout the process. Participants were involved in systematically identifying climate risks and impacts, proposing context-specific adaptation measures, defining assessment criteria, and applying structured scoring tools. Engagement was further enhanced through small-group deliberations, plenary reporting, and consensus-based decision-making, which strengthened collective ownership and analytical rigour.

3.7.2 How Gender Targetting was Integrated

Gender and inclusion were not treated as an “add-on,” but embedded in three ways:

- **A standalone MCA criterion** (“Gender & Social Inclusion”) ensured every action was examined through an equity lens;
- **Beneficiary identification** required groups to specify who benefits and how (e.g., women, children, PWDs, youth, elderly);
- **Safeguards reflection** prompted groups to consider inclusion measures during implementation.

This approach is consistent with SIGRA’s commitment to inclusive and equitable adaptation planning, where women, girls, and vulnerable groups are deliberately integrated across all stages of the intervention cycle. It goes beyond viewing these groups as passive recipients of benefits and instead ensures that their specific needs, priorities, and constraints are reflected in the design of adaptation measures.

In implementation, it promotes equitable access to resources, participation in decision-making, and the removal of structural barriers that may limit their involvement. Furthermore, in monitoring and evaluation, it incorporates disaggregated indicators and feedback mechanisms to track how different groups are affected, thereby ensuring that outcomes are both inclusive and responsive. This strengthens the overall effectiveness, sustainability, and social equity of adaptation interventions.

3.8 Influence of Vulnerable Groups on Adaptation Prioritisation

The prioritisation process deliberately incorporated the perspectives of women, youth, older persons, persons with disabilities (PWDs), migrants and other vulnerable groups to ensure that selected adaptation actions responded to the realities of those most affected by climate risks. Through stakeholder consultations, group discussions and participatory scoring exercises, these groups identified the climate-related challenges that most directly affect their livelihoods, well-being and adaptive capacity.

Participants consistently highlighted concerns about declining agricultural productivity, limited access to reliable water sources, increased exposure to climate-related health risks, inadequate opportunities for livelihood diversification, and restricted access to financial and productive resources. Women emphasised the disproportionate burden of water collection, household care responsibilities and food security challenges during periods of drought and erratic rainfall. Youth participants stressed the importance of skills development, employment opportunities and climate-resilient livelihood options, while persons with disabilities and older persons underscored the need for inclusive adaptation measures that improve access to essential services and strengthen social protection mechanisms.

These perspectives directly informed the weighting and scoring of adaptation options during the Multi-Criteria Analysis (MCA) process. Actions that demonstrated strong potential to improve livelihood resilience, enhance water security, protect public health, strengthen disaster preparedness, promote

social inclusion and generate benefits for vulnerable populations generally received higher prioritisation scores. Gender responsiveness, equity considerations and the potential to reach marginalised groups were also considered during the assessment process.

As a result, the final portfolio of priority adaptation actions reflects not only technical feasibility and climate effectiveness but also the expressed needs and priorities of vulnerable communities. This participatory approach strengthened the legitimacy, inclusiveness and local ownership of the Costed Adaptation Plan while increasing the likelihood that implemented actions will deliver equitable and sustainable adaptation outcomes across the district.

3.9 Key Learning Outcomes and Capacity Gains

A central objective of the SIGRA assignment extends beyond the preparation of costed plans to include the strengthening of practical capacity among district staff and implementers (Table 9). In this regard, the prioritisation process contributed to a range of key learning outcomes:

3.9.1 Improved Risk-to-Action Reasoning

Participants showed improved capacity to connect climate hazards with sector-specific impacts, analyse underlying vulnerability pathways (e.g., water scarcity leading to food insecurity and increased disease burden), and translate risk evidence into clearly defined and actionable adaptation options.

3.9.2 Practical Familiarity with Prioritisation Tools

District staff acquired practical experience in structured shortlisting methodologies, criteria-based prioritisation frameworks, weighted MCA scoring and ranking techniques, as well as the systematic documentation of underlying assumptions and conditions for success. These competencies are transferable beyond the SIGRA intervention and can be effectively applied in subsequent Medium-Term Development Plan (MTDP) revisions, annual planning cycles, and the development of project proposals.

3.9.3 Strengthened Cross-Sector Coordination Thinking

The workshop highlighted cross-sector connections such as:

- WASH actions affecting health outcomes,
- Flood control affecting infrastructure access and market connectivity,
- Gender finance measures influencing livelihood resilience.

This improved understanding is essential for implementing adaptation actions that require collaboration across departments and partners.

3.9.4 Deepened Inclusion Awareness

The prioritisation discussions strengthened awareness that:

- Women often carry the largest adaptation burdens (long distance to fetch water and caregiving),
- PWDs face access barriers during crises and recovery,
- Youth require meaningful resilience pathways (skills and sustainable jobs),
- Migrants and excluded groups may miss out on adaptation support without deliberate measures.

3.9.5 Readiness for Costing and Implementation Planning

Because groups defined:

- Lead and supporting institutions,
- Target communities and beneficiaries,
- Action modalities (soft/hard),
- Implementation horizons,

This should lead the district to position itself to move from prioritisation into:

- Detailed costing,
- Phasing,
- Financing mapping,
- MTDP/annual action plan integration.

Table 9: Capacity development and learning outcomes from the adaptation prioritisation process in Nanumba South District

Capacity Area	Things Participants Learned	Evidence from the Workshop Process	Descriptive Participant Reflections	Why The need for CAP Implementation
Risk-informed planning	Participants enhanced their ability to prioritize key climate risks from a wide range of identified challenges by applying evidence-based analytical approaches.	Participants frequently referenced the findings during MCA scoring	"We used to list activities because they looked important. Here and now we are checking whether they actually respond to drought." (Planning Unit)	Ensures adaptation actions are directly related to documented climate risks
Use of MCA as a decision tool	District staff gained hands-on experience applying MCA rather than relying on intuition	Scoring was based on ideas from the sector groups debated to bring out differences and similarities	"Before today, MCA was like fiction. But with this training, I can confidently apply it in my department." (Works Dept.)	Builds internal capacity to prioritise actions beyond this project
Understanding trade-offs	Participants recognised that not all "good" actions are feasible or impactful	Lower-ranked actions were deprioritised after feasibility and sustainability discussions	"Some actions are good ideas, but we saw they are too expensive or hard to sustain." (Agriculture Dept.)	Prevents over-ambitious, non-implementable CAPs
Gender-responsive adaptation	Gender and inclusion were understood as design criteria, not add-ons	Gender scores influenced final rankings, especially in agriculture and livelihoods	"This is the first time gender actually affected which action came first." (Gender Desk)	Aligns the CAP with SIGRA's gender-responsive mandate
Cross-sector collaboration	Departments recognised interdependence across sectors	Overlapping actions emerged (e.g., WASH–Health–Gender)	"Water issues are not only WATSAN issues—health and women are directly affected." (Health Directorate)	Reduces siloed implementation and duplication
Cost awareness and realism	Participants began thinking in terms of cost ranges rather than vague needs	Mini-costing templates were filled for top actions	"We now understand that if we cannot estimate costs, the action will not attract funding." (Finance Officer)	Prepares staff for budgeting and proposal development
Institutional ownership	Departments clearly identified lead and supporting roles	Each action had a named lead institution	"Once your department is listed as lead, you take the action more seriously." (Works Dept.)	Strengthens accountability during implementation
Learning-by-doing confidence	Staff confidence increased through practical engagement	Active facilitation and peer discussion	"This was participatory; we worked through the process ourselves." (Environmental Health Officer)	Builds confidence to replicate the process in future planning cycles

3.10 Limitations and Considerations for Future Prioritisation Rounds

While the process was rigorous and participatory, several practical issues warrant attention in the next stages. First, some adaptation actions will require further technical validation, including detailed engineering designs, confirmation of unit costs, and the integration of environmental and social safeguards. Second, a number of high-priority interventions with lower implementation feasibility will need targeted capacity strengthening and enhanced resource mobilisation to enable effective delivery.

Third, variations observed across communities highlight the need for more precise targeting during planning and costing, distinguishing between location-specific interventions and district-wide programmes. Finally, sustained technical support will be critical to improve costing accuracy, strengthen procurement readiness, and ensure the effective integration of monitoring and evaluation systems.

3.11 Transition from Prioritisation to Costing and Implementation Planning

The Costed Climate Adaptation Plan (CAP) for the Nanumba South District transforms priority adaptation needs into practical, investment-ready interventions that can be implemented, financed, and monitored. Building on the District's Climate Risk and Vulnerability Assessment (CRVA) and the prioritisation of adaptation options through participatory stakeholder engagement and Multi-Criteria Analysis (MCA), the costing process converts strategic priorities into clearly defined actions with estimated resource requirements, implementation timelines, institutional responsibilities, and financing needs. This ensures that the CAP serves not merely as a strategic policy document but as an operational framework to guide district planning, budgeting, investment, and climate finance mobilisation.

The costing process enhances the feasibility and sustainability of the proposed interventions by capturing the full range of implementation requirements, including capital investments, operations and maintenance, capacity development, and monitoring and evaluation. It also strengthens institutional ownership by drawing on the technical expertise of the District Assembly, decentralised departments, and key stakeholders, ensuring that proposed actions are realistic, implementable, and aligned with existing governance and service delivery systems. Consequently, the CAP provides the Nanumba South District with a credible pipeline of climate-resilient investments that can be integrated into annual development plans, leveraged for external financing, and implemented through coordinated institutional action. The sector-specific adaptation actions presented in this chapter therefore constitute the practical foundation for enhancing climate resilience, reducing vulnerability, and supporting sustainable development across the District.

4. COSTED PRIORITY ADAPTATION ACTIONS

4.1 Introduction

This chapter presents the prioritised and costed climate adaptation actions identified through a participatory, evidence-based planning process in the Nanumba South District. The actions build on a structured sequence that began with the CRVA, followed by the development of a longlist of adaptation options, prioritisation using MCA, and indicative costing undertaken during Workshop 1. The Nanumba South District Costed CAP were developed using an activity-based costing approach consistent with district planning and budgeting procedures (**Photos 1**). Cost estimates were derived and validated through a combination of historical expenditure data from similar interventions implemented by the District Assembly, relevant district development plans and annual budgets, prevailing market rates, and benchmark costs from comparable climate adaptation initiatives implemented in other districts. These estimates were further refined through consultations with sector heads, technical officers, and key stakeholders to ensure their realism, accuracy, and alignment with local implementation conditions. The estimated costs encompass capital investments as well as recurrent expenditures, including operations and maintenance, capacity building, monitoring and evaluation, and other implementation-related costs necessary for the effective and sustainable delivery of the proposed adaptation interventions.

The costing process commenced with a capacity-building session on the activity-based costing methodology, including the use of standard costing templates and practical examples. Following the training, technical officers from the Nanumba South District Assembly including representatives from Planning, Budget, Procurement, Agriculture, Physical Planning, Forestry Commission and Disaster Management collaboratively developed cost estimates using historical expenditure records, current market prices, existing district plans, and other relevant cost information. This collaborative approach ensured that the estimated costs were realistic, evidence-based, and aligned with the District's implementation capacity.

Photos 1: Images from costing capacity building



The resulting portfolio comprises 24 ranked adaptation options in all , with biodiversity, disaster risk reduction, agriculture and food security, water and sanitation, human health and gender targeting. Each adaptation action is presented with clear details on its technical scope, implementation rationale, indicative cost, institutional responsibilities, and expected resilience outcomes. This structured

approach is designed to support integration into district planning and to facilitate financing, implementation, and monitoring by clearly outlining:

- The specific climate risks being addressed;
- Target locations and beneficiary groups;
- Institutional roles and responsibilities;
- Implementation approaches; and
- Indicative cost ranges, including capital, operation and maintenance, training, monitoring, and contingency components.

At this stage, the costing remains indicative and serves primarily as a planning and capacity-building tool. Detailed engineering designs and refined Bills of Quantities will be developed in implementation planning. Importantly, the process has also strengthened district capacity in prioritisation, costing methodologies, gender-responsive planning, and cross-sectoral coordination—outcomes that are as valuable as the cost estimates themselves.

The chapter concludes with sector-specific summaries of the prioritised adaptation actions.

4.2 Costing Methodology and Assumptions

The costing of priority adaptation actions was undertaken through a structured, participatory, and capacity-building process aimed at strengthening district-level planning and decision-making, rather than generating fixed or rigid project budgets. The methodology integrated stakeholder engagement with practical training to enhance local capacity in basic cost estimation and resource planning for climate adaptation interventions (Table 10).

Indicative cost estimates were jointly developed with district staff during Workshop 2, drawing on institutional knowledge, recent implementation experiences, and simplified costing templates tailored for non-specialist users. The process incorporated locally available cost data and assumptions to ensure context-specific and realistic estimates. The costing process followed four principles:

- **Down-up estimation** using district-level knowledge and past project experience
- **Indicative cost ranges**, not fixed budgets, to allow flexibility during implementation
- **Consistency across sectors**, using comparable cost components and assumptions
- **Alignment with potential funding windows**, including DACF, donor projects, NGOs, and development partners

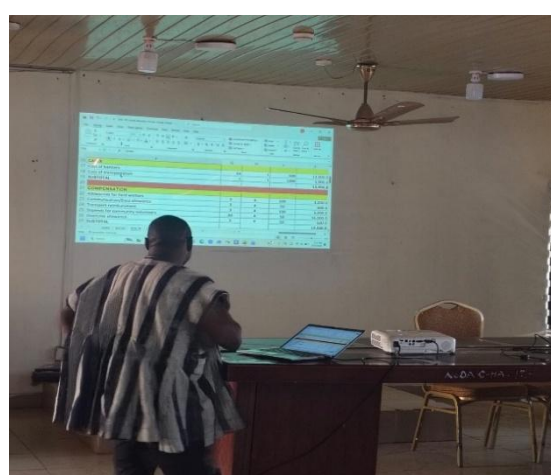
Table 10: Costing Assumptions Across Sectors

Item	Assumption
Cost Type	Capital investments plus soft costs (training, mobilisation, sensitisation)
Time Horizon	3 years (short–medium term)
Currency	Ghana Cedis (GHS)
Inflation	Not factored (indicative planning figures only)
Unit Costs	Based on recent district and NGO projects
Co-financing	Assumed for large infrastructure actions

4.3 Overview of Sectoral Costed Adaptation Actions

This section presents the priority adaptation options for the Nanumba South District Assembly, outlining the objective, rationale, and key considerations for each intervention. The options were identified and validated through participatory engagement with stakeholders. The section also provides indicative implementation costs to support planning, budgeting, and resource mobilisation. These cost estimates were prepared in line with the Nanumba South District's budgeting procedures and inflation with the indicative planning costs over the implementation period.

