



Strengthening Investments
in Gender-Responsive
Climate Adaptation



Costed Adaptation Plan

AUGUST 2026

AKATSI NORTH



TABLE OF CONTENTS

LIST OF ACRONYMS	v
EXECUTIVE SUMMARY	i
1. PURPOSE, SCOPE, AND USE OF THE COSTED ADAPTATION PLAN	1
1.1 Background and Rationale	1
1.2 Linkages to CRVA, SIGRA and District Planning Cycles	1
1.2.1 Linkage to the Akatsi North Climate Risk and Vulnerability Assessment	1
1.2.2 Alignment with the SIGRA Project	2
1.2.3 Integration with District Planning and Budgeting Cycles.....	2
1.3 Who this Document is for (Planners, Engineers, Sector Heads, Partners)	2
1.4 How the CAP Should be Used (Budgeting, MTDPs, Proposals, Implementation)	3
2. CLIMATE RISKS AND PRIORITY ADAPTATION NEEDS	5
2.1 Introduction.....	5
2.2 Key Climate Hazards and Vulnerable Sectors	5
2.3 Priority Risk Hotspots and Affected Groups.....	6
2.4 Priority Affected Groups	8
2.5 Implications for District Investment Decisions.....	9
2.6 Link to Subsequent Chapters.....	10
3. ADAPTATION PRIORITISATION PROCESS AND LEARNING OUTCOMES	11
3.1 Introduction.....	11
3.2 Overview of the Prioritisation Approach	11
3.3 Longlisting of Adaptation Options	12
3.4 Multi-Criteria Analysis (MCA): Criteria, Weights, and Rationale	13
3.5 Participatory Decision-Making and Gender Integration	14
3.6 Key Capacity Lessons from the Prioritization Process	14
3.7 Transition from Prioritisation to Costing and Implementation Planning	15
4. COSTED PRIORITY ADAPTATION ACTIONS	17
4.1 Introduction.....	17
4.2 Costing Methodology and Assumptions.....	18
4.3 Overview of Sectoral Costed Adaptation Options.....	19
4.3.1 Agriculture and Food Safety.....	19
4.3.2 Biodiversity and Ecosystem	31
4.3.3 Water Resources Sector	40

4.3.4	Health and Sanitation	53
4.3.5	Gender Targeted Adaptation Options	65
4.3.6	Disaster and Risk Reduction	78
4.4	Cross-Cutting Impacts and Adaptation Considerations	93
4.5	Implementation Needs and Resource Mobilization.....	95
4.6	Knowledge Co-Creation and Information Sharing	96
5.	FINANCING, PHASING AND RESOURCE MOBILISATION	97
5.1	Introduction.....	97
5.2	Financing Principles Guiding the CAP	97
5.3	Overview of Investment Requirements	97
5.4	Potential Funding Sources Mapped to Actions	98
5.5	Private Sector and Partner Engagement Pathways.....	99
5.6	Financing Strategy by Adaptation Action Type	100
5.7	Institutional Arrangements for Financial Management.....	101
5.8	Risks to Financing and Mitigation Measures	102
5.9	Linking Financing to Learning and Capacity Building	103
6.	IMPLEMENTATION, MONITORING, EVALUATION AND LEARNING	105
6.1	Implementation Framework for the CAP	105
6.1.1	Phased Implementation Approach	105
6.1.2	Institutional Roles in Implementation	109
6.2	Monitoring, Evaluation and Learning.....	109
6.2.1	Introduction and Purpose	109
6.3	Monitoring Framework	110
6.3.1	Indicators, Data Sources and Responsibilities.....	110
6.3.2	Monitoring Levels	111
6.3.3	Data Collection Methods	112
6.4	Evaluation Framework	112
6.4.1	Purpose of Evaluation	112
6.4.2	Types of Evaluation.....	112
6.4.3	Evaluation Criteria	113
6.5	Learning and Adaptive Management	113
6.6	Gender-Responsive MEL.....	113
6.6.1	Gender Integration in Monitoring and Evaluation.....	113
6.6.2	Accountability for Inclusion.....	114
6.7	Reporting and Alignment with Existing Systems.....	114

6.7.1	Reporting Schedule.....	114
6.7.2	Alignment with Existing Systems	114
6.7.3	Sustainability of the MEL Framework.....	115
6.8	Using MEL to Strengthen Future Costing and Planning	115
6.9	Results Framework Linked to Cost Actions	115
7.	INSTITUTIONAL COORDINATION AND CAPACITY BUILDING	117
7.1	Introduction.....	117
7.2	Institutional Coordination Framework.....	117
7.3	Safeguards for Gender, and Social Inclusion in Implementation	120
7.4	Coordination Mechanisms during Implementation	120
7.5	Capacity Development Strategy.....	121
7.6	Institutional Learning and Knowledge Management	123
7.7	Risk Management and Institutional Sustainability.....	123
7.8	Resource Mobilisation Responsibilities	124
8.	CONCLUSION AND WAY FORWARD	125
8.1	Key Investment Priorities	125
8.2	Immediate Next Steps	126
	REFERENCES.....	127
	ANNEXES.....	128
	Annex 1: Detailed Costing Templates	128
	Annex 2: Long List of Adaptation Options	131
	Annex 3: Details of Costed Adaptation Options	133
	Agriculture and Food Safety	133
	Biodiversity and Ecosystem.....	143
	Water Resources	152
	Health and Sanitation	164
	Gender-Targeted Adaptation	171
	Disaster Risk Reduction	180

LIST OF FIGURES

Figure 1: Stakeholders participatory mapping of priority risks hotspots (SIGRA, 2025).....	6
--	---

LIST OF TABLES

Table 1: Summary table (Key hazards → Vulnerable sectors → Main impact pathways)	6
Table 2: Summary of the impacts of changing climate on livelihoods by communities	7
Table 3: Costing assumptions across sectors	19
Table 4: Estimated cost of agriculture and food safety sector prioritised adaptation actions	21
Table 5: Estimated cost of biodiversity and ecosystem sector prioritized adaptation action	32
Table 6: Estimated cost of water resources sector prioritized adaptation action.....	41
Table 7: Estimated cost of health and sanitation sector prioritized adaptation action	57
Table 8: Estimated costing of gender targeted adaptation options sector prioritized adaptation actions	66
Table 9: Estimated costing of disaster and risk reduction sector prioritized adaptation actions	80
Table 10: Consolidated CAP investment envelope for Akatsi North	98
Table 11: Financing strategy by action category	100
Table 12: Key financing risks and mitigation measures.....	102
Table 13: Phased implementation approach	105
Table 14: Phasing of adaptation priorities in Akatsi North District	106
Table 15: Institutional roles in implementation	109
Table 16: Illustrative indicators, data sources, and responsibilities for MEL	110
Table 17: Monitoring levels	111
Table 18: Data collection methods.....	112
Table 19: Types of evaluation	112
Table 20: Reporting schedule for MEL	114
Table 21: Institutional roles and responsibilities by adaptation sector.....	118
Table 22: Training plan mapped to participants and timing	122
Table 23: Risk management approach	123

LIST OF PHOTOS

Photos 1: Images from costing capacity building.....	17
Photos 2: Stakeholder workshop	19
Photos 3: Some water sources in the District Source: Author's field visits.....	40
Photo 4: Authors field visits – Adom Online (https://www.adomonline.com/volta-regional-minister-inspects-akatsi-north-agenda-111-district-hospital-project/)	53
Photos 5: Discussions with gender groups.....	65
Photos 6: Effects of heavy rainfall in Ave Xevi.....	79

LIST OF ACRONYMS

AAP	Annual Action Plan
AF	Adaptation Fund
ANDA	Akatsi North District Assembly
BoQs	Bills of Quantities
CAP	Costed Adaptation Plan
CapEx	Capital Expenditure
CHPS	Community Health Planning and Services
CHPS	Community-Based Health Planning and Services
CIC	Community Information Centre
CLIC	Community LEAP Implementation Committee
CRVA	Climate Risk and Vulnerability Assessment
CSA	Cyber Security Authority
CSO	Civil Society Organisation
CWMC	Community Waste Management Committee
CWSA	Community Water and Sanitation Agency
CWSC	Centre for World Sustainable Construction
DACF	District Assemblies Common Fund
DCD	District Coordinating Director
DCE	District Chief Executive
DCMC	Dam Community Management Committee
DDF	District Development Facility
DMTDP	District Medium-Term Development Plan
DPCU	District Planning Coordinating Unit
DPO	District Planning Officer
DRR	Disaster Risk Reduction
EHSU	Environmental Health and Sanitation Unit
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
EWS	Early Warning System
FBO	Farmer-Based Organisation
GCF	Green Climate Fund
GEF	Global Environment Common Fund
GESI	Gender Equality and Social Inclusion
GHc	Ghana Cedis