Photos 2: Stakeholder engagement



Source: Stakeholder Engagement

The Costed Adaptation Plan comprises 20 priority adaptation actions distributed across five thematic sectors. The actions were prioritised through a participatory Multi-Criteria Analysis process and subsequently costed to support implementation planning, budgeting and resource mobilisation. Table 4.2 provides an overview of the distribution of actions, indicative budget allocations and lead implementing departments across the priority sectors. As shown in Table 11, Disaster Risk Reduction accounts for the largest share of the investment portfolio (30.5%), reflecting the district's high exposure to flooding, drought, bushfires and other climate-related hazards. Human Health and Wellbeing represents the second-largest allocation (21.8%), highlighting the importance of protecting communities from climate-sensitive health risks. Investments in agriculture, water and sanitation, biodiversity conservation, and gender-responsive adaptation measures collectively strengthen household resilience and reduce long-term climate vulnerability across the district.

Table 11: Summary of costed adaptation portfolio

Sector	Number of Priority Actions	Budget (GHS)	Share of Total Budget (%)	Lead Department / Institution
Biodiversity	4	838,058	13.5	Forestry Commission, EPA, District Assembly
Disaster risk reduction	4	1,891,456	30.5	NADMO, Physical Planning Unit, District Assembly
Agriculture	4	1,052,590	17.0	Department of Agriculture
Water & Sanitation	4	1,062,730	17.1	Environmental Health Unit, Works Dept.
Human health & Wellbeing	4	1,354,428	21.8	District Health Directorate
Total	24	6,199,262.00	100.0	

4.3.1 Biodiversity Sector

Biodiversity in the Nanumba South District is increasingly threatened by climate change and unsustainable man-induced activities. The district's natural ecosystems, including woodlands and riparian areas are under pressure from recurrent prolonged droughts, bushfires, overgrazing, and agricultural expansion. These climate and human-induced pressures are exacerbated by limited funding for biodiversity conservation, weak enforcement of environmental regulations, inadequate community-based resource management, and low public awareness of ecosystem conservation. The degradation of natural habitats has reduced wildlife populations, diminished vegetation cover, and weakened ecosystem functions that support agriculture, water regulation, and climate resilience. Since the majority of households depend directly on natural resources for farming, livestock production, fuelwood collection, medicinal plants, and other livelihood activities, continued ecosystem degradation threatens food security, household incomes, and community well-being. Strengthening biodiversity conservation through sustainable land use management, community-led forest and rangeland restoration, wildfire prevention, and protection of native plants is therefore essential to enhance ecosystem services, build climate resilience, and support sustainable livelihoods in the Nanumba South District.

Promote community participation in forest protection through community-based forest management and regular public education on the importance of conserving forests and preventing illegal activities. Undertake reforestation and tree planting programmes using drought-tolerant and climate-resilient indigenous tree species, while providing training to communities on tree planting and maintenance. Promote sustainable land management practices such as agroforestry, soil and water conservation, controlled bush burning, and fire prevention measures to reduce land degradation and wildfires. Protect and restore wildlife habitats by creating and maintaining wildlife corridors that connect fragmented forest areas, allowing wildlife to move safely and helping to conserve biodiversity.

Together, these objectives contribute to enhancing ecosystem resilience, supporting sustainable livelihoods, and safeguarding the natural heritage of the district (Table 12).

Table 12: Adaptation actions for biodiversity sector

Priority Rank	MCA Score	Adaptation Action	Climate Risks Addressed	Scope of Intervention	Primary Beneficiaries	Estimated Cost (GHS)	Timeframe	Lead Institution
1	57	Promote community-based forest management and sensitization campaigns	Enforcement of laws on unregulated cutting of trees	8 community sensitization campaigns and reforestation (500 seedlings)	Communities exposed to climatic events	246,804.00	Short-term	DA/NGO
2	53	Implement reforestation programs/training using climate-resilient tree species	Ensure adaptive needs in response to climate change	Improved forest cover and biodiversity through local restoration efforts (15,000 seedlings).	Households/ communities	233,814.00	Short-term	Forestry Commission
3	48	Adopt sustainable land management practices to combat soil degradation/ wildfire	Ensure soil health and fertility.	Increased agricultural productivity and reduced land degradation. (Construction of 8 dugouts)	Smallholder farmers	189,460.00	Medium long-Term	DA
4	42	Establish wildlife corridors to connect fragmented habitats	Create connections between isolated habitats	Reduce human-wildlife conflicts in farm corridor areas through awareness creation and sensitization, recruitment of fire guards and creation of fire belts to prevent dry season bush burning	Smallholder farmers	167,980.00	Medium-long term	Forestry Commission
Total Biodiversity Sector Budget						838,058.00		

4.3.2 Disaster Risk Reduction Sector

Disaster risk reduction (DRR) is a critical component of climate adaptation in the Nanumba South District, where communities are increasingly exposed to climate-related hazards such as droughts, flooding, bushfires, extreme heat, and windstorms. The district's heavy reliance on rain-fed agriculture and dependence on natural resources increase the exposure and vulnerability of households to climate shocks. Seasonal flooding affects settlements, farmlands, roads, and water sources, while prolonged dry spells and droughts contribute to crop failure, livestock losses, food insecurity, and increased livelihood stress. Bushfires, often linked to land preparation practices and dry-season activities, further degrade vegetation cover and reduce ecosystem resilience.

The capacity of communities to prepare for, respond to, and recover from disasters is constrained by limited access to early warning information, inadequate disaster preparedness systems, weak emergency response infrastructure, and limited financial resources among vulnerable households (Table 4.3). These challenges are more pronounced among women, children, persons with disabilities (PWDs), and other socially disadvantaged groups who often have fewer resources, limited mobility, and reduced participation in decision-making processes related to disaster management.

Women in Nanumba South District are particularly vulnerable because of their dependence on climate-sensitive livelihoods, limited financial services, climate information, and productive resources. Climate-related disasters increase their workload through additional responsibilities such as securing food, water, and household care during periods of drought or flooding. Children are exposed to increased risks of displacement, disruption of education, malnutrition, injuries, and disease outbreaks following extreme events. Persons with disabilities face additional barriers during emergencies due to mobility limitations, inadequate access to disaster information, and limited inclusion in community preparedness and response activities.

The NSDA prioritized these adaptation options due to the district's exposure to climate-related disasters, including droughts, heatwaves, and windstorms, which pose significant threats to lives, livelihoods, and infrastructure. Early warning systems and community awareness campaigns were prioritized to ensure timely communication and action during emergencies, reducing loss and damage (Table 13). Planting shade trees and diversifying cashew crops were selected to address the direct impacts of climate variability on agriculture and livelihoods, promoting food security and heat mitigation. These priorities align with the assembly's focus on building climate-resilient communities, protecting natural resources, and enhancing local capacities to adapt to changing climatic conditions effectively.

Table 13: Adaptation actions for the disaster risk reduction sector

Priority Rank	MCA Score	Adaptation Action	Climate Risks Addressed	Scope of Intervention	Primary Beneficiaries	Estimated Cost (GHS)	Timeframe	Lead Institution
1	68	Implementation of early warning systems	Improve community resilience to climate disasters	Quick response to climate emergency alerts through climate warning systems (media broadcasts and rainfall calendar leaflets and printed material)	Smallholder farmers, women farmers, youth farmers	235,850.00	Short-Term	GMeT
2	64	Community-based flood risk awareness campaigns	Planning infrastructural development	Community sensitization, evacuation and mitigation (12 weather warning signs, 36 safe havens, 60 temporal shelters, resettlement and livelihood support for 180 households)	Households/communities	1,017,600.00	Short-Term	Department of Agriculture / DA
3	52	Planting shade trees in communities and farms	Year-round production	Increase number of shade trees (500) planted that should serve as buffers against climatic hazards in selected communities	Men, market women, and PWDs	469,656.00	Medium Long-Term	DA
4	45	Improved community preparedness and emergency response training	Preventive measures	Create awareness on emergency preparedness in selected communities against climate hazards and related risks	Climate-prone villages	167,900.00	Short Medium-Term	Department of Agriculture
Total Disaster Risk Reduction Sector Budget						1,891,456.00		

4.3.3 Agricultural Sector

Climate-related shocks are exacerbated by high dependence on rain-fed agriculture, limited irrigation infrastructure, declining soil fertility, land degradation, and inadequate access to climate information and agricultural extension services. Smallholder farmers, particularly women, youth, and resource-poor households, are disproportionately affected because they have limited financial resources and adaptive capacity to cope with climate variability.

Agricultural interventions are designed to address key climate risks, including drought, erratic rainfall, declining soil fertility, and growing food insecurity, all of which undermine productivity and rural livelihoods. They reflect both district-wide priorities and localised vulnerabilities, ensuring that responses are context-specific and grounded in community realities.

All four prioritized adaptation actions achieved high overall scores under the weighted Multi-Criteria Analysis (MCA), outperforming the sector's non-prioritized long-list options while demonstrating strong gender responsiveness. Among these, promoting the use of drought-tolerant crop varieties emerged as the most gender-responsive intervention, achieving the highest score across both gender assessment dimensions. This intervention directly addresses one of the key vulnerabilities identified in the Climate Risk and Vulnerability Assessment (CRVA) by reducing financial barriers to climate adaptation, particularly for women, resource-poor farmers, and other vulnerable households, while strengthening agricultural resilience to recurrent drought and climate variability. Furthermore, the costed actions focus on strengthening climate-resilient production systems through improved agronomic practices, soil and water conservation, and the adoption of climate-smart agriculture (CSA) technologies (Table 14). They also prioritise support for vulnerable farmers, particularly smallholder households, by improving access to inputs, extension services, and diversified livelihood opportunities. Importantly, these interventions are aligned with existing agricultural programmes and gender-responsive extension services to ensure coherence, institutional integration, and the long-term sustainability of implementation.

Table 14: Agriculture sector

Priority Rank	MCA Score	Adaptation Action	Climate Risks Addressed	Scope of Intervention	Primary Beneficiaries	Estimated Cost (GHS)	Timeframe	Lead Institution
1	95	Encourage the use of drought-tolerant crop varieties	Yield improvement & resilience	Establish crop demonstration on the use of drought tolerant maize varieties in 5 communities for 15 men and women farmers in each community	Smallholder farmers, women farmers, youth farmers	106,800.00	Short-Term	Department of Agriculture
2	93	Providing farmers with timely weather forecast and climate-related information and calendars	Planning and for women-led income security	Organize community sensitization for 50 men and women farmer each in 10 communities on weather forecast and planting calendars	Smallholder farmers, women groups, youth farmers	72,750.00	Short-Term	Department of Agriculture / BAC
3	84	Train farmers in CSA practices	Year-round production	Train 400 women smallholder farmers in 8 communities on CSA practices	Smallholder farmers, women, farmer groups, youth	319,000.00	Short-Medium Term	Department of Agriculture / GIDA
4	78	Promote small-scale irrigation facilities	Livelihood resilience	Construct 2 solar-powered irrigation facilities	Smallholder farmers	554,040.00	Medium-Long Term	Department of Agriculture
Total Agriculture Sector Budget						1,052,590.00		

4.3.4 Water and Sanitation Sector

Rising temperatures in the Nanumba South District increase the risk of heat-related illnesses and the spread of climate-sensitive diseases, particularly among vulnerable populations such as children, older adults, and pregnant women. The district's health sector is further challenged by inadequate healthcare infrastructure, limited access to safe drinking water, poor sanitation facilities, and insufficient health personnel and logistics, reducing its capacity to respond effectively to climate-related health risks. These challenges are compounded by widespread open defecation in some communities, inadequate waste management systems, low public awareness of hygiene and sanitation practices, and seasonal water scarcity, all of which heighten the incidence of waterborne and vector-borne diseases during periods of climate stress. The prioritized adaptation actions consistently outperformed the non-shortlisted alternatives based on the agreed multi-criteria assessment. In particular, all four priority actions demonstrated strong gender responsiveness by explicitly addressing the needs of climate-vulnerable groups in the Nanumba South District, including women, children, persons with disabilities (PWDs), and other marginalized households (Table 15). These interventions are designed to strengthen the adaptive capacity and resilience of communities that are disproportionately affected by climate hazards such as drought, extreme heat, water scarcity, and food insecurity, while promoting inclusive and equitable access to adaptation benefits.

Table 15: Adaptation actions for the water and sanitation sector

Priority Rank	MCA Score	Adaptation Action	Climate Risks Addressed	Scope of Intervention	Primary Beneficiaries	Estimated Cost (GHS)	Timeframe	Lead Institution
1	92	Construct and maintain boreholes	Water scarcity, drought	Hydrogeological assessments; construct and rehabilitate 7 boreholes in underserved communities; install hand pumps and associated water access facilities; establish community management structures	Women, girls, households, schools, health facilities, livestock keepers	476,270.00	Medium Term	DA / CWSA
2	86	Educating communities about water conservation practices	Health protection	132 communities attending water conservation training sessions	Women, girls, schools, health facilities	231,000.00	Short-Term	GoG
3	83	Installing rainwater harvesting/collecting systems	Drought, water scarcity	Installation of 8 household, institutional, and community rainwater harvesting systems; water storage tanks; training on system operation and maintenance	Households, schools, health facilities, women groups	150,420.00	Short–Medium Term	DA
4	78	Improve sanitation in flood-prone areas	Water scarcity and sanitation	Construction of 5 drainage systems, clearing of solid waste at 5 dumping sites	Women, girls, households	205,040.00	Short Medium-Term	DA / WASH
Total Water and Sanitation						1,062,730.00		

4.3.5 Human Health and Wellbeing

The health vulnerabilities in Nanumba South District are compounded by limited healthcare infrastructure, inadequate access to health facilities in some remote communities, shortages of essential medical resources, and challenges in accessing timely healthcare services. Seasonal water scarcity, poor sanitation facilities, and inadequate waste management further increase exposure to health risks. During prolonged dry seasons, households may travel longer distances in search of safe water, increasing the burden on women and children who are often responsible for water collection.