GHS	Ghana Health Service
HeMAB	Health Mamas and Babies
IEC	Information, Education and Communication
IGF	Internally Generated Funds
IPM	Integrated Pest Management
LEAP	Livelihood Empowerment Against Poverty
M&E	Monitoring and Evaluation
MCA	Multi-Criteria Analysis
MEL	Monitoring, Evaluation, and Learning
MMDA	Metropolitan, Municipal and District Assembly
MoFA	Ministry of Food and Agriculture
MPCU	Municipal Planning and Coordinating Unit
MTDP	Medium-Term Development Plan
MUAC	Mid-Upper Arm Circumference
NADMO	National Disaster Management Organisation
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NDP	Nationally Determined Contribution
NGO	Non-Governmental Organisation
O&M	Operation and Maintenance
ODF	Open Defecation Free
PPP	Public-Private Partnership
PWDs	Persons with Disabilities
QA	Quality Assurance
RWH	Rainwater Harvesting
SIGRA	Strengthening Investments in Gender-Responsive Climate Adaptation
ToR	Terms of Reference
TVET	Technical and Vocational Education and Training
WASH	Water, Sanitation and Hygiene
WASHCOM	Water, Sanitation, and Hygiene Committee
WATSAN	Water and Sanitation

EXECUTIVE SUMMARY

The Akatsi North District Costed Adaptation Plan (CAP) sets out a prioritised, evidence-based, and implementation-oriented response to the climate risks confronting the district. Building on the Akatsi North Climate Risk and Vulnerability Assessment (CRVA) and developed under the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) programme, the CAP translates climate risk diagnostics into costed adaptation actions across six sectors, with indicative costs, implementation responsibilities, phasing, and financing pathways aligned to district planning processes and broader national climate policy frameworks. The CAP is designed as a practical working tool for the Akatsi North District Assembly (ANDA), sector departments, development partners, and national stakeholders, with the purpose of moving the district from climate risk diagnosis toward implementable and investment-ready adaptation action.

At national level, the CAPs provide a bottom-up pipeline of locally validated, prioritised and costed adaptation investments that can be aggregated through sector ministries and climate-planning institutions to support NAP implementation, investment planning and climate-finance mobilisation. Their implementation and MEL data also provide district-level evidence on adaptation costs, results and remaining gaps, thereby informing NAP progress reporting, periodic review and future updates.

The Climate Challenge Facing Akatsi North District

Akatsi North District is increasingly exposed to the effects of climate variability and change, as reflected in recurrent flooding, erratic rainfall, prolonged dry spells, water stress, environmental degradation, and climate-sensitive health risks. These pressures affect livelihoods, infrastructure, service delivery, and the wellbeing of climate-exposed populations, particularly where rain-fed agriculture, weak service infrastructure, and limited water access already constrain local resilience. The CRVA identifies a set of interacting hazards that shape the district's climate risk profile, notably erratic rainfall and prolonged dry spells, increasing temperatures and heat stress, flooding and waterlogging in low-lying settlements, and dry-season bushfires. These hazards are further intensified by pest outbreaks, land degradation, weak transport connectivity, and fragile water systems.

Climate risks are spatially concentrated in specific hotspot communities and landscapes. Flood-prone hotspots include Ave Dzadzepe, Ave Havi, Nyitawuta, and parts of Ave-Dakpa, with additional recurrence reported in Ashiagborvi and Atsata Bame. Bushfire risk is pronounced in lower-lying farmlands and forested zones such as Zemu, Agormor, and Ashiamgborvi, while drought-related stress is especially evident in Kpegbedza and other water-scarce communities. These risks are not experienced uniformly. Smallholder farmers, women and female-headed households, youth, older persons, persons with disabilities, migrants, and other socially vulnerable households bear a disproportionate burden because of their reliance on climate-sensitive livelihoods, weak access to assets and services, and lower adaptive capacity.

How Priorities Were Identified

The CAP was developed through a structured evidence-to-action pathway. The CRVA first established the district's risk profile by identifying key hazards, vulnerable sectors, risk hotspots, and priority affected groups. Sector working groups and district stakeholders then translated these findings into a longlist of 47 adaptation options across six sectors: Agriculture and Food Security, Biodiversity and Ecosystems, Water Resources, Health and Sanitation, Gender targeted options, and Disaster Risk Reduction. District technical staff and stakeholders subsequently refined these options to reflect practical implementation realities, sector mandates, and local development needs.

A Multi-Criteria Analysis (MCA) was then used to compare and rank adaptation options against economic, social, environmental, technical, and institutional criteria. This process ensured that prioritisation was transparent, evidence-informed, and consistent with SIGRA's emphasis on gender-responsive and implementable adaptation planning. A participatory costing process followed, through which sector heads and technical officers translated prioritised options into more clearly defined intervention packages with indicative costs, institutional roles, implementation timelines, and delivery

requirements. To avoid duplication in costing, adaptation options which were repeated in other sectors due to their cross-cutting relevance were retained once to the sector they are most relevant to. The CAP therefore combines risk evidence, stakeholder judgment, and practical costing to produce a district adaptation portfolio that is both analytically grounded and operationally relevant.

The Adaptation Portfolio

The CAP organises costed adaptation actions across six sectors that reflect the main dimensions of climate risk in Akatsi North. In Agriculture and Food Security, the portfolio emphasises climate-resilient production, livelihood diversification, improved varieties, farmer training, agro-processing, irrigation support, and soil and water conservation. In Biodiversity and Ecosystems, the focus is on restoration, vegetation protection, tree planting, buffer zones, fire management, and reduction of biomass pressure. Water Resources actions emphasise domestic and productive water security, including boreholes, dams, dugouts, rainwater harvesting, catchment protection, water governance, and maintenance systems. Health and Sanitation actions focus on reducing climate-related health risks and protecting service continuity. Gender targeting addresses differential actions that reduces vulnerability and equitable access to adaptation benefits, while Disaster Risk Reduction includes preparedness, fire control, early warning, drainage, embankments, and protective infrastructure.

Investment Envelope

The participatory costing exercise produced a consolidated CAP investment envelope of approximately GH¢44.8 million for 40 prioritised adaptation options. The portfolio is strongly weighted toward water infrastructure and related service systems. Water Resources accounts for the largest share of the total, at GH¢23.56 million (52.4%), driven mainly by dams, dugouts, dredging, rainwater harvesting, and other water infrastructure. Health and Sanitation represents the second-largest share at GH¢6.21 million (13.8%), followed by Agriculture and Food Security at GH¢5.51 million (12.3%). Ecosystem and Biodiversity for GH¢3.28 million (7.0%). Disaster Risk Reduction accounts for GH¢3.24 million (7.2%), and Gender targeted adaptation options for GH¢2.99 million (6.7%). Together, these figures show that adaptation in Akatsi North is shaped by a combination of high-cost infrastructure needs and lower-cost but strategically important investments in livelihoods, ecosystems, inclusion, and preparedness.

Financing Strategy: Blended, Tiered, and Phased

Because the total CAP requirement exceeds what routine district financing alone can support, the plan adopts a blended financing strategy. This combines district-level public financing, sector-based public financing, development partner support, climate finance, project-based grants, and complementary community or private contributions. Financing pathways are guided by five principles: alignment with district planning and budget cycles, prioritisation before fundraising, gender-responsive and inclusive allocation, phased and scalable investment, and blended financing. This means that financing is not approached as a one-off fundraising exercise, but as a structured effort to match adaptation priorities to realistic funding channels and implementation timing.

A three-tier financing and implementation strategy is recommended. Tier 1 covers low-cost, high-impact actions that can be integrated directly into Annual Action Plans, Composite Budgets, and sector work plans. Tier 2 covers medium-scale actions that are suitable for co-financing through district funds, SIGRA support, NGOs, and other partners. Tier 3 comprises large and capital-intensive investments, particularly in water, health, and resilient local infrastructure, which will need to be packaged as bankable proposals for external support. This tiered approach allows the district to initiate lower-cost and institutionally ready actions immediately, while progressively positioning larger investments for medium-term co-financing and external mobilisation.

Implementation Approach: Phased and System-Integrated

Implementation is intended to be integrated into district planning and budgeting processes rather than treated as a stand-alone climate project. The CAP is explicitly designed to feed into the Medium-Term Development Plan, Annual Action Plans, Composite Budgets, and sector investment plans. Phasing is therefore central to delivery. Adaptation priorities are to be sequenced over the short, medium, and longer term according to urgency, institutional readiness, affordability, and financing availability. This approach is particularly important in Akatsi North, where affordability constraints are significant for

water infrastructure, health facility upgrades, and flood protection works, and where phased delivery can help protect high-risk communities and high-dependency assets first.

The District Planning Coordinating Unit (DPCU) is expected to serve as the central coordination body for implementation and financing oversight. Sector departments retain ownership of sector-specific actions, while district management structures provide oversight, coordination, and accountability. This institutional architecture is intended to ensure that implementation remains embedded within existing governance systems and that adaptation expenditures can be tracked, reviewed, and adjusted through routine district processes.

Monitoring, Evaluation, and Learning (MEL)

The MEL framework is embedded within existing district systems rather than designed as a parallel compliance arrangement. It supports accountability, evidence-based decision-making, and adaptive management by tracking implementation progress, financial performance, outputs, and emerging challenges over time. Monitoring is expected to be linked to district planning and policy processes, especially the Annual Action Plans and the Medium-Term Development Plan, so that CAP delivery remains connected to budgeting and review systems. Learning loops include quarterly reviews, annual reviews, and seasonal or event-based reviews following floods, droughts, bushfires, or other climate shocks. These processes are intended to ensure that implementation evidence leads to practical adjustments in targeting, phasing, supervision, procurement, financing arrangements, and delivery approaches.

Gender-responsive MEL is also integral to the framework. The plan calls for sex-, age-, and disability-disaggregated indicators, tracking of adaptation benefits reaching vulnerable groups, and monitoring that goes beyond participation counts to assess the quality of inclusion in decision-making and benefit-sharing. These provisions reinforce the CAP's broader emphasis on Gender Equality and Social Inclusion (GESI) as core performance criteria rather than optional safeguards.

Institutional Capacity and Safeguards

The CAP recognises that implementation quality depends heavily on institutional capacity. The prioritisation and costing process already revealed important needs in climate-responsive planning, costing, procurement, technical supervision, gender integration, data management, coordination, and maintenance planning. This is especially relevant in sectors such as agriculture, water, and local infrastructure, where the success of adaptation investments depends not only on financing, but also on routine management, O&M, local oversight, and cross-sector coordination. The plan therefore treats capacity development as an implementation requirement in its own right.

Safeguards for gender and social inclusion are equally central. The CAP emphasises the need for adaptation actions to reduce time poverty, strengthen agency, and improve equitable access to services and livelihood support for women, youth, PWDs, and other vulnerable groups. Transparent beneficiary targeting, grievance mechanisms, and oversight by relevant district social and gender structures are intended to reduce the risks of exclusion and elite capture.

Key Messages for Decision-Makers

- **The cost of inaction is high.** Without deliberate adaptation investment, recurrent flooding, water stress, ecosystem degradation, agricultural instability, and climate-sensitive health risks will continue to undermine livelihoods, service delivery, and local development gains in Akatsi North.
- **Adaptation is a district development investment.** The CAP is designed for mainstreaming into district planning and budgeting systems, not as a stand-alone climate project.
- **Water security is the dominant investment priority.** Nearly half of the CAP envelope is concentrated in Water Resources, reflecting the central role of water insecurity in agriculture, household welfare, sanitation, and service reliability.

- **District resources can drive early gains while larger finance is mobilised.** Lower-cost and institutionally ready actions can begin through district and sector systems, while high-cost actions are prepared for phased co-financing and external proposals.
- **Gender responsiveness and inclusion are implementation priorities.** The CRVA and the MCA process show that effective adaptation in Akatsi North requires direct attention to women, youth, PWDs, and other vulnerable groups.
- **Coordination, capacity, and maintenance are decisive.** The effectiveness of the CAP will depend not only on finance, but also on DPCU coordination, sector ownership, supervision quality, and realistic O&M arrangements.

The CAP is a living planning instrument. Monitoring, learning, and implementation experience are intended to strengthen future costing, phasing, and district planning cycles over time.

In conclusion, the Akatsi North District Costed Adaptation Plan provides a credible, locally grounded, and implementation-oriented roadmap for moving from climate risk evidence to prioritised and costed adaptation action. It responds to a district risk profile shaped by erratic rainfall, flooding, drought, heat stress, bushfires, water insecurity, ecosystem degradation, and socially differentiated vulnerability. By combining risk analysis, participatory prioritisation, sector-based costing, financing pathways, institutional coordination, and an embedded MEL system, the CAP gives ANDA and its partners a practical basis for advancing climate-resilient, inclusive, and better-sequenced district development. If implemented progressively and supported through blended financing and sustained coordination, the CAP can help position Akatsi North as a strong example of district-level adaptation planning and implementation in Ghana.

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

This section presents the overview, rational and scope of the Costed Adaptation Plan (CAP).

1.1 Background and Rationale

Akatsi North District is increasingly exposed to the effects of climate variability and change, as seen in recurrent flooding, erratic rainfall, prolonged dry spells, water stress, environmental degradation, and climate-sensitive health risks. These challenges are placing pressure on livelihoods, infrastructure, service delivery, and the wellbeing of vulnerable populations, including women, children, persons with disabilities (PWDs), smallholder farmers, and low-income households. In several communities, this vulnerability is compounded by poor access to clean water, dependence on rain-fed agriculture, and limited service infrastructure.

In response to these challenges, the Akatsi North District Climate Risk and Vulnerability Assessment (CRVA) was undertaken to systematically identify priority climate hazards, exposed sectors, vulnerable populations, and geographic hotspots.

While the CRVA provided a strong evidence base for understanding climate risks, it did not on its own provide guidance on which adaptation actions should be implemented first, how much they would cost, or how they could be integrated into district planning and budgeting systems.

This Costed Adaptation Plan (CAP) was therefore developed to bridge the gap between risk assessment and practical implementation. It translates the CRVA findings and stakeholder priorities into clearly defined, prioritised, and costed adaptation actions that can be realistically implemented by the District Assembly and its partners. Specifically, the CAP seeks to:

1. Move adaptation planning from conceptual recommendations to investment-ready actions;
2. Support evidence-based allocation of limited district resources;
3. Strengthen institutional capacity for costing, planning, and implementation of climate adaptation measures; and
4. Enhance accountability, transparency, and coordination in climate-related decision-making.

In this way, the CAP provides a district-level pipeline of investment-ready adaptation actions that can feed into Ghana's National Adaptation Plan (NAP), including national adaptation investment planning and climate-finance mobilisation. Its implementation and monitoring evidence can also support NAP progress reporting, learning, and future updates. The CAP, therefore, represents a deliberate step towards mainstreaming climate adaptation into routine district development planning, rather than treating it as a stand-alone or externally driven agenda.

1.2 Linkages to CRVA, SIGRA and District Planning Cycles

This Costed Adaptation Plan is situated within three interlinked processes, namely the Akatsi North Climate Risk and Vulnerability Assessment (CRVA), the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project framework implemented by Cowater International, and Ghana's district planning and budgeting cycles.

1.2.1 Linkage to the Akatsi North Climate Risk and Vulnerability Assessment

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

- Identification of dominant climate hazards (e.g., 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 Akatsi North CRVA, ensuring coherence between assessment and action.

1.2.2 Alignment with the SIGRA Project

The CAP was developed under the 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;
- 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, including:

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

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

1.3 Who this Document is for (Planners, Engineers, Sector Heads, Partners)

This document is prepared as an operational guide rather than simply a policy reference, and is intended to support the diverse actors involved in planning, financing, and implementing development interventions in Akatsi North District.