Increasing temperatures and heatwaves contribute to a higher risk of heat-related illnesses, including heat exhaustion, dehydration, and heat stress, particularly among outdoor workers such as farmers, livestock keepers, and construction workers. Changing climatic conditions also create favourable environments for the spread of climate-sensitive diseases, including malaria and other vector-borne diseases, as well as water- and sanitation-related diseases such as diarrhoea and cholera, especially during periods of flooding and poor water quality.

The actions identified in Nanumba South District focus on reducing climate-related health risks and strengthening community resilience. These include promoting hygiene campaigns to improve water, sanitation, and hygiene (WASH) practices; constructing shaded public spaces in key community facilities such as markets, clinics, and schools to reduce exposure to extreme heat; supporting community-based malaria prevention and control initiatives; and establishing heat-health awareness programmes. These interventions are designed with strong consideration for climate-vulnerable groups, including women, children, persons with disabilities (PWDs), and the elderly, who are disproportionately affected by heat stress, water scarcity, poor sanitation, and climate-sensitive diseases. By improving access to climate-resilient health infrastructure, strengthening preventive health measures, and enhancing community awareness, the actions will contribute to reducing health vulnerabilities and improving overall wellbeing across communities in the Nanumba South District (Table 16).

Table 16: Adaptation actions for the human health and wellbeing

Priority Rank	MCA Score	Adaptation Action	Climate Risks Addressed	Scope of Intervention	Primary Beneficiaries	Estimated Cost (GHS)	Timeframe	Lead Institution
1	79	Promote hygiene campaigns water, sanitation and hygiene	High impact on disease prevention	District-wide hygiene education campaigns; community sensitisation on safe water handling, sanitation, waste management, and disease prevention in flood-prone communities. 54 handwashing facilities, and 2 climate resilient health facilities	Women, children, households in flood-prone communities, schools	247,018.00	Short–Medium Term	District Health Directorate
2	74	Construct green-shaded public spaces in markets, clinics, and schools	Heat stress reduction and cooling measures	This will provide green-shaded public spaces	Vulnerable households market women and school children	257,660.00	Medium Long-Term	DA/Forestry Commission
3	69	Support community-based malaria control	Strong healthcare impact	Strengthen community disease surveillance systems; support outreach services in vulnerable communities; improve early detection and reporting of climate-sensitive diseases; community health education and risk communication	Women, children, elderly persons, PWDs, remote communities	730,600.00	Medium Long-Term	District Health Directorate / Ghana Health Service
4	58	Establish heat-health awareness programs	Enhance community resilience against climate-related health risks	Curtail impact of climate-related issues in 4 identified communities through sensitization and awareness of tree planting (300)	Community households	119,150.00	Medium-Term	Ghana Health Directorate
Total Health Sector Budget						1,354,428.00		

The sectoral allocation of the CAP reflects a balanced and strategically sequenced investment framework designed to address the District's most pressing climate risks. The total estimated investment requirement for implementing the priority adaptation actions across all sectors is GHS **6,199,262.00** (Table 17).

The largest share of the investment is allocated to Disaster Risk Reduction (GHS 1,891,456.00), underscoring the urgent need to strengthen flood control systems, improve drainage infrastructure, and enhance climate-resilient public infrastructure. This is followed by Human Health and Wellbeing (GHS 1,354,428.00), reflecting the growing importance of protecting vulnerable populations from climate-sensitive diseases, heat stress, and environmental health risks.

Substantial allocations are also directed to Water and Sanitation (GHS 1,062,730.00) and Agriculture (GHS 1,052,590.00), highlighting the central role of water security and climate-resilient agricultural systems in sustaining livelihoods, ensuring food security, and improving adaptive capacity under increasing climate variability.

Moderate but critical investments are assigned to Biodiversity (GHS 838,058.00), demonstrating a commitment to ecosystem restoration, natural resource protection, and the reduction of climate-induced shocks through both structural and nature-based solutions.

Therefore, the sectoral distribution reflects a comprehensive and integrated climate adaptation strategy that balances infrastructure investment, ecosystem protection, livelihood resilience, and social inclusion. It demonstrates a deliberate effort to address both immediate climate risks and long-term structural vulnerabilities while promoting sustainable and equitable development outcomes across the District.

Table 17: Summary of estimated cost

S/N	Sector	Amount (GHS)
1	Agriculture	1,052,590.00
2	Biodiversity	838,058.00
3	Disaster Risk Reduction	1,891,456.00
4	Water and Sanitation	1,062,730.00
5	Human Health and Wellbeing	1,354,428.00
Grand total		6,199,262.00

4.4 Cross-Cutting Requirements for Successful Implementation

Successful implementation of the priority adaptation actions will require several cross-cutting enabling conditions that apply across all sectors and intervention areas. While individual actions are assigned to specific departments and institutions, effective delivery will depend on coordinated planning, adequate financing, community ownership and sustained institutional collaboration. First, implementation will require proactive resource mobilisation and alignment with district planning and budgeting processes. Departments should integrate priority adaptation actions into Annual Action Plans, Composite Budgets and departmental work programmes to improve access to public funding and external support. Second, strong stakeholder and community engagement will be essential throughout implementation. Traditional authorities, community leaders, farmer groups, women's groups, youth organisations and civil society actors should be actively involved in planning, implementation and monitoring activities to strengthen local ownership and sustainability.

Third, gender equality and social inclusion considerations should be mainstreamed across all interventions. Particular attention should be given to ensuring that women, youth, older persons, persons with disabilities and other vulnerable groups have equitable access to adaptation benefits, capacity-building opportunities and decision-making processes. Fourth, operation and maintenance (O&M) arrangements should be established for all infrastructure and asset-based interventions. Clear responsibilities, maintenance schedules and budget provisions should be defined to ensure the long-term functionality and sustainability of project investments. Fifth, environmental and social safeguards should be integrated into implementation processes to minimise unintended impacts on natural resources, ecosystems and communities. Where applicable, actions should promote ecosystem restoration, sustainable resource management, and climate-resilient land-use practices.

Finally, effective coordination among district departments, decentralised agencies, development partners and community institutions will be necessary to avoid duplication of effort, maximise resource efficiency and strengthen collective impact. Regular coordination meetings, joint monitoring exercises and information-sharing platforms should be used to support integrated implementation and adaptive management. These cross-cutting requirements provide the enabling framework necessary for the successful delivery, sustainability and long-term effectiveness of the Costed Adaptation Plan.

5. FINANCING, PHASING AND RESOURCE MOBILISATION

5.1 Introduction

Financing is the critical link between climate planning and climate action use. For the Nanumba South District, the effectiveness of this CAP depends not only on the technical soundness of the identified adaptation actions but also on the district's ability to mobilise, sequence, and manage financial resources in a realistic and sustained manner. This chapter basically is to provide a structured financing framework that:

- Links prioritised and costed adaptation actions to feasible funding sources;
- Strengthens district staff capacity to mobilise and manage adaptation finance;
- Aligns district investments with national climate finance architecture, including the Medium-Term Development Plan (MTDP), the National Adaptation Plan (NAP), and SIGRA objectives;
- Encourages blended and phased financing, recognising fiscal constraints at the MMDA level.

The approach reflects SIGRA's emphasis on integrating gender-responsive, actionable, and implementable climate adaptation investments, rather than aspirational funding wish-lists.

5.2 Financing Principles Guiding the CAP

The financing strategy for Nanumba South District is guided by five core principles:

- **Alignment with District Planning and Budget Cycles:** All proposed financing pathways are designed to fit within MTDPs, Annual Action Plans (AAPs), and Composite Budgets.
- **Prioritisation Before Fundraising:** Only MCA-prioritised adaptation actions are presented for financing, ensuring efficient use of limited resources.
- **Gender-Responsive Allocation:** Financing strategies explicitly support interventions benefiting women, youth, persons with disabilities (PWDs), migrants, and other vulnerable groups.
- **Phased and Scalable Investment:** Actions are designed to allow partial implementation and co-financing where full funding is not immediately available.
- **Blended Financing:** Public funds are leveraged to attract climate finance, donor support, and private sector participation.

5.3 Potential Financing Sources for the Nanumba South CAP

5.3.1 Government Funding Sources

- **District Assemblies Common Fund (DACF):** DACF remains the most reliable financing source for adaptation actions embedded within district mandates. Suitable for small-scale drainage works, boreholes and water systems, and market shading and sanitation improvements

Key Action for District Staff should include integrating CAP priorities directly into the AAP and Composite Budget to ensure eligibility in:

- **District Development Facility (DDF)/Performance-Based Grants:** Where applicable, performance-linked grants can support climate-resilient infrastructure and service delivery.
- **Sector Ministry Allocations:** Relevant sector budgets (Agriculture, Health, Water and Sanitation, Gender) should be aligned with CAP priorities through coordinated planning.

5.3.2 SIGRA and Climate Programme Grants

SIGRA grants provide catalytic financing for:

- Gender-responsive livelihood adaptation
- Community-based climate resilience initiatives
- Institutional capacity building

Strategic Role of SIGRA Financing:

- De-risk early-stage adaptation investments
- Demonstrate proof-of-concept for scaling

5.3.3 International Climate Finance and Donor Support

Potential sources include:

- Green Climate Fund (GCF) – via national entities
- Adaptation Fund
- Bilateral donors
- Multilateral development partners

Rather than district-level direct access, Nanumba South District should position CAP actions for aggregation into national or regional proposals led by EPA or sector MMDAs.

5.3.4 Public-Private Partnerships (PPPs)

PPP opportunities exist particularly in:

- Solar-powered infrastructure
- Market infrastructure and storage facilities
- Agro-processing and value chains

PPPs should focus on service delivery, not asset ownership, to protect public interest.

5.3.5 Community and Local Resource Mobilisation

Community contributions such as labour, land, and local materials remain important co-financing mechanisms, particularly for tree planting and woodlots, fire belts and environmental restoration, and community monitoring systems. These contributions should be formally documented to strengthen funding proposals.

5.3.6 Innovative Financing Mechanisms

Emerging financing mechanisms such as results-based financing, climate risk insurance pilots, and carbon and ecosystem service incentives (longer-term) offer potential avenues to complement conventional funding streams. Nevertheless, their adoption requires rigorous feasibility assessment, including institutional readiness, regulatory alignment, and monitoring, reporting, and verification (MRV) capacity. Implementation should therefore be sequenced and piloted where appropriate, with clear performance metrics and risk management frameworks. These instruments should be pursued selectively and only in contexts where adequate technical, financial, and administrative capacity exists to ensure integrity and sustainability (Table 18).

Table 18: Financing strategy by adaptation action type

Action Type	Primary Funding Source	Secondary Source
Small-scale infrastructure	DACF, SIGRA	Donor grants
Livelihood diversification	SIGRA, NGOs	Community contributions
Capacity building	SIGRA, Sector MDAs	Development partners
Nature-based solutions	Donors, NGOs	Community labour
Energy-related actions	PPPs	Climate funds

5.4 Financing Tiers and Investment Categories

The priority adaptation actions vary considerably in scale, cost and implementation complexity. To support effective resource mobilisation, adaptation investments may be grouped into three financing tiers based on their indicative budget requirements and financing needs.

Tier 1: Low-Cost Actions

Low-cost interventions, including community sensitisation campaigns, capacity-building activities, training programmes, stakeholder engagement initiatives, and selected policy or institutional strengthening measures, may be financed through existing district resources, departmental budgets, the District Assemblies Common Fund (DACF), and, where available, internally generated funds.

Tier 2: Medium-Scale Investments

Medium-scale adaptation investments, including livelihood support programmes, small-scale infrastructure, community resilience initiatives and ecosystem restoration projects, may require co-financing arrangements involving district resources, sector agencies, development partners, NGOs and donor-supported programmes.

Tier 3: Large-Scale and Capital-Intensive Investments

High-cost adaptation interventions, particularly infrastructure-related projects such as irrigation development, water supply systems, flood control measures, and major climate-resilient public assets, will require external financing. Such investments should be pursued through national programmes, climate finance facilities, development partner funding, public-private partnerships and blended financing arrangements.

This tiered financing approach will enable the District Assembly to match adaptation actions with appropriate funding sources, improve project packaging for resource mobilisation and support the phased implementation of the Costed Adaptation Plan.

5.5 Proposed Institutional Arrangements for Financial Management

5.5.1 Lead Coordination

- District Planning Unit (DPU)
- Finance Department
- Environmental Health and Works Departments

5.5.2 Role of EPA and SIGRA

- Technical validation
- Climate finance alignment
- Oversight and learning support

5.5.3 Accountability Measures

- Clear budget tagging for climate actions
- Regular financial reportingIntegration into MTDP monitoring frameworks

5.5.4 Risks to Financing and Mitigation Measures

Potential financial, institutional, and operational challenges that may hinder the effective mobilization and use of funds for climate adaptation. These risks may include limited budget allocations, delays in fund disbursement, weak financial management systems, and over-reliance on external funding sources (Table 19). Additional risks involve inflation, cost escalations, and uncertainty in climate finance flows, which can affect implementation timelines and project scope (Annex A). Mitigation measures include diversifying funding sources, strengthening financial management and accountability systems, improving budget planning and forecasting, and building strong partnerships with development partners. Establishing contingency planning and phased implementation approaches also helps to reduce financial risk exposure and ensure continuity of adaptation actions.