Table 1: Primary users and how they are expected to use the CAP

User Group	Intended Use
District Planning Officers	Integrate costed adaptation actions into MTDPs and Annual Action Plans
Budget and Finance Officers	Inform budget preparation, costing assumptions, and funding prioritisation
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 How the CAP Should be Used (Budgeting, MTDPs, Proposals, Implementation)

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

- Agriculture and Food Security
- Biodiversity and Ecosystems
- Health and Sanitation
- Water Resources
- Disaster Risk Reduction
- Gender Targeted Options

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 refined during detailed project preparation.

2. CLIMATE RISKS AND PRIORITY ADAPTATION NEEDS

2.1 Introduction

This section examines the climate risk profile of Akatsi North District by highlighting the key hazards, the sectors and population groups most affected, and the implications for district-level investment planning. Drawing on the CRVA it shows that climate risk in the district is not shaped by isolated hazards alone, but by the interaction between erratic rainfall, flooding, drought, heat stress, bushfires, weak infrastructure, and underlying livelihood vulnerabilities. The section therefore provides a basis for understanding where climate impacts are most concentrated, who faces the greatest exposure and sensitivity, and why adaptation investments in Akatsi North must be designed to strengthen water security, protect critical assets, and build the resilience of climate-dependent livelihoods.

2.2 Key Climate Hazards and Vulnerable Sectors

The CRVA for Akatsi North (SIGRA, 2025) identifies a set of interacting hazards that shape climate risk in Akatsi North. Overall, the CRVA's hazard–sector linkages point to a risk system where climate variability repeatedly undermines agriculture and water security, while infrastructure fragility magnifies both direct losses and indirect welfare impacts.

Erratic rainfall and prolonged dry spells, increasing temperatures/heat stress, flooding and waterlogging in low-lying settlements, and dry-season bushfires are among the main elements of hazard in this area. These hazards are reinforced by livelihood and environmental stressors such as pest outbreaks (e.g., fall armyworm and termites) and land/vegetation degradation, which amplify losses even when climate shocks are moderate (SIGRA, 2025).

The most exposed and climate-sensitive sector in Akatsi North District is agriculture, which anchors employment and household income in the district. Climate shocks reduce yields and livestock productivity through prolonged dry spells, waterlogging/flooding, and heat stress; these effects are compounded by pest infestations (including fall army worms and termites), which further erode production and incomes. As a result, climate shocks in this sector translate quickly into food insecurity and income instability, with knock-on effects on migration pressures and household coping strategies (SIGRA, 2025).

Water resources, WASH, and health constitute a second vulnerability cluster. Higher temperatures accelerate evaporation and shrink surface water volumes, while floods and stagnant conditions increase the likelihood of contamination and waterborne disease risks (ANDA, 2025). Water scarcity also increases the time and physical burden of water collection, which disproportionately affects women and girls, reduces time for school and income generation, and heightens exposure to health risks (SIGRA, 2025).

Infrastructure and social services are a third vulnerability cluster, because flooding and rainfall variability damage roads, public buildings, and facilities, limiting market access, emergency response, and continuity of education and health services (SIGRA, 2025). Notably, critical assets in the district such as dams, schools, health facilities, markets and the poor existing transport networks, are repeatedly climate-exposed, implying high economic and welfare cost to the district's vulnerability.

Table 1: Summary table (Key hazards → Vulnerable sectors → Main impact pathways)

Key Hazard	Most Vulnerable Sectors/Assets	Typical Impact Pathways (as evidenced in the CRVA)
1. Water scarcity / heat - particularly acute in Nyitawuta and communities dependent on poorly maintained or overgrown community dams, including Ave Afiadenyigba and Ave Xevi	Community dams and other water points; household water supply and WASH; rain-fed agriculture and livestock; health; women and girls responsible for water collection	Reduced surface water, degraded quality, higher water-collection burden for women, constrained irrigation and livestock water
2. Flooding / waterlogging—concentrated in Ave Dzadzepe, Ave Havi, Nyitawuta, parts of Ave Dakpa (including around the chief's palace), with recurrence also reported in Ashiagborvi and Atsata Bame	Agriculture, Farmland and crops; the Ave Dakpa Dam and local drainage systems; feeder roads, bridges and transport links; schools, health facilities and markets	Crop losses, infrastructure damage, disrupted services/market access, higher disease risks
3. Drought / erratic rainfall — especially evident in Kpegbedza, with prolonged dry spells and unreliable rainfall also affecting communities such as Avevi, Ave Dakpa and Nyitawuta	Rain-fed crop production; livestock; household food security; community water sources; smallholder livelihoods	Yield decline, livestock stress, food insecurity, income instability, migration pressure
4. Dry-season bushfires/wildfires — prominent in lower-lying farms and vegetation zones, particularly around Zemu, Agormor and Ashiamgborvi	Farmlands, forested zones and other natural resources	Crop and asset losses during dry season; amplified by burning practices

2.3 Priority Risk Hotspots and Affected Groups

The Akatsi North District Assembly CRVA (SIGRA, 2025) reveals that climate risk hotspots in Akatsi North are spatially concentrated around flood-prone settlements and low-lying areas, forested/vegetation zones susceptible to dry-season fires, and drought-stressed communities facing chronic water scarcity (Figure 1).

Figure 1: Stakeholders participatory mapping of priority risks hotspots (SIGRA, 2025)



Flood-prone hotspots include Ave Dzadzepe, Ave Havi, Nyitawuta, and parts of Ave-Dakpa (including the vicinity of the chief's palace), with additional flood recurrence reported in Ashiagborvi and Atsata Bame.

Bushfire hotspots are prominent in lower-lying farmlands during the January–April dry season, and in forested zones such as Zemu, Agormor, and Ashiamgborvi; risk is heightened by vegetation burning to stimulate pasture regrowth. Drought-prone hotspots are exemplified by Kpegbedza, where severe water scarcity undermines both agriculture and domestic supply.

Across these hotspots, the most affected groups are those whose livelihoods and daily responsibilities depend directly on climate-sensitive natural resources and on fragile infrastructure: smallholder farmers, women (including female-headed households), youth, the elderly, Persons with Disability (PWDs), and migrants.

The CRVA makes the gendered nature of exposure explicit: women's roles in water collection, caregiving, and food security increase their sensitivity to drought and water-quality deterioration, while also reducing their time for income generation and participation in local decision-making (SIGRA, 2025). Youth vulnerability is also reflected in disrupted education and migration pressures when farming becomes less reliable and rural economic options contract. PWDs face heightened constraints during floods and infrastructure failures, including mobility barriers and increased dependency, which the district-level participatory findings also emphasize.

Table 2: Summary of the impacts of changing climate on livelihoods by communities

Community	Climate Change Impacts	Women	Men
Avevi	Erratic rainfall, prolonged dry spells	Increased burden in farming, reduced earnings from crops.	Lower crop yields affect income; pressure to adopt resilient methods.
Ashiagborvi	Deforestation, erratic rainfall, increased bush burning, temperature changes	Challenges in preserving food security; reduced economic options.	Increased difficulty in maintaining farms; higher costs for irrigation.
Ave Afiadenyigba	Flooding and waterlogging	Loss of farmland affects income; strain on household resources.	Higher costs for flood recovery; reduced farming output.
Ave Dakpa	Droughts and reduced rainfall	More time spent on water collection; reduced productivity in subsistence farming.	Difficulty sustaining livestock; increased investment pressures.
Ave Xevi	Heatwaves, water scarcity	Increased health risks and reduced energy for daily tasks.	Stress from providing irrigation; lower income from cash crops.
Nyitawuta	Prolonged dry periods, drying of water bodies, irregular rainfall	Higher workloads to secure water for households.	Struggles to maintain agricultural income. Cutoff from other communities
Hadave	Heavy rains, inconsistent patterns	Strain on maintaining crops during extreme rains.	Damage to farm equipment and facilities.

Community	Climate Change Impacts	Women	Men
Dzadzepe	Soil erosion, flooding	Efforts to maintain food crops with diminished soil quality.	Investment challenges in soil improvement methods.
Kpegbadza	Flash flooding, drought risks	Decreased effort to secure household safety and stability.	Financial losses from infrastructure damage.
Zemu	Deforestation, erratic rainfall, increased bush burning, conflict with agriculture limited resources, temperature changes	Limited ability to ensure food sufficiency.	Increased debt due to unstable agricultural returns.

2.4 Priority Affected Groups

The Climate Risk/Vulnerability Assessment indicates that the groups most affected by climate change in Akatsi North are those whose livelihoods, wellbeing, and daily survival depend heavily on climate-sensitive natural resources and on access to weak or disrupted infrastructure. These groups face the strongest overlap between exposure to climate hazards, dependence on natural-resource-based livelihoods, and limited capacity to absorb and recover from repeated shocks.

- Women and female-headed households:** Women are a priority affected group because climate risks intersect with their responsibilities in farming, water collection, caregiving, and household food provision. Drought, water scarcity, and declining water quality increase their time burden, reduce the time available for income-generating activities, and heighten health and welfare risks. The community-level evidence also shows that women experience reduced farm earnings, greater difficulty maintaining food security, and increased domestic pressure during and after climate shocks. These burdens can be even more severe for female-headed households where access to labour, land, finance, and other adaptive resources may already be limited.
- Youth:** Youth constitute another priority affected group because climate change weakens both current livelihood opportunities and future prospects. When farming becomes less reliable and local economic opportunities narrow, young people face rising migration pressure, reduced incentives to remain productively engaged in agriculture, and disruptions to education and skills development where roads, schools, and related services are affected by floods or other shocks. Their vulnerability is therefore both immediate and long term, reflecting exposure to current climate stresses as well as declining prospects for stable livelihoods in the future
- Older persons and persons with disabilities (PWDs):** Older persons and PWDs are especially vulnerable because climate hazards often interact with mobility constraints, health challenges, and dependence on functioning infrastructure and services. Flooding, damaged roads, disrupted transport, and failing public facilities can increase their isolation, limit access to assistance and healthcare, and deepen dependency during climate shocks. In this sense, their vulnerability is shaped not only by the hazard itself, but also by the fragility of the support systems on which they rely.
- Migrants and socially vulnerable households:** Migrants and other vulnerable households are also among the priority affected groups because repeated climate shocks can further weaken already fragile livelihood systems and reduce their ability to cope and recover. Where households have limited assets, weaker social support, or insecure access to land and services, the effects of drought, floods, and bushfires are likely to be more severe and more difficult to

reverse. This makes them particularly susceptible to prolonged welfare losses and deeper livelihood insecurity.

- **Smallholder farmers:** Within the broader farming population, smallholder farmers are especially vulnerable because they depend heavily on rainfall, local water sources, land quality, and fragile access routes to farms and markets. Their limited asset base and lower capacity to absorb losses make them particularly sensitive to repeated climate shocks. In communities such as Avevi, Ave Afiadenyigba, Nyitawuta, Dzadzepe, and Zemu, climate impacts translate into food insecurity, unstable incomes, and growing difficulty sustaining agricultural production under worsening conditions.

The overall pattern of vulnerability in Akatsi North shows that the most affected groups are those facing the strongest overlap between hazard exposure, dependence on climate-sensitive livelihoods, and limited adaptive capacity.

2.5 Implications for District Investment Decisions

The CRVA's risk profile implies that district investments should prioritize:

- (i) Protecting high-value, high-dependency assets in hazard-prone locations, and
- (ii) Reducing the everyday vulnerability drivers water insecurity, weak utilities, and fragile access infrastructure that convert climate variability into repeated livelihood losses.

From an adaptation perspective, an investment strategy should focus on targeted risk reduction investments that deliver benefits even under uncertainty. Considering that the agriculture sector forms the majority of the district's socioeconomic profile, priority adaptation investments should focus on reducing exposure and sensitivity of farms and agro-dependent households by balancing structural adaptation investments (e.g., flood protection for farms and community assets, climate-resilient feeder roads and culverts, and drainage improvements in production and market corridors) with non-structural adaptation investments (e.g., early warning dissemination, climate advisory services, and agroecology training) so that agricultural losses are prevented rather than only responded to after the event.

As well, a core implication is that water investments are both adaptation and development multipliers. The district relies on a limited dam network, including the Ave Dakpa Dam (noted as flood-prone) and community dams, many of which are non-engineered and impaired by water hyacinths and debris; these constraints directly affect domestic supply and irrigation reliability. Investments should therefore focus on resilient water infrastructure (rehabilitation/desilting, ecosystem management, and flood protection around strategic water assets), paired with governance arrangements for maintenance to avoid rapid functionality loss.

Further, the flooding of the TVET school in Ave-Dakpa illustrates how flood risk can directly undermine human capital development. This resulted in the relocation of the school, disrupting young people's access to vocational education and practical skills training in the district. Similarly, health facilities and markets are essential continuity assets during shocks. Climate-resilient upgrades to drainage, roads, bridges, and public buildings reduce both direct damages and indirect losses from disrupted market access and emergency response.

Moreover, investment choices should be explicitly gender-responsive to address differential exposure and capacity. The CRVA underscores that women's roles in agriculture, caregiving, and water management require targeted measures that reduce time poverty and strengthen agency and support to women farmers facing constrained access to land, credit, and inputs (SIGRA, 2025).

Finally, the CRVA findings indicate that limited utilities (pipe-borne water/wells) and weak transport amenities constrain adaptive capacity in communities such as Ave Dakpa, Avevi, Ave Dzadzepe, and Nyitawuta, making basic service expansion a legitimate adaptation priority. Taken together, the investment logic is to concentrate first on water security, flood-risk reduction around key assets, and

service-access infrastructure, while bundling livelihood resilience (climate-smart agriculture, pest management, and diversification) to reduce repeated climate-driven income shocks.

2.6 Link to Subsequent Chapters

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

- *Chapter Three* builds on this risk profile to explain how adaptation options were prioritized using participatory methods and Multi-Criteria Analysis.
- *Chapter Four* translates these priorities into fully costed adaptation actions that the district can implement, budget for, and mobilize resources around.
- *Chapter Five* sets out the implementation and capacity development framework needed to operationalise these actions effectively.
- *Chapter Six* extends this by examining financing, phasing, and resource mobilisation pathways. It shows how the district can sequence actions over time, match adaptation priorities with potential funding sources, and engage public, private, and development partners in implementation.
- Finally, *Chapter Seven* provides the monitoring, evaluation, learning, and adaptive management framework, while Chapter Eight concludes with the way forward for implementation, scaling, and longer-term district resilience building.

3. ADAPTATION PRIORITISATION PROCESS AND LEARNING OUTCOMES

3.1 Introduction

This chapter explains how Akatsi North District translated the climate risks and vulnerabilities identified in the CRVA into a structured set of adaptation priorities suitable for costing, investment planning, and integration into district development planning.

The CRVA identified major climate hazards affecting the district, including erratic rainfall, prolonged dry spells, flooding and waterlogging, increasing temperatures and heat stress, and bushfires, as well as the sectors, communities, and social groups most exposed to these risks. These hazards intersect with livelihood dependence on agriculture, weak infrastructure, water insecurity, and social vulnerability, thereby creating a strong need to move beyond risk diagnosis toward a practical set of adaptation responses that are technically sound, socially inclusive, and feasible within district institutional systems. Specifically, this chapter:

- Documents how the district generated and organised a comprehensive longlist of sector-based adaptation options;
- Explains the participatory prioritisation process used to review, compare, and rank these options;
- Presents the multi-criteria analysis (MCA) framework applied to support transparent and evidence-informed decision-making; and
- Highlights the key lessons and institutional learning that emerged from the prioritisation process.

By documenting the methodology and results of the prioritisation exercise, this chapter strengthens transparency, consistency, and traceability for district stakeholders, SIGRA partners, and potential financing institutions. It also provides the analytical bridge between the climate risk profile presented in Chapter Two and the costed adaptation actions set out in Chapter Four.