Table 19: Risks to financing and mitigation measures

Risk	Mitigation Measure
Over-reliance on donor funds	Strengthen internal budget integration
Weak costing credibility	Use standardised costing guide
Limited staff capacity	Continuous coaching and templates
Fragmented funding	Phased and bundled financing approach

5.6 Linking Financing to Learning and Capacity Building

Beyond resource mobilisation, this financing framework:

- Strengthens district staff skills in costing and proposal development;
- Improves financial literacy around climate adaptation;
- Creates a repeatable model usable beyond SIGRA-supported districts.

5.7 Institutional Roles and Responsibilities for Resource Mobilisation

The successful implementation of the Costed Adaptation Plan will depend on coordinated efforts among district departments, decentralised agencies, and development partners to mobilise and manage financial resources. The District Planning Unit (DPU) should lead and coordinate resource mobilisation efforts for the CAP. This includes integrating priority adaptation actions into the Medium-Term Development Plan, Annual Action Plans, and other district development frameworks; coordinating funding proposals; engaging potential partners; and tracking implementation progress. The Finance Department should support the mobilisation process by facilitating budget integration, providing financial planning and costing support, coordinating expenditure tracking and ensuring compliance with financial management requirements. The Department should also support the preparation of funding proposals and engagement with government agencies, donor institutions and climate finance mechanisms.

Sector departments and implementing agencies should be responsible for developing project concepts, technical proposals and implementation packages within their respective mandates. They should provide technical information required for resource mobilisation and support engagement with sector ministries, specialised agencies and development partners. The District Coordinating Director, District Assembly leadership, and relevant decentralised agencies should provide strategic oversight and facilitate partnerships necessary to attract financial and technical support. Development partners,

NGOs, community organisations and private-sector actors may further contribute through co-financing arrangements, technical assistance and implementation support. Regular coordination among all responsible institutions will be necessary to maximise funding opportunities, avoid duplication of effort and ensure efficient utilisation of resources for adaptation implementation.

5.8 Financing Gap and Prioritisation Strategy

Given the scale and scope of the Nanumba South District Climate Adaptation Plan (CAP) and its classification as an underserved district, the financial requirements for implementation exceed what can be fully supported by routine district-level financing alone. A structured prioritisation and sequencing approach is therefore essential to ensure that available resources are directed towards interventions with the greatest immediate and long-term climate resilience benefits. Three-tier implementation strategy is required: district funded, financial support from organizations like SIGRA and other external bodies to provide capital for community development.

6. IMPLEMENTATION, MONITORING, EVALUATION AND GOVERNANCE

6.1 Introduction

Effective climate adaptation is not solely contingent on strategic planning; it requires sustained implementation, robust monitoring systems, iterative learning processes, and adaptive management practices (Beauchamp et al., 2024). This chapter provides a technical articulation of how the Nanumba South District Assembly could operationalise the Costed Climate Adaptation Plan (CAP), including mechanisms for tracking implementation progress, evaluating outcomes, and integrating feedback to enhance performance over time.

The Monitoring, Evaluation, and Learning (MEL) framework is designed with the following core attributes:

- **Implementation-oriented:** Emphasising the systematic tracking of outputs and outcomes to ensure the effective delivery of prioritised adaptation interventions;
- **Learning-driven:** Embedding feedback loops and evidence-based reflection to support continuous improvement and informed decision-making among district stakeholders;
- **Gender-responsive and socially inclusive:** Incorporating disaggregated indicators and participatory approaches to ensure equitable access to adaptation benefits, particularly for women and other vulnerable populations;
- **Institutionally aligned:** Harmonised with existing SIGRA, Environmental Protection Agency (EPA), and Medium-Term Development Plan (MTDP) reporting systems to enhance coherence, reduce redundancy, and optimise resource use.

Rather than establishing a parallel institutional arrangement, the MEL framework leverages and strengthens existing district governance and reporting structures, enhancing their capacity to effectively coordinate, monitor, and sustain climate adaptation investments.

6.2 Implementation Framework for the CAP

Implementation should follow three phases. Phase 1 focuses on quick-win actions and strengthening institutional capacity. Phase 2 emphasises scaling of interventions and infrastructure investments. Phase 3 focuses on consolidation, sustainability and institutionalisation of successful approaches.

6.2.1 Phased Implementation Approach

CAP actions should be implemented in clearly defined phases aligned with funding availability and institutional capacity. Initial phases will prioritize high-impact, readily implementable actions to deliver early results. Subsequent phases will scale up and expand interventions as resources and capacity increase. This phased approach allows flexibility to adjust implementation timelines and scope (Table 20). It also enables lessons from earlier phases to inform and improve later investments.

Table 20: Phasing of CAP

Phase	Timeframe	Focus	Activity
Phase 1	Year 1	Priority actions and capacity building	Execution of prioritised and institutionally ready actions through district and sector workplans; ensuring capacity strengthening, coordination, community engagement, monitoring arrangements, costing refinement and preparation of larger investments.

Phase	Timeframe	Focus	Activity
Phase 2	Year 2	Scaling priority actions, infrastructure investments	Development of prioritised actions requires moderate investment, interdepartmental coordination, partner support or co-financing; implementation of prepared sectoral and infrastructure investments where technical, financial and institutional requirements have been secured.
Phase 3	Year 3	Consolidation, learning, and institutionalisation	Sustainable delivery and scaling up of longer-term investments; strengthening of operation and maintenance, technical supervision, monitoring, learning, accountability and integration of successful actions into routine district planning and sector systems.

This phased approach also reflects financing realities, with:

- Phase 1 should prioritise low-cost, high-impact actions that can be supported directly through district and sector resources while advancing preparation and resource mobilisation for larger investments;
- Phase 2 supports expanding co-financed sector and district resources while advancing preparation and resource mobilisation for larger investments;
- Phase 3 focuses sustaining, completing and institutionalising investments that require longer-term financing, technical support and operation and maintenance commitments.

6.2.2 Institutional Roles in Implementation

Implementation responsibilities are strategically decentralised across relevant departments to promote institutional ownership, accountability, and coordination. This distributed approach ensures that sector-specific expertise is leveraged, roles are clearly defined, and adaptation actions are effectively mainstreamed into routine planning and service delivery processes. Implementation responsibility is distributed to ensure ownership across departments (Table 21). To ensure oversight and monitoring, as instituted by local government reporting, each lead department reports for its allocated actions and submit them to the Development Planning Committee Unit (DPCU). The DPCU should consolidate these reports for review through the DPCU Cross-Sector Review process including the District Chief Executive. On an annual basis, the DPCU should prepare the CAP annual progress brief, incorporating and updating the districts Annual Action Plans and in line local monitoring systems. The brief should also be shared, as appropriate, with relevant communities, NDPC, EPA Ghana, funding and development partners, including SIGRA, and other applicable local government reporting channels. Findings from these reports should guide adjustments to implementation sequencing, budgets and corrective actions.

Table 21: Institutional roles in implementing CAP

Institution / Unit	Key Responsibilities
District Planning Unit (DPU)	Coordination, integration into MTDP & AAP
Finance Department	Budgeting, financial tracking
Works & Environmental Health/CWSA	Infrastructure-related actions, water, boreholes
Agriculture Department	Climate-smart agriculture actions
Gender Desk	Gender targeting, mainstreaming and inclusion
Forestry Commission	Facilitating trees planting, bushfire control, riparian and degraded land restoration
EPA / SIGRA-Ghana	Technical backstopping and oversight

To ensure accountability, lead implementing departments should be encouraged to report periodically on both physical progress and financial utilisation. Integrating CAP reporting into existing district monitoring and reporting processes can help minimise duplication while ensuring that adaptation investments remain visible within broader development planning and performance management systems.

6.3 Monitoring Framework of MEL

6.3.1 Purpose of Monitoring

Monitoring under the Costed Climate Adaptation Plan (CAP) serves three core purposes: to track implementation progress against planned actions and budgets, to ensure that gender and vulnerability considerations are systematically addressed, and to generate evidence to support decision-making and reporting to SIGRA, the Environmental Protection Agency (EPA), and the District Assembly.

6.3.2 Monitoring Levels

Monitoring should be undertaken at four levels: Activity Monitoring (progress of implementation), Output Monitoring (deliverables achieved), Outcome Monitoring (resilience and adaptation benefits), and Portfolio Monitoring (overall CAP performance and investment effectiveness). At the activity level, monitoring focuses on the execution of planned adaptation interventions, assessing the extent to which activities are implemented in accordance with approved workplans, timelines, and budgets. The output level captures the immediate, tangible results generated from these activities, including the delivery of infrastructure, services, and strengthened institutional or community capacities. At the outcome level, monitoring evaluates the broader effects of these outputs, particularly in terms of enhanced resilience, reduced vulnerability, and improved adaptive capacity of target populations and systems over time.

6.3.3 Core Monitoring Indicators

A simplified indicator set is proposed to ensure feasibility (see Table 22).

Table 22: Indicators for quantifying CAP

Indicator Category	Examples
Implementation	Quantity of planned actions implemented
Financial	Quantity of budget that disbursed and utilized
Gender	Quantity of actions benefiting women and vulnerable groups
Capacity	Number of staff trained in costing and implementation
Service Delivery	Infrastructure or services delivered

6.3.4 Adaptation Outcome Indicators

In addition to tracking implementation progress and outputs, the District Assembly should monitor the longer-term adaptation outcomes generated by the priority interventions. Outcome monitoring will help determine whether implemented actions are achieving their intended resilience benefits and reducing climate-related vulnerabilities across the district. Adaptation outcome indicators should assess changes in key sectors, including:

- Water Security – improved access to reliable water supplies, reduced seasonal water shortages and increased functionality of water infrastructure.
- Agricultural Resilience – increased adoption of climate-smart practices, improved crop productivity, reduced climate-related crop losses and strengthened livelihood security among farming households.

- Disaster Preparedness and Risk Reduction – improved community preparedness, enhanced early warning dissemination, reduced disaster impacts and strengthened emergency response capacity.
- Ecosystem Restoration and Environmental Sustainability – increased vegetation cover, improved land management practices, reduced environmental degradation and enhanced protection of critical ecosystem services.
- Health and Wellbeing – reduced incidence of climate-sensitive diseases, improved access to health services and strengthened community health resilience during extreme weather events.
- Gender Equality and Social Inclusion – improved participation of women, youth, older persons and persons with disabilities in adaptation activities, increased access to adaptation benefits and more equitable resilience outcomes.

Outcome indicators should be assessed periodically to evaluate the effectiveness, sustainability and long-term impact of adaptation investments and to inform future planning and resource allocation decisions.

6.3.5 Data Collection Methods

Monitoring data should be collected using existing district systems, supplemented where necessary (See Annex A and Table 23).

Table 23: Data collection methods

Method	Responsible Unit
Administrative records	DPU / Departments
Field inspections	Works, Agriculture, Environmental Health
Community feedback	Assembly Members, CSOs
Financial reports	Finance Department

6.4 Evaluation Framework

6.4.1 Purpose of Evaluation

The evaluation framework focuses on understanding what worked best, what didn't work best, and why as the value-for-money investments decisions and equity and gender outcomes.

6.4.2 Types of Evaluation

The types of evaluations used should combine quantitative indicators with qualitative insights from communities and implementers based on time frame (Table 24). Quantitative data will track progress against defined targets, outputs, and outcomes. Qualitative inputs will capture lived experiences, local perceptions, and contextual factors influencing implementation. This mixed-methods approach will provide a more comprehensive understanding of performance and impact. It will also support adaptive management by informing timely adjustments to strategies and interventions

Table 24: Various types of phasing evaluation

Evaluation Type	Timing	Purpose
Mid-term review	End of Year 2	Course correction
End-of-plan evaluation	End of Year 3	Effectiveness and lessons

6.4.3 Evaluation Criteria

Evaluations should be guided by the criteria of relevance, effectiveness, efficiency, equity and inclusivity, and sustainability. The relevance will assess how well the interventions respond to identified climate risks and local development priorities. Effectiveness will examine the extent to which planned adaptation outcomes and targets are achieved. Efficiency will consider how resources are utilized to deliver results in a cost-effective manner. Equity and inclusivity will ensure that benefits are fairly distributed, particularly among vulnerable groups and hotspots.

6.4.4 Evaluation Timeline

A mid-term review should be undertaken during Year 2 to assess progress and implementation challenges, while a final evaluation should be conducted during Year 3 to evaluate effectiveness, sustainability and lessons learned.

6.5 Learning and Adaptive Management

The implementation of climate adaptation actions will take place in a dynamic environment characterised by evolving climate risks, changing development priorities and varying resource availability. Consequently, the Costed Adaptation Plan should be implemented using an adaptive management approach that promotes continuous learning and evidence-based decision-making. Findings from routine monitoring activities, periodic reviews, and evaluation exercises should be used to inform adjustments to annual work plans, budgets, implementation schedules, and management approaches, where necessary. Lessons emerging from implementation should be documented and used to strengthen future adaptation planning and investment decisions. Annual learning and reflection sessions should be organised to enable implementing departments, community representatives, development partners and other stakeholders to review progress, identify challenges, share experiences and agree on corrective actions. Particular attention should be given to identifying successful practices, implementation bottlenecks and emerging climate risks that may require modifications to planned interventions. The adaptive management process will ensure that the Costed Adaptation Plan remains responsive to changing circumstances while improving effectiveness, efficiency, stakeholder ownership and long-term resilience outcomes across the district.

6.5.1 Learning Objectives

Learning under the Costed Climate Adaptation Plan (CAP) is intended to enhance the accuracy of future costing through evidence-based refinements, improve implementation efficiency by identifying and addressing operational bottlenecks, strengthen gender-responsive adaptation practices through continuous assessment and integration of inclusive approaches, and generate insights to inform subsequent Medium-Term Development Plan (MTDP) cycles.

6.5.2 Learning Mechanisms

Learning outputs should be shared with SIGRA, the Nanumba South District Assembly, EPA, and other district agencies to support national learning (Table 25).