3.2 Overview of the Prioritisation Approach

The prioritisation process for Akatsi North District followed a structured evidence-to-action pathway. Rather than generating adaptation ideas independently of the risk analysis, the process built directly on the findings of the Climate Risk and Vulnerability Assessment (CRVA), which had already identified the district's major climate hazards, vulnerable sectors, affected population groups, and geographical hotspots. Four main inputs informed the prioritisation process:

1. **Climate risk evidence from the CRVA:** The CRVA identified the main hazards affecting Akatsi North District, including erratic rainfall, prolonged dry spells, flooding and waterlogging, increasing temperatures and heat stress, bushfires, pest outbreaks, and environmental degradation. It also mapped their effects on sectors such as agriculture, water resources, WASH, health, infrastructure, and social services, while highlighting vulnerable communities and groups such as smallholder farmers, women, youth, older persons, persons with disabilities, and migrants.
2. **Sector-specific adaptation option development:** Based on the CRVA findings, sector working groups translated identified vulnerability patterns into concrete adaptation options across the main sectors prioritised in the district. These included Agriculture and Food Security, Biodiversity and Ecosystems, Water Resources, Health and Sanitation, Gender targeting, and Disaster Risk Reduction. Together, these sector-based option sets formed the longlist of adaptation measures used in the prioritisation exercise.

3. **Participatory review and refinement:** District technical staff and relevant stakeholders reviewed and refined the longlisted options to ensure that they reflected practical implementation realities, institutional responsibilities, and local development needs within Akatsi North. This participatory step was important for aligning proposed actions with district capacities, community priorities, and the lived realities of climate risk across exposed settlements and livelihood groups.
4. **Multi-Criteria Analysis (MCA):** A structured Multi-Criteria Analysis was applied to compare and rank adaptation options using economic, social, environmental, technical, and institutional criteria. This helped ensure that prioritisation decisions were transparent, evidence-informed, and consistent with SIGRA's emphasis on gender-responsive, inclusive, and implementable adaptation planning.

Table 4: 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 Longlisting of Adaptation Options

The Akatsi North District CRVA documents the district's key climate hazards, sector vulnerabilities, risk hotspots, and affected population groups. Rather than treating adaptation planning as a separate exercise, the longlisting process built directly on this evidence base so that the proposed actions would respond to the actual pattern of climate risk facing the district. In Akatsi North, this pattern is shaped by erratic rainfall, prolonged dry spells, flooding and waterlogging, heat stress, bushfires, pest outbreaks, and environmental degradation, with particularly strong effects on agriculture, water resources, WASH, health, infrastructure, and climate-sensitive livelihoods.

To translate these findings into actionable planning options, sector-specific adaptation measures were developed through consultation with district technical departments and stakeholder review of the CRVA findings. This process generated adaptation options that reflected both the evidence from the risk assessment and the practical realities of district implementation. The options were organised across six sectors that structure the Akatsi North Costed Adaptation Plan: Agriculture and Food Security, Biodiversity and Ecosystems, Water Resources, Health and Sanitation, Gender targeting, and Disaster Risk Reduction.

The resulting longlist comprised 47 discrete adaptation options (Annex 2), organised across the six sectors.

Table 5: Total number of adaptation options

Sector	Number of options
Agriculture and Food Security	9
Biodiversity and Ecosystems	7
Water Resources	9
Health and Sanitation	7
Gender Targeting	6
Disaster Risk Reduction	9
Total	47

The longlist ensures that both immediate adaptation needs and longer-term resilience investments were considered. It therefore includes a mix of livelihood, infrastructure, governance, ecosystem, service-delivery, and social inclusion measures, providing a sufficiently wide pool of options from which district stakeholders could later identify the most feasible and strategic priorities for costing and implementation.

3.4 Multi-Criteria Analysis (MCA): Criteria, Weights, and Rationale

To ensure that prioritization was not based on opinion alone, the study applies the MCA to assess each adaptation action within each sector of ANDA. The MCA, also known as multi-objective decision-making, is a tool designed for scenarios where single-criterion methods, such as cost-benefit analysis, fail to address all relevant factors. This is especially true when environmental and social impacts are significant but cannot be quantified monetarily. MCA offers a framework for evaluating a comprehensive range of criteria, encompassing social, environmental, technical, economic, and financial aspects (Ngara, 2011).

For each adaptation action, stakeholders scored indicators under each criterion based on evidence from the vulnerability assessment, sector experience and practical implementation knowledge. A scoring measure of Low (1) to High (4) were used to capture relative performance. The MCA then applied equal weights to reflect the overall priority and rank of the adaptation options. This equal weight scoring approach creates a consistent basis for comparing actions within and across sectors. The two-step logic is essential because an adaptation action may score highly on one criterion (e.g., risk mitigation) but perform weakly on another (e.g., feasibility), and the final priority should reflect both performance and relevance to district realities. The criteria for assessing adaptation options are outlined in Table 5.

Table 5: Multi-criteria indicators for assessment of adaptation actions

Dimension	Indicators	Guiding Questions for Assessment
Economic	Affordability (cost efficiency)	Is the cost of implementing the adaptation option efficient/affordable?
	Economic feasibility	Is the financial/economic potential (related to financial resources, economic structures, and economic mobility) for the adaptation option a constraint?
Social	Traditional acceptance of adaptation	Does the option typically find acceptance within existing socio-cultural norms?
	Social co-benefits	Are there social co-benefits, such as health, education, peace, food security, energy access, water and sanitation, to be had from the option?

Dimension	Indicators	Guiding Questions for Assessment
	Gender responsiveness/ inclusiveness	Is the option accessible particularly to vulnerable groups including gender?
	Equity	Does the option reduce inequalities?
Environmental	Environmental co-benefits	Does the option have the potential to improve GHG emissions, biodiversity, human health, soil quality, water quality, air quality, climate, landscape?
	Flexibility	Does the option have the ability to change behavior in response to changing conditions (not only mitigate vulnerability to diverse climate change risks but also function effectively across a broad spectrum of climatic conditions)?
Technological Institutional	Technical feasibility	Are the technology and associated human resources capacity needed for the adaptation option available?
	Effectiveness	Does the option yield considerable benefits in terms of avoided consequences, albeit potentially at a high cost?
	Replicability	Is there a possibility for the adaptation option or intervention to be scaled at other parts of the country?
	Institutional feasibility	Does the adaptation option align with laws, regulations, and institutional structures
	Alignment with district and/or national priorities	The extent to which does this measure support other development priorities of the district or the country?

3.5 Participatory Decision-Making and Gender Integration

Following the MCA scoring and ranking, the prioritization process transitioned from technical assessment to participatory decision-making to validate results and translate them into implementable priorities for ANDA.

Stakeholders reviewed the ranked outputs, discussed divergences between sector perspectives, and applied contextual judgment to ensure that high-scoring options also made sense within local institutional, budget, and implementation conditions.

This stage was also used to deliberately integrate gender and social inclusion considerations into the final set of priorities, recognizing that climate risks and adaptive capacities are not evenly distributed across women, men, youth, persons with disabilities, and poorer households. Gender integration was operationalized by checking whether proposed actions would reduce differential vulnerabilities, improve equitable access to services and livelihood support, and avoid reinforcing existing inequalities. The process resulted in a set of priority adaptation actions that are evidence-informed by the MCA outputs, context-sensitive to Akatsi North District conditions and designed to support inclusive and equitable resilience outcomes across ANDA.

3.6 Key Capacity Lessons from the Prioritization Process

The prioritization exercise highlighted that institutional capacity is a binding determinant of adaptation quality and deliverability, as reflected in Akatsi-North District CRVA (SIGRA, 2025).

- A first lesson is the need to strengthen technical capacity at community and district levels for climate-resilient delivery in key livelihood sectors, particularly agriculture and water. This includes skills for climate-smart production practices, soil and water conservation, integrated pest and disease management, and basic irrigation or water-use efficiency where feasible. For water and related services, capacity is needed for routine inspection, minor repairs, and local-level management of water infrastructure to prevent rapid deterioration and functionality loss.
- Second, the exercise reinforced the need to strengthen data and knowledge management for risk-informed decision-making. This indicates that ANDA requires routine systems for managing climate-risk information, baseline service data, asset condition records and community vulnerability profiles and linked to monitoring and budgeting.
- Third, the process clarified that gender integration is not automatic and must be operationalized through deliberate capacity. This includes inclusion strategies that ensure representation, access and enable meaningful participation. Capacity needs extend beyond representation to practical competencies: designing interventions that reduce time burdens linked to water access, ensuring women's participation in water and livelihood governance structures, and improving women farmers' access to information, inputs, and support services.
- Finally, stakeholders repeatedly returned to the importance of coordination across sectors, clear governance arrangements and realistic operations and maintenance planning to avoid rapid functionality loss after investment. Strengthening these delivery capacities alongside technical assessment skills, improves the likelihood that prioritized options move beyond planning and produce sustained resilience outcomes across ANDA's communities.

3.7 Transition from Prioritisation to Costing and Implementation Planning

Overall, the costing of the Adaptation Prioritisation Plan of Akatsi North District constituted the critical step through which identified adaptation priorities were translated into actionable and implementation-oriented interventions. Prior sections had established the district's climate risk profile and generated a ranked set of adaptation options through participatory review and Multi-Criteria Analysis. The costing process advanced this analytical work by converting these prioritised options into more clearly specified intervention packages, with defined activities, indicative resource requirements, institutional responsibilities, and delivery considerations. This was necessary to ensure that the plan functioned not merely as a statement of adaptation intent, but as an operational planning instrument capable of informing budgeting, coordination, and resource mobilisation.

At a substantive level, the costing exercise clarified the implementation requirements associated with each selected action, including the inputs, institutional arrangements, and supporting conditions needed for effective delivery. By incorporating not only capital costs, but also operations and maintenance, training, and monitoring requirements, the process strengthened the realism and planning value of the proposed interventions. It thereby reduced the likelihood of treating adaptation as a series of isolated capital investments detached from longer-term operational and institutional demands. In addition, the exercise embedded the prioritised actions more firmly within district governance structures, since the cost estimates were informed by the technical knowledge and practical experience of officers responsible for planning, budgeting, procurement, agriculture, engineering, physical planning, and disaster management.

The costing stage should therefore be understood not only as a financial exercise, but also as an institutional and implementation-oriented process that strengthened the operational readiness of the plan. By demonstrating how adaptation priorities could be specified, costed, and aligned with district delivery systems, it created the immediate foundation for the next chapter, which presents the sector-specific costed adaptation actions in detail. These actions represent the practical outcome of the prioritisation and costing process and provide the basis for the subsequent treatment of implementation arrangements, financing pathways, and monitoring and learning within the wider Costed Adaptation Plan.

4. COSTED PRIORITY ADAPTATION ACTIONS

4.1 Introduction

This chapter presents the prioritisation of adaptation options and the costing of the selected actions to inform implementation planning and financing decisions. It outlines how options are ranked using agreed criteria and stakeholder inputs, and how priority actions are translated into indicative cost estimates that reflect district delivery requirements. The costing of adaptation options was participatorily conducted by sector heads of the Akatsi North District. The indicative costs used in the ANDA CAP were developed using the activity-based approach set out in the Budgeting Guide and aligned with ANDA's budgeting procedures. Estimates were triangulated or generated using expenditure data from comparable activities previously implemented by the Assembly, relevant Assembly plans and budgets and benchmark costs from successfully implemented interventions in other districts. With validation by the district's sector heads and technical officers. The costs estimated include capital, operations and maintenance, training, monitoring, and other explained costs.

This process of costing began with a capacity building training session using adapted costing methods, templates and worked examples of adaptation costing. Following the training session, the sector heads including the district Planning Officer, Budget officer, Audit officer, Procurement head, director of Agriculture, physical planning officer, disaster management officer and district engineer, worked together to generate estimated costing based on available data such as past expenditures, known costs, researched costs and existing plans.

In total, 40 adaptation options were costed. The resulting portfolio estimated a total indicative investment requirement of GH¢44.80 of ranked adaptation options. Agriculture and Food Security had 7 options, estimated at a total of GH¢5.51 million. The Biodiversity and Ecosystem sector estimated 6 adaptation options at a total of GH¢3.28 million. Water Resources sector also had 8 options estimated at GH¢23.56 million in total. The Health and Sanitation as well had 5 adaptation options, at a total estimation of GH¢6.21 million. Similarly, the Gender targeting and Disaster Risk Reduction had 6 options totaling GH¢2.99 million and 8 options at a total of GH¢3.45 million, respectively.

Overall, the consolidated ranking and phasing schedule should guide funding decisions. For example, since resources are limited, the Assembly should first fund the highest-ranked, low-cost actions that are ready for implementation through the Annual Action Plans and Composite Budgets. While giving particular attention to urgent water-resource interventions, given that the Water Resources sector is the district's largest and most critical investment need. Larger and more capital-intensive water and infrastructure projects could be phased and prepared for co-financing or external support.

Photos 1: Images from costing capacity building



This section links the prioritisation results to practical budgeting, investment sequencing, and resource mobilisation. Costing was based on the following considerations:

- **Action description:** Defines the adaptation measure, what will be delivered, and the key activities required for implementation.
- **Climate risk addressed:** Specifies the primary hazard(s) and impact pathways the option is designed to reduce (e.g., flood losses, drought stress).
- **Target locations and beneficiaries:** Identifies where the action applies and who benefits, prioritising exposed communities and vulnerable groups.
- **Implementation modality (soft/hard):** Classifies the option as institutional/ behavioural/ service-based (“soft”) or infrastructure/engineering-based (“hard”), guiding delivery and costing.
- **Lead and supporting institutions:** Assigns implementation responsibility and coordination roles to ensure accountability and feasible execution.
- **Detailed cost breakdown (CapEx, O&M, training, M&E, contingency):** Disaggregates total costs into investment, recurrent and capacity-building components to support budgeting and lifecycle sustainability.
- **Implementation timeline:** Indicates sequencing and duration for delivery, enabling phasing, procurement planning, and integration into district work plans.

4.2 Costing Methodology and Assumptions

The costing of adaptation actions in Akatsi North District followed a participatory and bottom-up approach intended to support district-level planning, budgeting, and resource mobilisation. Rather than producing fixed engineering budgets, the exercise generated indicative cost estimates for priority adaptation actions based on district knowledge, existing plans, and practical implementation experience. This approach is consistent with the broader purpose of the Costed Adaptation Plan, which is to move from climate risk diagnosis to investment-ready and implementable district actions.

Cost estimates were developed through a participatory process involving sector heads and district technical officers, including the District Planning Officer, Budget Officer, Audit Officer, Procurement Head, Director of Agriculture, Physical Planning Officer, Disaster Management Officer, and District Engineer. The exercise drew on adapted costing methods, simplified costing templates, worked examples, past expenditure patterns, known local costs, researched costs, and relevant existing district plans. This ensured that the cost estimates were grounded in the implementation realities of Akatsi North District Assembly (ANDA).

The costing process was designed to capture the main delivery requirements of prioritised adaptation action. In practical terms, costing was informed by the following elements: the action description, the climate risk addressed, target locations and beneficiary groups, implementation modality, lead and supporting institutions, detailed cost breakdowns, and proposed implementation timelines. Importantly, the estimates were not limited to capital expenditures alone, but also incorporated operations and maintenance (O&M), training, monitoring and evaluation (M&E), and other recurrent or supporting costs needed for implementation sustainability. The methodology was guided by four main principles:

- **Bottom-up estimation:** Costs were derived from district-level technical knowledge, local experience, and past implementation practice rather than from externally imposed assumptions.
- **Indicative planning estimates:** The figures are intended to guide planning, budgeting, proposal development, and investment sequencing, and may therefore be refined during detailed project preparation or engineering design.
- **Consistency across sectors:** A comparable costing structure was applied across adaptation sectors to improve coherence, transparency, and usability within district systems.
- **Alignment with financing pathways:** Costing was undertaken with attention to the likely resource envelope and financing channels available to the district, including district-level public financing, sector-based public financing, development partners, NGOs, climate finance, project-based grants, and complementary community or private contributions.