Table 25: Learning outputs mechanism

Mechanism	Description
Annual reflection sessions	Review progress and challenges
Learning briefs	Short summaries for decision-makers
Peer learning	Exchange with other SIGRA districts
Documentation	Case studies of adaptation actions

6.5.3 Feedback Loops

The findings from monitoring and evaluation will directly form basis to ensure that CAP remains a living document, not a static report most especially:

- Revision of annual work plans;
- Budget reallocations;
- Design of future adaptation actions.

6.6 Gender-Responsive MEL

6.6.1 Gender Integration in MEL

Gender responsiveness within the CAP should be operationalised through the systematic integration of sex-disaggregated indicators across the results framework, enabling the measurement of differential impacts on men and women. The framework should also incorporate mechanisms to track the distribution of adaptation benefits, with particular attention to women and other vulnerable groups, to ensure equitable outcomes. In addition, participatory feedback processes should be institutionalised to capture and integrate the perspectives, experiences, and priorities of women, thereby strengthening inclusivity and informing adaptive decision-making throughout implementation.

6.6.2 Gender-Responsive Monitoring

Monitoring data should be disaggregated by sex, age and disability status. Participation, access to benefits and decision-making influence should be tracked to ensure equitable adaptation outcomes.

6.6.3 Accountability for Inclusion

The District Gender Desk, in collaboration with the District Planning Unit (DPU), should be responsible for overseeing the monitoring of gender-related outcomes within the CAP, systematically identifying and documenting inclusion gaps, and providing evidence-based recommendations to inform corrective actions and improve gender responsiveness in implementation.

6.7 Reporting and Alignment with SIGRA and MTDP Systems

6.7.1 Reporting Schedule

A structured reporting schedule should be established to ensure timely, consistent, and transparent tracking of CAP implementation progress, financial performance, and results (Table 26).

Table 26: Reporting schedules

Report	Frequency	Audience
Progress update	Quarterly	District Management
CAP progress brief	Annually	SIGRA / EPA
MTDP integration report	Annually	Assembly
Scholarly brief	Annual	SIGRA, EPA-Ghana, and relevant national institutions

6.7.2 Alignment with Existing Systems

The MEL framework aligns with MTDP monitoring structures, SIGRA reporting requirements, and EPA climate adaptation oversight, and helps to reduce reporting burden while strengthening coherence.

6.8 Sustainability of the MEL Framework

The sustainability of the Monitoring, Evaluation, and Learning (MEL) framework beyond SIGRA support is anchored in its institutional integration, operational simplicity, and capacity-strengthening approach. Core MEL functions should be embedded within existing district structures and mandates, ensuring continuity without reliance on parallel systems or external facilitation. The framework adopts practical, user-friendly, and replicable tools that can be consistently applied across departments, thereby enhancing usability and reducing implementation complexity. In addition, capacity development efforts are deliberately oriented toward building hands-on technical competencies among district staff, enabling them to independently manage data collection, analysis, reporting, and adaptive decision-making processes.

Furthermore, learning processes are institutionalised within routine planning, budgeting, and review cycles, ensuring that evidence generated through implementation is systematically used to inform policy adjustments, improve programme effectiveness, and guide future development planning.

6.9 Institutional Capacity Development

Capacity strengthening should focus on climate-responsive planning, adaptation costing, procurement, contract management, monitoring and evaluation, safeguards implementation, documentation and knowledge management.

Implementation Risks and Mitigation Measures: include funding delays, staff turnover, coordination challenges, procurement bottlenecks and weak maintenance arrangements, with corresponding mitigation measures.

Table 27: Implementation risk matrix

Risk	Likelihood	Impact	Mitigation
Funding delays	High	High	Diversify funding sources
Staff transfers	Medium	Medium	Documentation and coaching
Weak coordination	Medium	High	Quarterly coordination meetings
Procurement delays	Medium	High	Early procurement planning
Poor O&M	Medium	High	O&M plans and budget allocation

7. INSTITUTIONAL COORDINATION AND CAPACITYBUILDING

7.1 Introduction

Effective climate adaptation extends beyond well-designed technical solutions; it depends on strong institutional coordination, clearly defined roles and responsibilities, and sustained investment in capacity development. This chapter outlines how the Costed Adaptation Plan (CAP) will be operationalised by detailing the institutional arrangements and practical capacity-building measures required to support district staff and stakeholders in planning, costing, implementation, monitoring, and learning.

It is recommended that, rather than creating new or parallel systems, the approach strengthens existing district governance structures to enhance their effectiveness. This ensures that implementation remains locally driven, well-coordinated, and sustainable over time. It also aligns with the broader objectives of the SIGRA programme, which emphasise climate adaptation that is technically robust, gender-responsive, inclusive, and grounded in strong district-level leadership and ownership.

7.2 Institutional Coordination Framework

7.2.1 Overall Coordination Mechanism

It is recommended that the District Planning Unit (DPU) functions as the lead coordinating institution for the implementation of the Costed Adaptation Plan (CAP), ensuring effective collaboration with key sector departments, including the Finance Department and the Gender Desk, as well as other relevant stakeholders. Coordination should be guided by an integrated institutional framework anchored on three core principles: first, policy and planning integration, which ensures full alignment of CAP activities with the Medium-Term Development Plans (MTDPs), annual action plans, and approved budgetary frameworks; second, interdepartmental collaboration, which promotes joint planning, harmonised implementation, and coordinated resource utilisation across sectors; and third, accountability and results-based management, which establishes clear assignment of roles, responsibilities, and reporting lines to ensure transparency, performance tracking, and effective delivery of adaptation outcomes.

7.2.2 Roles and Responsibilities

This proposed role clarity responds directly to lessons from Workshop 1, where participants highlighted the need for clear implementation leadership to avoid duplication and delays (Table 28).

Table 28: Roles of the various agencies and departments

Institution / Unit	Core Responsibilities under the CAP
District Planning Unit (DPU)	Overall coordination; MTDP integration; reporting to SIGRA/EPA
Finance Department	Budgeting, financial tracking, value-for-money oversight
Works Department	Implementation of infrastructure-related actions
Environmental Health & Sanitation	WASH, sanitation, and public health-related actions
Agriculture Department	Climate-smart agriculture and livelihood actions
Gender Desk	Gender targeting safeguards and monitoring
NADMO	Early warning, preparedness, and response
Assembly Members & CSOs	Community engagement and feedback

7.3 Safeguards for Gender, and Social Inclusion in Implementation

It is recommended that safety net, gender, and social inclusion considerations should be treated as implementation requirements. For NSDA, this means each adaptation should embed conditionalities that ensure that their implementation benefits all equitable, reaching women, youth, persons with disabilities and all climate-exposed communities. Strong safeguards also lead to reduced delivery risks, complaints and conflicts, asset misuse, community buy-in of adaptation options and improve the durability and legitimacy of completed investments. Safeguards, gender and social inclusion in implementation should focus on:

Budget safeguards in planning: The Assembly is advised to apply gender-responsive planning and budgeting as a safeguard to ensure that adaptation actions are designed and funded in ways that address different vulnerabilities and constraints across women, men, youth, and other vulnerable groups. NSDA is recommended to integrate this approach into routine planning by requiring sector actions to clearly state intended beneficiaries, anticipate exclusion risks, and include the necessary measures and budgets to enable equitable participation and benefits. This would help ensure inclusion is implemented as part of core delivery and verified through routine reporting, rather than treated as an optional or separate activity.

Institutionalise inclusive participation standards: Community engagement is recommended be planned and budgeted, with minimum requirements for representation of women, youth, PWDs and vulnerable livelihood groups. Where social norms limit participation, it is recommended that NSDA convene separate focus discussions (e.g., women-only sessions) and integrate feedback into design choices such as siting, operating hours, and affordability rules.

Equitable targeting and transparency: For any adaptation support with limited resources such as training, equipment, subsidised inputs, cash-for-work, or facility access, The Assembly is advised to apply clear eligibility criteria that communities understand, and use community validation to reduce bias. Beneficiary lists and selection processes should be made transparent at community level, and selection should prioritise exposure and vulnerability rather than influence.

Accessible service and infrastructure design: It is recommended that that adaptation infrastructure and services should be usable by all groups. For instance, water and irrigation infrastructure, sanitation facilities, health centres, markets or disaster risk reduction investments. This requires incorporating safety, and ease-of-use into design and operations so women, elderly persons, and PWDs are not indirectly excluded. Implementation should include checks that confirm access pathways are safe, facilities are usable without undue burden, to vulnerable users. Accessibility should be treated as part of technical completion, not a secondary consideration.

Grievance redress and feedback mechanisms: The Assembly is advised to establish simple, accessible channels for communities to raise concerns about unfair selection, poor workmanship, unsafe conditions, discrimination, or misconduct during implementation. Confidential reporting options should exist for sensitive issues, and repeated complaints should trigger corrective actions such as re-targeting, contractor enforcement, or changes to operating rules. A functioning grievance mechanism improves accountability and provides early warning of implementation failures.

These measures should be implemented as standard practice across sectors to enable adaptation delivery in NSDA to consistently reduces risk without transferring harm, and to strengthen equitable resilience for those most exposed.

7.4 Coordination Across Levels and Partners

7.4.1 Links with National and Regional Institutions

It is recommended that implementation of the CAP will be supported through coordination with Environmental Protection Authority (EPA), Regional Coordinating Council (RCC), and relevant sector MDAs. These linkages ensure policy alignment, technical backstopping, and access to financing opportunities.

7.4.2 Partner Engagement

Development partners, NGOs, and private-sector actors are recommended to be engaged to enhance technical relevance to specific climate actions, capacity to co-finance, and alignment with district priorities. Partner roles are advised to be defined during annual planning cycles to maintain district ownership.

7.3 Capacity Gaps Identified During the Workshops

Gaps identified during stakeholder engagement highlight key constraints that may affect the effective implementation of the CAP. These include limited technical capacity at the district level, inadequate and unpredictable financing, and weak coordination among relevant institutions. Stakeholders also noted gaps in data availability, monitoring systems, and access to climate information for informed decision-making. In addition, issues of inclusivity emerged, particularly the limited participation of vulnerable and marginalized groups in planning and implementation processes. Addressing these gaps will be critical to strengthening institutional readiness and ensuring the success and sustainability of adaptation interventions. The workshops revealed strong contextual knowledge but also highlighted key capacity gaps (Table 29).

Table 29: Gaps identified during stakeholder engagement

Capacity Area	Identified Gaps
Costing	Limited experience with detailed cost breakdowns
Procurement	Weak linkage between costing and procurement processes
MEL	Inadequate use of indicators for learning
Gender integration	Need for practical tools beyond policy statements
Documentation	Inconsistent recording of implementation lessons

7.5 Capacity Development Strategy

7.5.1 Capacity Development Objectives

The recommended capacity development approach is designed to enhance the technical and institutional capabilities of district staff to effectively support climate adaptation planning and implementation. It focuses on strengthening competencies in the preparation of realistic and evidence-based cost estimates for adaptation interventions, thereby improving the credibility and financial feasibility of planning processes. It also seeks to enhance skills in the implementation, coordination, and supervisory oversight of adaptation actions to ensure efficient and timely delivery of planned activities. In addition, the approach builds capacity for robust monitoring, reporting, and learning systems that support performance tracking and adaptive management. Furthermore, it institutionalises gender-responsive adaptation practices by integrating gender considerations into planning, budgeting, implementation, and evaluation processes to ensure inclusive and equitable outcomes.

7.5.2 Priority Capacity Development Areas

Priority capacity development areas should focus on strengthening the technical, institutional, and operational capabilities required for effective CAP implementation. Enhancing coordination, data management, and access to climate information is also essential for informed decision-making. In addition, targeted efforts to build skills in gender-responsive and inclusive planning will help ensure equitable adaptation outcomes (Table 30).

Table 30: Development capacity areas

Area	Focus
Costing & appraisal	Unit costing, O&M estimation, contingencies
Implementation	Planning procurement, contractor supervision
MEL	Indicator tracking, learning documentation
Gender & inclusivity	Practical integration into actions
Coordination	Cross-sector collaboration

7.5.3 Capacity Development Modalities

Capacity development is recommended to be delivered through on-the-job technical coaching, practical workshops directly linked to ongoing implementation activities, and the provision of simplified manuals and standardized templates. In addition, peer learning exchanges will be facilitated across SIGRA districts to promote knowledge sharing and best practices. This blended approach ensures that learning is practical, contextual, and immediately applicable to real tasks. It also strengthens institutional memory and supports sustained capacity beyond formal training sessions.

7.6 Institutional Learning and Knowledge Management

Institutional learning and knowledge management within the CAP are recommended to be operationalised through structured and iterative learning processes embedded in the district planning system. Annual CAP reflection sessions should be convened to critically review implementation performance, identify bottlenecks, and consolidate lessons learned from adaptation interventions. In addition, concise learning briefs should be systematically developed to capture key insights, emerging evidence, and operational experiences for dissemination among relevant stakeholders. Good practices as well as implementation challenges are recommended to be systematically documented to build an institutional knowledge base that supports continuous improvement. The resulting learning outputs are also recommended to be integrated into future Medium-Term Development Plan (MTDP) cycles and used to inform the design, prioritisation, and financing of subsequent adaptation investments.

7.7 Risk Management and Institutional Sustainability

Institutional risks to the implementation of the CAP is recommended to include staff attrition, delays in funding flows, and coordination inefficiencies across implementing units. These risks are to be mitigated through the development and maintenance of comprehensive process documentation to ensure continuity of implementation regardless of personnel changes, the promotion of cross-unit capacity transfer and knowledge sharing to reduce dependency on individual staff, and the systematic integration of CAP tools, procedures, and reporting instruments into existing district planning and administrative systems to strengthen institutional resilience and ensure long-term sustainability.

7.8 Conclusion

Strong institutional coordination and sustained capacity development are critical for translating the Nanumba South District's Costed Adaptation Plan into tangible and measurable resilience outcomes at both community and sector levels. To achieve this, the District Assembly will build on existing governance structures by strengthening interdepartmental coordination, clearly defining roles and responsibilities, and reinforcing accountability across implementing units.

Priority should be given to developing practical technical and managerial capacities to support effective planning, costing, implementation, monitoring, evaluation, and learning of climate adaptation interventions under the SIGRA programme and related district frameworks. These measures are intended to position the Assembly to deliver adaptation investments effectively and sustain them over time, while remaining responsive to evolving climate risks and development priorities.

The implementation of the proposed actions within three administrative years is estimated at GHS 6,974,732.00, covering programme delivery, coordination, and institutional strengthening required to achieve the intended resilience outcomes.

7.9 The Way Forward

To ensure effective implementation of the Costed District Adaptation Action Plan in the district, moving forward the following actions are recommended in strategic areas:

- **Strengthen Institutional Frameworks:**
Clearly defined roles and responsibilities among relevant institutions to enhance coordination, accountability, and efficiency, while minimising duplication of efforts across ministries, departments, and units addressing climate risks.
- **Enhance Financial and Logistical Support:**
Mobilise adequate financial resources through strengthened partnerships, including engagement with the private sector supported by incentives such as tax reliefs and recognition schemes. Ensure that critical logistical needs equipment, transport, and infrastructure are adequately provided.
- **Capacity Building:**
Invest in training and resource provision for key stakeholders, particularly smallholder farmers, to support the adoption and sustained use of climate-resilient practices. Promote livelihood diversification and targeted capacity development for women and other vulnerable groups to enhance their adaptive capacity.
- **Gender-responsive and social inclusion Mainstreaming:**
Integrate gender considerations across all stages of implementation by actively involving women and marginalised groups in decision-making and improving their access to resources. Strengthen gender data systems through the collection of sex-disaggregated data and the generation of relevant statistics to inform inclusive policy and planning.

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ANNEX A: Project Profiles and Budgets of the Prioritised Adaptation Options

1. Biodiversity Sector

Objective: Protect and restore forest cover, land and habitats | Lead institutions: Forestry Commission, EPA, District Assembly | Sector budget: GH¢ 838,058

PROJECT DESCRIPTION — Promote community-based forest management and sensitization campaigns

- Intervention & Objectives: Delivers 8 community sensitisation campaigns on forest management together with reforestation of 500 seedlings, supported by enforcement of controls on unregulated tree cutting.
- Climate Risks Addressed: Enforcement of laws on unregulated cutting of trees.
- Beneficiaries: Residents of the bushfire- and deforestation-affected hotspot communities — Nakpayili, Gaunguni and Nabayili (Dachamba Zone) and Bandiyili, Tampoaya and Tanbahimi (Bondalikadibu Zone) — with traditional authorities and youth engaged in enforcing controls on unregulated tree cutting.
- Communities Targeted: Bushfire and deforestation hotspots: the Dachamba Zone communities of Nakpayili, Gaunguni and Nabayili, and the Bondalikadibu Zone communities of Bandiyili, Tampoaya and Tanbahimi.
- MCA Priority Ranking: 1st, MCA score 57.
- Gender Responsiveness & Equity: Youth are engaged alongside traditional authorities in enforcing controls on unregulated tree cutting.
- Timeframe & Lead Institution: Short-Term — District Assembly / NGO.

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Promote community-based forest management and sensitization campaigns		GOODS AND SERVICES					
	Organize Community Sensitization	Travel means (Local Travel Cost)	8	6	108	5,184.00	
		Printed Material and Stationery	8	1	1500	12,000.00	
		Fuel and Lubricant	120	6	15	10,800.00	
		training household for livelihoods	500	2	180	180,000.00	
		Media broadcast	8	4	400	12,800.00	
		SUBTOTAL				220,784.00	
		CAPEX					
		seedlings	500	1	35	17,500.00	
		labor	24	1	70	1,680.00	
		SUBTOTAL				19,180.00	
		COMPENSATION					
	Monitoring and Evaluation	Lunch & Snack	6	4	35	840.00	
		Fuel and Lubricant	100	4	15	6,000.00	
		SUBTOTAL				6,840.00	
		TOTAL				246,804.00	

PROJECT DESCRIPTION — Implement reforestation programs/training using climate-resilient tree species

- Intervention & Objectives: Provides training to farmers and supplies 15,000 tree seedlings to communities to improve forest cover and biodiversity through local restoration efforts.
- Climate Risks Addressed: Ensure adaptive needs in response to climate change.
- Beneficiaries: Households and communities in the deforestation- and drought-affected Dachamba Zone (Nakpayili, Gaunguni, Nabayili) and Bondalikadibu Zone (Bandyili, Tampoaya, Tanbahimi); women and youth engaged in nursery and planting work.
- Communities Targeted: Deforestation- and drought-affected communities, prioritising the Dachamba Zone (Nakpayili, Gaunguni, Nabayili) and Bondalikadibu Zone (Bandyili, Tampoaya, Tanbahimi).
- MCA Priority Ranking: 2nd, MCA score 53
- Gender Responsiveness & Equity: Women and youth are engaged in nursery and planting work.
- Timeframe & Lead Institution: Short-Term — Forestry Commission.

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
implement reforestation programs/training using climate-resilient tree species							
		GOODS AND SERVICES					
	Provide training to farmers	Agric. Expert Or forester	15	2	1500	45,000.00	
	Supply tree seedlings to communities	Tree nursery establishment or purc	1500	1	40	60,000.00	
		Motivation for community workforc	120	2	500	120,000.00	
		Fuel for seedlinds transportation	150	1	15	2,250.00	
		SUBTOTAL				227,250.00	
		CAPEX					
		COMPENSATION					
	Monitoring and Evaluation	Lunch & Snack for field officers	14	2	78	2,184.00	
		Fuel & lubricant	146	2	15	4,380.00	
		SUBTOTAL				6,564.00	
		TOTAL				233,814.00	

PROJECT DESCRIPTION — Adopt sustainable land management practices to combat soil degradation/wildfire

- Intervention & Objectives: Constructs 8 dugouts and applies sustainable land management practices to increase agricultural productivity and reduce land degradation.
- Climate Risks Addressed: Soil degradation and wildfire.
- Beneficiaries: Smallholder farmers on erosion-affected land in the Sunkuli Zone communities of Lungni, Kotoya, Kukuo and Gbungbaliga.
- Communities Targeted: Soil-erosion and degradation hotspots, especially the Sunkuli Zone communities of Lungni, Kotoya, Kukuo and Gbungbaliga affected by soil erosion and River Oti overflow.
- MCA Priority Ranking: 3rd, MCA score 48
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Medium–Long Term — District Assembly

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Adopt sustainable land management practices to combat soil degradation/wildfire		GOODS AND SERVICES					
	1. Identify communities interested	Travel means	4	4	100	1,600.00	
	2. Identify & access to the degraded portion of the communities	Motivation for experts	4	8	500	16,000.00	
		Fuel	84	2	15	2,520.00	
		Working tools	54	1	250	13,500.00	
	3. Identifying the strength of the	SUBTOTAL				33,620.00	
		CAPEX					
		construction of dug outs	8	1	16000	128,000.00	
		SUBTOTAL					
		COMPENSATION					
	Monitoring and Evaluation	Lunch & Snack	33	4	100	13,200.00	
		Fuel and Lubricant	122	8	15	14,640.00	
		SUBTOTAL				27,840.00	
		TOTAL				189,460.00	

PROJECT DESCRIPTION — Establish wildlife corridors to connect fragmented habitats

- Intervention & Objectives: Creates awareness, recruits fire guards and establishes fire belts to decrease human–wildlife conflict in corridor areas.
- Climate Risks Addressed: Habitat fragmentation and human–wildlife conflict.
- Beneficiaries: Smallholder farmers in communities adjoining fragmented habitats across the three hotspot zones (sites to be confirmed by the District Assembly and Forestry Commission).
- Communities Targeted: Communities adjoining fragmented habitats across the three hotspot zones; site selection to be confirmed by the District Assembly and Forestry Commission.
- MCA Priority Ranking: 4th, MCA score 42
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Medium–Long Term — Forestry Commission

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Establish wildlife corridors to connect fragmented habitats		GOODS AND SERVICES					
		Awareness creation and sensitization	150	1	80	12,000.00	
		recruitment of fire guards	100	1	500	50,000.00	
		Training materials	100	1	25	2,500.00	
		Creation of fire belts	100	1	750	75,000.00	
		Training of volunteers	100	1	55	5,500.00	
		SUBTOTAL				145,000.00	
		CAPEX					
		COMPENSATION					
	Monitoring and Evaluation	Lunch & Snack for field officers	18	2	100	3,600.00	
		Allowance	5	2	1500	15,000.00	
		Fuel & lubricant	146	2	15	4,380.00	
		SUBTOTAL				22,980.00	
		TOTAL				167,980.00	

2. Disaster Risk Reduction Sector

Objective: Reduce exposure and strengthen community preparedness | Lead institutions: NADMO, Physical Planning Unit, District Assembly | Sector budget: GH¢ 1,891,456

PROJECT DESCRIPTION — Implementation of early warning systems

- Intervention & Objectives: Organises climate warning systems through media broadcasts, rainfall calendar leaflets and printed material to enable quick response to climate emergency alerts.
- Climate Risks Addressed: Flood and drought onset; uncertainty over onset and cessation of rains.
- Beneficiaries: Smallholder, women and youth farmers in flood- and drought-exposed hotspot communities, prioritising the Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga) along the River Oti.
- Communities Targeted: Flood- and drought-exposed hotspot communities district-wide, prioritising the Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga) along the River Oti and the Bondalikadibu and Dachamba Zones.
- MCA Priority Ranking: 1st, MCA score 68
- Gender Responsiveness & Equity: Women and youth farmers are named among the primary beneficiary groups.
- Timeframe & Lead Institution: Short-Term — Ghana Meteorological Agency (GMet).

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUEN CY	RATE (c)	AMOUNT (GH¢)	REMARKS
	Implementation of early warning systems		GOODS AND SERVICES					
		Organize Community Sensitization	Local Travel Cost	250	1	252	63,000.00	
			Printed Material and Stationery	250	1	11,600	11,600.00	
			Travel cost	150	1	15	2,250.00	
			training of households	150	1	285	42,750.00	
			Media broadcast/information	10	2	2500	50,000.00	
			designing rainfall calendar leaflets	250	1	250	62,500.00	
			SUBTOTAL				232,100.00	
			CAPEX					
			SUBTOTAL					
			COMPENSATION					
		Monitoring and Evaluation	Allowances (Lunch & Snack)	12	1	200	2,400.00	
			Fuel and Lubricant	120	1	15	1,800.00	
			SUBTOTAL				4,200.00	
			TOTAL				236,300.00	

PROJECT DESCRIPTION — Community-based flood risk awareness campaigns

- Intervention & Objectives: Delivers community sensitisation, evacuation and mitigation covering 12 weather warning signs, 36 safe havens and 60 temporary shelters, with resettlement and livelihood support for 180 households.
- Climate Risks Addressed: River Oti overflow and flooding.
- Beneficiaries: Households and communities in the flood-prone Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga) affected by River Oti overflow.
- Communities Targeted: Flood-prone communities of the Sunkuli Zone (Lungni, Kotoya, Kukuo and Gbungbaliga) affected by River Oti overflow, and other flood-exposed hotspot communities.
- MCA Priority Ranking: 2nd, MCA score 64
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Short-Term — Department of Agriculture / District Assembly

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GHc)	REMARKS
	Community-based flood risk awareness campaigns		GOODS AND SERVICES					
		community sensitization, evacuation and mitigation	weather warning signs	12	1	200	2,400.00	
			safe havens	36	1	100	3,600.00	
			temporal shelter	60	1	60	3,600.00	
			medication /utilities	120	1	50	6,000.00	
			SUBTOTAL				15,600.00	
			CAPEX					
			SUBTOTAL					
			COMPENSATION					
		Re-settlement and restoration	site selection(surveying)	12	1	1000	12,000.00	
			provision of basic/shelter	180	1	5000	900,000.00	
			livelihood support programmes	180	1	500	90,000.00	
			SUBTOTAL				1,002,000.00	
			TOTAL				1,017,600.00	

PROJECT DESCRIPTION — Planting shade trees in communities and farms

- Intervention & Objectives: Combines community sensitisation, local species selection, 500 seedlings, organic manure, planting and extension services to increase shade cover and improve thermal comfort in communities.
- Climate Risks Addressed: Extreme heat and bushfire.
- Beneficiaries: Men, market women and PWDs in the heat- and bushfire-affected communities of the Dachamba Zone (Nakpayili, Gaunguni, Nabayili) and Bondalikadibu Zone (Bandiyili, Tampoaya, Tanbahimi).
- Communities Targeted: Heat- and bushfire-affected communities across the three zones, with planting in and around Nakpayili, Gaunguni, Nabayili (Dachamba) and Bandiyili, Tampoaya, Tanbahimi (Bondalikadibu).
- MCA Priority Ranking: 3rd, MCA score 52
- Gender Responsiveness & Equity: Market women and persons with disabilities are named among the primary beneficiary groups.
- Timeframe & Lead Institution: Medium–Long Term — District Assembly

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GH¢)	REMARKS
Planting shade trees in communities and farms		GOODS AND SERVICES					
	Encouraging institutions to plant trees to serve as windbreaks and to improve soil fertility	sensitize communities	250	1	250	62,500.00	
		choose local species	500	1	150	75,000.00	
		animated sensitization materials	250	1	150	37,500.00	
		planting of the plant species	100	2	255	51,000.00	
		organic manure	250	2	200	100,000.00	
		Providing extension services	250	2	150	75,000.00	
		SUBTOTAL				401,000.00	
		CAPEX					
		SUBTOTAL					
		COMPENSATION					
		Volunteers	20	4	600	48,000.00	
		snack/lunch	4	2	102	816.00	
		Transport cost (litres)	128	2	15	3,840.00	
		Allowance for officers	4	2	2000	16,000.00	
		SUBTOTAL				68,656.00	
		TOTAL				469,656.00	

PROJECT DESCRIPTION — Improved community preparedness and emergency response plans

- Intervention & Objectives: Develops disaster preparedness action plans, undertakes community engagement and provides relief items, with relocation, structures for displaced persons and livelihood support for victims.
- Climate Risks Addressed: Flooding and displacement.
- Beneficiaries: Residents of the flood-prone Sunkuli Zone villages (Lungni, Kotoya, Kukuo, Gbungbaliga) along the River Oti, and other disaster-exposed hotspot communities.
- Communities Targeted: Disaster-exposed hotspot communities, prioritising flood-prone Sunkuli Zone communities (Lungni, Kotoya, Kukuo, Gbungbaliga) along the River Oti.
- MCA Priority Ranking: 4th, MCA score 45
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Short–Medium Term — Department of Agriculture

		ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GHc)	REMARKS
Adaptation Action	Action Description/Activity	GOODS AND SERVICES					
Improved community preparedness and emergency response plans		disaster preparedness action plan	1	1	1500	1,500.00	
		community engagement	132	1	200	26,400.00	
		relief items				50,000.00	
		SUBTOTAL				77,900.00	
		CAPEX					
		SUBTOTAL					
		COMPENSATION					
		Relocation	10	1	1500	15,000.00	
		Structures for displace persons	10	1	2500	25,000.00	
		livelihood for victims	100	1	500	50,000.00	
		SUBTOTAL				90,000.00	
		TOTAL				167,900.00	

3. Agriculture Sector

Objective: Boost climate resilience of smallholder production systems | Lead institutions:
Department of Agriculture | Sector budget: GH¢ 1,052,590

PROJECT DESCRIPTION — Encourage the use of drought-tolerant crop varieties

- Intervention & Objectives: Establishes crop demonstrations on the use of drought-tolerant maize varieties in 5 communities, for 15 men and women farmers in each community.
- Climate Risks Addressed: Drought and delayed rains reducing yields.
- Beneficiaries: Smallholder, women and youth farmers in the drought-affected hotspot communities across the Bondalikadibu, Dachamba and Sunkuli Zones.
- Communities Targeted: Drought-affected farming communities across all three hotspot zones (Bandiyili, Tampoaya, Tanbahimi; Nakpayili, Gaunguni, Nabayili; Lungni, Kotoya, Kukuo, Gbungbaliga).
- MCA Priority Ranking: 1st, MCA score 95
- Gender Responsiveness & Equity: Each demonstration targets 15 men and women farmers per community; women and youth farmers are named among the primary beneficiaries.
- Timeframe & Lead Institution: Short-Term — Department of Agriculture

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
	encourage the use of drought-tolerant crop varieties							
			GOODS AND SERVICES					
		Establish crop demonstration on the use of drought tolerant maize varieties in 5 communities for 15 men and women farmers in each community	Seed	9kg	5	360	1,800.00	multiply by 5 communities
			Ploughing	1	5	300	1,500.00	
			Harrowing	1	5	200	1,000.00	
			Pre emergence herbicide	1	5	70	350.00	
			Post emergence herbicides	1	5	70	350.00	
			NPK	2	5	250	2,500.00	
			UREA	1	5	150	750.00	
			Printed Material and Stationery	1	10	5	50.00	
			Fuel and Lubricant (supervision & transport)	14	5	15	1,050.00	
			Refreshment	30	5	35	5,250.00	
			Lunch for officers	8	15	50	6,000.00	
			SUBTOTAL				20,600.00	103000
			CAPEX					
			SUBTOTAL				-	
			COMPENSATION					
		Monitoring and Evaluation	Transportation	1	1	1,550.00	1,550.00	
			Supervision (lunch)	5	15	30	2,250.00	
			SUBTOTAL				3,800.00	
			TOTAL				106,800.00	

PROJECT DESCRIPTION — Providing farmers with timely weather forecast and climate-related information and calendars

- Intervention & Objectives: Organises community sensitisation for 50 men and women farmers in each of 10 communities on weather forecasts and planting calendars.
- Climate Risks Addressed: Erratic rainfall and uncertain planting windows.
- Beneficiaries: Smallholder farmers, women's groups and youth farmers in the drought-exposed hotspot communities across the three zones.
- Communities Targeted: Farming households in the drought-exposed hotspot communities across the Bondalikadibu, Dachamba and Sunkuli Zones.
- MCA Priority Ranking: 2nd, MCA score 93.
- Gender Responsiveness & Equity: Sensitisation targets 50 men and women farmers per community; women's groups and youth farmers are named beneficiaries.
- Timeframe & Lead Institution: Short-Term — Department of Agriculture / Business Advisory Centre.

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (C)	AMOUNT (GHC)	REMARKS
	Providing farmers with timely weather forecast and climate-related information and calendars							
			GOODS AND SERVICES					
		Organize community sensitization for 50 men and women farmer each in 10 communities on wheather forecast and planting calendars	Lunch for participants	50	2	50	5,000.00	
			Lunch for officers	3	2	50	300.00	
			Printed Material and Stationery	60	2	10	1,200.00	
			Fuel and Lubricant	14	2	15	420.00	
			SUBTOTAL				6,920.00	69200
			CAPEX					
			SUBTOTAL					
			COMPENSATION					
		Monitoring and Evaluation	Transportation	1	1	550.00	550.00	
			Supervision (lunch)	2	50	30	3,000.00	
			SUBTOTAL				3,550.00	
			SUBTOTAL					
			TOTAL				72,750.00	

PROJECT DESCRIPTION — Train farmers in CSA practices

- Intervention & Objectives: Trains 400 women smallholder farmers in 8 communities on climate-smart agriculture practices, delivered through climate-smart villages.
- Climate Risks Addressed: Declining yields under drought and flood stress.
- Beneficiaries: Smallholder farmers, women, farmer groups and youth in the three hotspot zones, reached through climate-smart villages in the most drought- and flood-affected communities.
- Communities Targeted: Smallholder farmers in the three hotspot zones, delivered through climate-smart villages sited in the most drought- and flood-affected communities.
- MCA Priority Ranking: 3rd, MCA score 84
- Gender Responsiveness & Equity: The training cohort of 400 smallholder farmers is composed entirely of women; youth and farmer groups are additional named beneficiaries.
- Timeframe & Lead Institution: Short–Medium Term — Department of Agriculture / GIDA

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Train farmers in CSA practices							
		GOODS AND SERVICES					
	Train 400 women smallholder farmers in 8 communities on CSA practices	Facilitation Fees	1	8	500	4,000.00	
		Printed Material and Stationery	1	1	2400	2,400.00	
		Fuel and Lubricant	24	8	15	2,880.00	
		Refreshment	408	1	35	14,280.00	
		SUBTOTAL				23,560.00	188480
		CAPEX					
		SUBTOTAL					
		COMPENSATION					
	Monitoring and Evaluation	Fuel and Lubricants	120	8	15	14,400.00	
		Lunch and Snacks	12	4	40	1,920.00	
		SUBTOTAL				16,320.00	130560
		SUBTOTAL					
		TOTAL				319,040.00	

PROJECT DESCRIPTION — Promote small-scale irrigation facilities

- Intervention & Objectives: Constructs 2 solar-powered irrigation facilities to support year-round production in water-scarce farming communities.
- Climate Risks Addressed: Seasonal drying of community dams and water scarcity.
- Beneficiaries: Smallholder farmers in water-scarce communities dependent on the Wulensi and Nakpayili dams, across the Dachamba and Sunkuli Zones.
- Communities Targeted: Water-scarce farming communities dependent on seasonal dams — notably communities served by the Wulensi and Nakpayili dams — across the Dachamba and Sunkuli Zones.
- MCA Priority Ranking: 4th, MCA score 78
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Medium–Long Term — Department of Agriculture

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GHc)	REMARKS
	Promote small-scale irrigation facilities							
			GOODS AND SERVICES					
		Promote small scale irrigation	Fuel and Lubricants (ltrs)	220	1	15	3,300.00	
			Lunch and Snacks	12	1	100	1,200.00	
			Printed materials			500	500.00	
			Radio campaigns	1	1	500	500.00	
			SUBTOTAL				5,500.00	
			CAPEX					
		Solar-powered irrigation pumps in 2 communities identified	Excavating work	1	2	174,256	348,512.00	
			Solar pump (1.5HP)	1	2	15500	31,000.00	
			10CM Pump cable	130	2	75	19,500.00	
			100M Sensor cable	130	2	38	9,880.00	
			100M HDPE Pipe	1	2	1800	3,600.00	
			Well-Head	1	2	500	1,000.00	
			30M Power cable	1	2	600	1,200.00	
			Safety Rope	1	2	200	400.00	
			2.25 KW PV Models	80	2	320	51,200.00	
			Model structure	1	2	7000	14,000.00	
			Cable Ties	1	2	450	900.00	
			1/2" PIPES(Pcs)	5	2	60	600.00	
			1" PIPES(Pcs)	5	2	85	850.00	
			2 " PVC PIPES(Pcs)	2	2	140	560.00	
			¼ "TEES(Pcs)	15	2	6	180.00	
			¼ "BENDS(pcs)	5	2	6	60.00	
			1" PVC UNION(Pcs)	4	2	45	360.00	
			HOLES(yds)	5	2	65	650.00	
			1BOX(Clip)	1	2	45	90.00	
			REDUCS 2"2(Pcs)	2	2	6	24.00	
			REDUCS 1"2(Pcs)	2	2	6	24.00	
			15m water hole inlet (Set)	1	2	500	1,000.00	
			20m water holeoutlet(Set)	1	2	700	1,400.00	
			3" WATER PUMP (7.5HP) (No)	4	2	6,500.00	52,000.00	
			1" AIR VALVES(Pcs)	8	2	50	800.00	
			S100(Pcs)	3	2	80	480.00	
			¾ / ½ REDUCE(Pcs)	45	2	7	630.00	
			SUBTOTAL				540,900.00	
			COMPENSATION					
		Monitoring and Evaluation	Fuel and Lubricants	120	4	15	7,200.00	
			Lunch/Snacks	99	4	15	5,940.00	
			SUBTOTAL				13,140.00	
			TOTAL				554,040.00	

4. Water and Sanitation Sector

Objective: Secure reliable water access and safe sanitation | **Lead institutions:** Environmental Health Unit, Works Department | **Sector budget:** GH¢ 1,062,730

PROJECT DESCRIPTION — Construct and maintain boreholes

- **Intervention & Objectives:** Undertakes hydrogeological assessments; constructs and rehabilitates 7 boreholes in underserved communities; installs hand pumps and associated water access facilities; and establishes community management structures (WSMTs) to operate them.
- **Climate Risks Addressed:** Seasonal drying of community dams and household water insecurity.
- **Beneficiaries:** Women, girls, households, schools, health facilities and livestock keepers in water-scarce hotspot communities where dams (e.g. Wulensi, Nakpayili) dry up seasonally, across all three zones.
- **Communities Targeted:** Water-scarce hotspot communities where community dams (e.g. Wulensi and Nakpayili) dry up seasonally, across the Bondalikadibu, Dachamba and Sunkuli Zones.
- **MCA Priority Ranking:** 1st, MCA score 92
- **Gender Responsiveness & Equity:** Women and girls are named as primary beneficiaries; a Water and Sanitation Management Team is trained in each community to manage the facilities.
- **Timeframe & Lead Institution:** Medium Term — District Assembly / CWSA

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Construct and maintain boreholes		GOODS AND SERVICES					
	Organize Community Sensitization and training of WSTMT team to manage the facilities	Local Travel Cost	6	3	100	1,800.00	
		Printed Material and Stationery	6	1	120	720.00	
		Fuel and Lubricant	110	3	15	4,950.00	
		WSTMT Training (Refreshment, Training Materials, Training Venue Logistics)	35	1	2000	70,000.00	
		WSTMT Facilitators allowances	3	1	2000	6,000.00	
		SUBTOTAL				83,470.00	
		CAPEX					
		Borehole Siting	7	1	2000	14,000.00	
		Borehole Drilling, Construction and Development	7	1	45000	315,000.00	
		Pump Testing and water Quality Test	7	1	5000	35,000.00	
		TOTAL-A				364,000.00	
		Contingency-B				18,200.00	
		SUBTOTAL (A+B)				382,200.00	
		COMPENSATION					
	Monitoring and Evaluation	Allowances (Lunch & Snack)	10	4	100	4,000.00	
		Fuel and Lubricant	110	4	15	6,600.00	
		SUBTOTAL				10,600.00	
		TOTAL				476,270.00	

- **Intervention & Objectives:** Delivers water conservation training sessions reaching 132 communities.
- **Climate Risks Addressed:** Household water scarcity under drought.
- **Beneficiaries:** Women, girls, schools and health facilities in drought-affected communities across the Dachamba and Sunkuli Zones.
- **Communities Targeted:** Communities facing household water scarcity across the three hotspot zones, especially drought-affected Dachamba and Sunkuli Zone communities.
- **MCA Priority Ranking:** 2nd, MCA score 86
- **Gender Responsiveness & Equity:** Women and girls are named as primary beneficiaries.
- **Timeframe & Lead Institution:** Short-Term — Government of Ghana

educating communities about water conservation practices							
		GOODS AND SERVICES					
	Organize Community Sensitization	Local Travel Cost	132	1	100	13,200.00	Visit 132 communities to educate the communities about efficient use of water one
		Fuel and Lubricant	110	132	15	217,800.00	requires 110 liters of fuel to vist 132 communities
		SUBTOTAL				231,000.00	
		CAPEX					
		SUBTOTAL					
		COMPENSATION					
		SUBTOTAL					
	TOTAL				231,000.00		

PROJECT DESCRIPTION — Installing rainwater harvesting/collecting systems

- Intervention & Objectives: Installs 8 household, institutional and community rainwater harvesting systems with overhead stands and 1,000-litre polytanks, and trains users on system operation and maintenance.
- Climate Risks Addressed: Unreliable water access during drought.
- Beneficiaries: Households, schools, health facilities and women's groups in drought-affected communities across the Bondalikadibu, Dachamba and Sunkuli Zones.
- Communities Targeted: Drought-affected communities with unreliable water access across the three zones (Bandiyili, Tampoaya, Tanbahimi; Nakpayili, Gaunguni, Nabayili; Lungni, Kotoya, Kukuo, Gbungbaliga).
- MCA Priority Ranking: 3rd, MCA score 83
- Gender Responsiveness & Equity: Women's groups are named among the primary beneficiaries.
- Timeframe & Lead Institution: Short–Medium Term — District Assembly

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
installing rainwater harvesting/collection system							
		GOODS AND SERVICES					
	Organize Community Sensitization	Local Travel Cost	8	4	150	4,800.00	
		Printed Material and Stationery	6	1	120	720.00	
		Fuel and Lubricant	120	3	15	5,400.00	
		SUBTOTAL				10,920.00	
		CAPEX					
	Construct overhead stands and mount with 1000litres polytanks	Construction of concrete stand	8	1	11500	92,000.00	
		Provision of Rainbow 1000litres Polytank	8	1	5000	40,000.00	
		SUBTOTAL				132,000.00	
		COMPENSATION					
	Monitoring and Evaluation	Allowances	10	3	100	3,000.00	
		Fuel and Lubricant	100	3	15	4,500.00	
		SUBTOTAL				7,500.00	
		TOTAL				150,420.00	

PROJECT DESCRIPTION — Improve sanitation in flood-prone areas

- Intervention & Objectives: Constructs 5 drainage systems and clears solid waste at 5 dumping sites in flood-prone communities.
- Climate Risks Addressed: River Oti overflow, flooding and associated sanitation risk.
- Beneficiaries: Women, girls and households in the flood-prone Sunkuli Zone communities (Lungni, Kotoya, Kukuo, Gbungbaliga) affected by River Oti overflow.
- Communities Targeted: Flood-prone communities of the Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga) affected by River Oti overflow, and other flood-exposed hotspot communities.
- MCA Priority Ranking: 4th, MCA score 78
- Gender Responsiveness & Equity: Women and girls are named as primary beneficiaries.
- Timeframe & Lead Institution: Short–Medium Term — District Assembly / WASH

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
improve sanitation in flood-prone areas							
		GOODS AND SERVICES					
	number of flood communities constructed/rehabilitated	construction of drain system	5	1	30000	150,000.00	
		SUBTOTAL				150,000.00	
		CAPEX					
	clearing of solid wastes at the dumping sites	Repairs work	5	1	1500	7,500.00	
		carting of wastes	5	2	4400	44,000.00	
		SUBTOTAL				51,500.00	
		COMPENSATION					
	Monitoring and Evaluation	Allowances	10	3	100	3,000.00	
		Fuel and Lubricant	12	3	15	540.00	
		SUBTOTAL				3,540.00	
		TOTAL				205,040.00	

5. Human Health and Wellbeing Sector

Objective: Protect population health from climate-sensitive risks | Lead institutions: District Health Directorate | Sector budget: GH¢ 1,354,428

PROJECT DESCRIPTION — Promote hygiene campaigns — water, sanitation and hygiene (WASH)

- Intervention & Objectives: Runs district-wide hygiene education campaigns and community sensitisation on safe water handling, sanitation, waste management and disease prevention; procures 54 handwashing facilities for health facilities and schools and 2 climate-resilient health facilities.
- Climate Risks Addressed: Waterborne disease following flooding.
- Beneficiaries: Women, children, households and schools in the flood-prone Sunkuli Zone communities (Lungni, Kotoya, Kukuo, Gbungbaliga).
- Communities Targeted: Households in flood-prone communities and schools, prioritising the River Oti-affected Sunkuli Zone communities (Lungni, Kotoya, Kukuo, Gbungbaliga).
- MCA Priority Ranking: 1st, MCA score 79
- Gender Responsiveness & Equity: Women and children are named as primary beneficiaries; community volunteers receive allowances under the compensation component.
- Timeframe & Lead Institution: Short–Medium Term — District Health Directorate

SN	Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
	Promote hygiene campaigns water, Sanitation and Hygiene (WASH)							
			GOODS AND SERVICES					
		Community sensitization on WASH practice	Printing of campaign materials	1	1	1500	1,500.00	
			Media/CIC engagement	3	4	500	6,000.00	
			Public information services	8	4	100	3,200.00	
			Development and airing of jingles on WASH	8	4	200	6,400.00	
			SUBTOTAL				9,500.00	
			CAPEX					
		Procurement and distribution of hand washing station to health facilities and schools	Hand washing facilities/tanks	54	1	250	13,500.00	
			climate resilient health facilities	1	1	213,418	213,418.00	
			Soap	20	4	20	1,600.00	
			SUBTOTAL				228,518.00	
			COMPENSATION					
		Monitoring and evaluation	Field supervision allowance	3	4	100	1,200.00	
			Community mobilisation support	3	4	100	1,200.00	
			Data allowance	3	4	50	600.00	
			Allowance for community volunteers	24	4	50	4,800.00	
			Fuel for transportation	3	4	100	1,200.00	
			SUBTOTAL				9,000.00	
			TOTAL				247,018.00	

PROJECT DESCRIPTION — Construct green-shaded public spaces in markets, clinics and schools

- Intervention & Objectives: Constructs shaded public spaces in markets and clinics and installs metal benches for patient waiting areas, with relocation of structures occupying designated space.
- Climate Risks Addressed: Extreme heat and heat stress in public spaces.
- Beneficiaries: Vulnerable households — market users, the elderly and PWDs — in the heat-exposed hotspot communities across the three zones (sites to be confirmed by the District Health Directorate).
- Communities Targeted: Heat-exposed communities across the three hotspot zones; markets and clinics in the most heat-affected settlements to be confirmed by the District Health Directorate.
- MCA Priority Ranking: 2nd, MCA score 74
- Gender Responsiveness & Equity: Market users, elderly persons and persons with disabilities are named among the primary beneficiary groups.
- Timeframe & Lead Institution: Medium–Long Term — District Assembly / Forestry Commission

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
Construct green-shaded public spaces in markets, clinics and schools		GOODS AND SERVICES					
	Construction of green-shaded public spaces	Cement	240	1	85	20,400.00	
		Building blocks	1440	1	10	14,400.00	
		sea sand	24	1	1000	24,000.00	
		Roofing sheets	24	1	800	19,200.00	
		Nails	24	1	40	960.00	
		Wood	240	1	120	28,800.00	
		Benches	240	1	200	48,000.00	
		Metal poles	96	1	100	9,600.00	
		SUBTOTAL				165,360.00	
		CAPEX					
	Installation of metal benches for patient waiting area	Metal benches	240	1	250	60,000.00	
		concrete flooring	140	1	85	11,900.00	
		SUBTOTAL				71,900.00	
		COMPENSATION					
	structures that may occupy the	Cost of removing temporary structures	24	1	300	7,200.00	
		Cost of labor	24	1	550	13,200.00	
		SUBTOTAL				20,400.00	
		TOTAL				257,660.00	

PROJECT DESCRIPTION — Support community-based malaria control

- **Intervention & Objectives:** Strengthens community disease surveillance, supports outreach services in vulnerable communities, improves early detection and reporting of climate-sensitive diseases, and delivers community health education and risk communication, including procurement of antimalarial drugs.
- **Climate Risks Addressed:** Elevated malaria transmission from flooding and standing water.
- **Beneficiaries:** Women, children, elderly persons and PWDs in flood-prone and standing-water communities, prioritising the Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga).
- **Communities Targeted:** Flood-prone and standing-water communities where malaria risk is elevated, prioritising the Sunkuli Zone (Lungni, Kotoya, Kukuo, Gbungbaliga) and other flood-affected hotspots.
- **MCA Priority Ranking:** 3rd, MCA score 69
- **Gender Responsiveness & Equity:** Women, children, elderly persons and persons with disabilities are named as primary beneficiaries.
- **Fimeframe & Lead Institution:** Medium–Long Term — District Health Directorate / Ghana Health Service

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GHc)	REMARKS
Support community-based malaria control		GOODS AND SERVICES					
	Organise Malaria Awareness campaign	Printed educational materials	24	1	500	12,000.00	
		Media/community engagement	100	4	500	200,000.00	
		Public address system	1	4	100	400.00	
		Cost for trainin health volunteers on m	80	1	100	8,000.00	
		SUBTOTAL				220,400.00	
		CAPEX					
	Procurement of antimalarial drugs	Cost of anti malaria medicines	24	1	20000	480,000.00	
		Transportation	24	1	1000	24,000.00	
		SUBTOTAL				504,000.00	
		COMPENSATION					
	Provide compensation to support community based malaria control activities	Facilitators allowance	3	4	250	3,000.00	
		Allowance for community health volun	1	4	50	200.00	
		Community mobilization incentives	1	4	50	200.00	
		Data allowance	2	4	50	400.00	
		Fuel for transpotation	3	4	200	2,400.00	
		SUBTOTAL				6,200.00	
		TOTAL				730,600.00	

PROJECT DESCRIPTION — Establish heat-health awareness programs

- Intervention & Objectives: Organises and conducts heat-health awareness activities in selected communities, including the planting of 300 trees in 3 selected communities and production of roll-up banners carrying heat-health messages.
- Climate Risks Addressed: Rising temperatures and heat-related illness.
- Beneficiaries: Households in the heat-vulnerable hotspot communities across the Bondalikadibu, Dachamba and Sunkuli Zones.
- Communities Targeted: Heat-vulnerable populations across the Bondalikadibu, Dachamba and Sunkuli Zone communities.
- MCA Priority Ranking: 4th, MCA score 58
- Gender Responsiveness & Equity: Not specified for this action in the CAP; sex-disaggregated reporting to be applied at implementation.
- Timeframe & Lead Institution: Medium-Term — Ghana Health Service / District Health Directorate

Adaptation Action	Action Description/Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (c)	AMOUNT (GHC)	REMARKS
Establish heat-health awareness programs							
		GOODS AND SERVICES					
	Organize Community Sensitization	Printed heat health education material	24	2	50	2,400.00	
		Radio discussion programs on heat health	1	4	2000	8,000.00	
		Trees planting	300	1	150	45,000.00	
		Development and airing of heat health	8	1	2500	20,000.00	
		Public address system	1	8	3000	24,000.00	
		SUBTOTAL				99,400.00	
		CAPEX					
	Production of roll up banners with heat health messages	Cost of banners	24	1	500	12,000.00	
		Cost of transportation	1	1	910	910.00	
		SUBTOTAL				12,910.00	
		COMPENSATION					
	Monitoring and Evaluation	Allowances for field workers	3	4	100	1,200.00	
		Communication/Data allowance	3	4	20	240.00	
		Transport reimbursement	3	4	100	1,200.00	
		Stipends for community volunteers	18	4	50	3,600.00	
		Overtime allowance	3	4	50	600.00	
		SUBTOTAL				6,840.00	
		TOTAL				119,150.00	

Total CAP investment (all 20 prioritised options): GHS 6,199,262.00

ANNEX B: Longlist of Adaptation Options

SECTORS	OPTIONS
Disaster Risk Reduction	Planting shade trees in communities and farms
	Improved community preparedness and emergency response plans
	Implementation of early warning systems
	Community-based flood risk awareness campaigns
	Public education on heat protection measures
	Construction of wind-resistant structures
	Diversification of crops to include drought-tolerant varieties
Biodiversity	Sensitization campaigns
	Expand community woodlots in reforestation
	Establish fire belts and patrols committees
	Promote agroforestry and sustainable charcoal production
	Protect riparian zones and wetlands
	Enforce bye-laws on tree felling
Agriculture	Introduce drought-tolerant crop varieties
	Develop early warning & planting calendars
	Promote small-scale irrigation
	Train farmers in CSA practices
	Establish community seed banks
	Animal traction
	Establish local climate adaptation committees
	Support women's cooperatives (e.g., agro processing, soap and pomade processing)
	Establish local climate adaptation committees
Water and Sanitation	Grey water system
	Construction of small dams
	Improve sanitation in flood-prone areas
	Construct and maintain boreholes
	Rehabilitate existing hand-dug wells
	Promote rainwater harvesting systems
	Introduce water-use efficiency campaigns
Health and Human well being	Establish heat-health awareness programs
	Support community-based malaria control
	Train health workers on climate-sensitive illnesses
	Establish rural-based health facilities
	Construct shaded public spaces (markets, clinics)
	Promote hygiene campaigns in flood zones
	Construct climate-resilient Health facilities

ANNEX C : Practical Costing Guide for District Climate Adaptation Actions

Purpose of This Guide

This guide helps MMDA staff estimate realistic costs for climate adaptation actions during planning, budgeting, and proposal development, using simple steps and assumptions appropriate for non-economists.

Step I: Clearly Define the Adaptation Action

Before costing, most of the specific questions include the following checklist structured into

- What exactly will be done?
- Who benefits?
- Where will it be implemented?
- Over how many years?

Step II: Break the Action into Cost Components

Every action should be broken into **three main cost types**:

Cost Category	What to Cover
Capital Costs	Infrastructure, equipment, materials
Soft Costs	Training, mobilisation, facilitation
Operation and maintenance	Maintenance, minor repairs, monitoring

Step III: Estimate Quantities

Ask questions such as: *How many and often?*

- Number of boreholes
- Number of trainings per year
- Number of communities involved

Step IV: Indicative Unit Costs

Use:

- Recent district projects
- NGO/programme benchmarks
- EPA/SIGRA guidance
- Conservative estimates if unsure

Tip: When unsure, estimate a range, not a single figure.

Step V: Calculate Cost Ranges

Avoid false precision to improve and enhance credibility with funders.

Step VI: Assign Institutional Responsibility

Each action must have:

- Lead department
- Supporting institutions

This improves accountability and implementation readiness.

Step VII: Check Gender & Inclusion Costs

Ask:

- Are women, youth, PWDs targeted?
- Are additional costs needed (childcare, accessibility, mobilisation)?

If yes, include them explicitly.

Step VIII: Sanity Check the Numbers

Before finalising:

- Is this affordable within district realities?
- Can it be phased?
- Can co-financing be explored?

How This Guide Should Be Used

- MTDP preparation
- Annual Action Plans
- Climate finance proposals
- Donor engagement
- Internal budget discussions