Table 3: Costing assumptions across sectors

Item	Assumption
Cost type	Capital investments plus recurrent and soft costs, including O&M, training, M&E, and implementation support
Time horizon	Indicative implementation timelines and phased delivery integrated into district work planning
Currency	Ghana Cedis (GHc)
Cost basis	Past expenditures, known district costs, researched costs, existing plans, and participatory technical inputs
Budget status	Indicative planning figures, to be refined during detailed project preparation
Financing orientation	Matched, where possible, to district budgets, sector financing, partner support, climate finance, and co-financing arrangements

4.3 Overview of Sectoral Costed Adaptation Options

This section outlines the prioritized adaptation options for the Akatsi North District Assembly (ANDA), detailing the adaptation objectives, justification, and key considerations associated with each action. The prioritised adaptation actions for Akatsi North District reflect the key climate risks identified in the CRVA. Across the sectors, four adaptation options are selected and costed for each sector and participatorily justified with stakeholders. It further presents indicative implementation costs to support planning, budgeting, and resource mobilisation. The cost estimates are prepared in line with ANDA's budgeting procedures, incorporating year-on-year inflation assumptions to reflect expected changes in input and delivery costs over the implementation period.

For sector-based costing, the prioritised adaptation options were costed identifying key activities on the basis for estimating district-level implementation costs. Further, where a prioritised adaptation option appears in more than one sector due to its cross-cutting nature, it is assigned to the sector with the strongest primary alignment and implementation role, to prevent duplication and double costing. The next highest-ranked non-duplicated option was then selected in the other affected sector to maintain five distinct adaptation measures per sector.

Photos 2: Stakeholder workshop



4.3.1 Agriculture and Food Safety

According to the Akatsi North District Assembly (ANDA) Vulnerability Assessment, agriculture is among the most climate-sensitive sectors and requires priority attention due to its central role in livelihoods, food security, and household incomes. The nine (9) adaptation actions identified for the agriculture sector, estimated at a total of GH¢6.42 million and assessed using the Ranking and Performance Matrix (MCA) are discussed below. These actions primarily target smallholder farmers who depend largely on rain-fed production systems under increasing climate variability.

In ANDA, the agriculture adaptation options broadly emphasise livelihood resilience and climate-smart production. Farmer training and improved climate-resilient crop varieties emerge as the highest-ranked priorities, reflecting a strong focus on strengthening farmer capacity and protecting yields under drought and flood stress. Their higher placement is also consistent with strong performance across the MCA indicators, particularly effectiveness, alignment with district priorities, institutional and technical feasibility, and broad traditional and social acceptance, alongside positive results on environmental resilience, gender responsiveness, equity, and replicability. Complementary actions such as vocational and enterprise training, soil and water conservation, and community tree planting indicate an effort to diversify livelihoods while improving sustainable land management. These options generally scored well on acceptance, feasibility, and flexibility, while contributing to environmental efficiency and climate resilience. Lower-ranked options including agro-processing support, strengthening farmer organisations, agroforestry and small-scale irrigation, reflect interventions for value addition and reducing dependence on a single rainy season. Although their placement suggests relatively greater constraints linked to affordability, higher technical and institutional delivery requirements, even where social acceptance, gender responsiveness and broader resilience benefits remain strong.

Table 4: Estimated cost of agriculture and food safety sector prioritised adaptation actions

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (48)	Training farmers on climate-smart agroecological practices. Timeline: - Months 1–6: Training-needs assessment, preparation of modules and selection of demonstration sites - Months 7–24: Seasonal field schools, demonstrations, radio sensitisation and extension follow-ups	Improve farmers' capacity to apply climate-smart agronomic, agroecological and post-harvest practices that stabilise production under rainfall variability, flooding, dry spells and heat stress, addressing limited access to extension advice, climate information and improved farm-management practices.	- Ten farmer field-school, FBO training and on-farm agroforestry demonstration sessions for a cohort of 120 farmers, supported by 16 radio sensitisation broadcasts — 225,200.00 - One agroforestry demonstration-input package comprising improved seeds, fertiliser, compost and field markers — 6,000.00	- Smallholder farmers, particularly women farmers, young farmers and farmers in drought- and flood-prone communities. - Training schedules should consider women's care responsibilities and participation should be monitored by sex, age and disability status.	- Number of farmers trained, disaggregated by sex and age - Number of farmer field schools and demonstrations conducted - Percentage of trained farmers adopting promoted practices - Area of farmland under climate-smart practices - Change in yields or climate-related production losses	Lead: Department of Agriculture Supporting partners: Agricultural Extension Agents, FBOs, GMet, NADMO, local radio stations, traditional authorities and climate-service providers	231,200.00
2nd (46)	Use of improved climate-resilient and drought/flood-tolerant crop varieties Timeline: Months 1–3: Variety selection, procurement	Increase yield stability and reduce crop failure by promoting crop varieties that perform better under drought, waterlogging, heat and variable rainfall.	Ten demonstration plots and five varietal-selection and field-training sessions for 100 farmers, including seed-system strengthening and training on seed	- Rain-fed smallholder farmers, particularly women-headed farming households, low-income farmers and young farmers with limited access to certified seed. - Women and youth should receive	- Ten demonstration plots established - Number of farmers accessing certified climate-resilient seed	Lead: Department of Agriculture Supporting partners: Agricultural Extension Agents, certified seed producers, PPRSD, agricultural	191,500.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	planning and identification of demonstration farmers • Months 4–7: Establishment of ten demonstration plots and farmer training • Years 1–2: Distribution and scaling of successful varieties through FBOs and seed producers • Years 3: Seed-system consolidation, adoption monitoring and varietal review		selection and storage — 139,000.00 • Inputs for ten demonstration trials, certified seed packages for 100 farmers and ten seed-storage packages — 52,500.00	equitable access to demonstration plots, seed and extension support.	• Adoption rate of promoted varieties • Percentage improvement in crop establishment and survival • Change in yield stability under drought or excess rainfall • Proportion of women and youth beneficiaries	research institutions, FBOs and input dealers	
3rd (44)	Vocational and entrepreneurial training as an alternative livelihood Timeline: • Month 1: Market and skills-needs assessment, beneficiary	Diversify household income sources, especially for women and youth, to reduce dependence on climate-sensitive agriculture.	• One hundred trade-specific toolkits and 100 smartphone and mobile-money kits for trained beneficiaries — 110,000.00 • Six vocational and entrepreneurship training workshops for 100 beneficiaries,	• Unemployed and underemployed youth, women, persons with disabilities and members of farming households affected by climate-related income losses.	• Number of beneficiaries trained, disaggregated by sex, age and disability • One hundred trade tools and digital-finance kits distributed	Lead: District Assembly and Ghana Enterprises Agency Supporting partners: Department of Agriculture, TVET institutions, Department of	293,200.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	selection and curriculum development • Months 2–58: Skills training, apprenticeships, entrepreneurship coaching and toolkit distribution • Years 1–3: Business incubation, savings-group formation and financial linkages. Enterprise monitoring, mentorship and market-linkage support		including apprenticeship linkages, vocational assessment, entrepreneurship coaching and one baseline and end-line impact assessment — 183,200.00	• At least 50 per cent of beneficiaries should be women where feasible.	• Number of apprenticeships completed • Number of enterprises established or expanded • Percentage of trainees earning income after 6–12 months • Change in household non-farm income	Social Welfare and Community Development, financial institutions, apprenticeship providers and private businesses	
4th (44)	Soil and water conservation practices Timeline: • Months 1–3: Mapping of erosion hotspots and selection of demonstration farms • Months 4–6: Farmer training, field	• Reduce soil erosion, improve moisture retention and sustain agricultural yields through locally appropriate land and water conservation practices. The intervention addresses intense rainfall and runoff as well as declining soil	• Three conservation-agriculture and soil-health training and demonstration sessions for 100 farmers, supported by two technical assignments for gully rehabilitation, contour mapping and soil and water conservation planning — 155,000.00	• Farmers in erosion-prone, drought-prone and waterlogged areas, particularly women farmers and resource-poor households cultivating degraded land. • Demonstration inputs and extension support should be equitably distributed.	• Number of farmers trained in conservation agriculture • Area of farmland under soil and water conservation practices • Number of gullies and erosion hotspots rehabilitated	Lead: Department of Agriculture Supporting partners: Agricultural Extension Agents, EPA, Water Resources Commission, FBOs, NADMO, traditional authorities and	222,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	demonstrations, gully rehabilitation and distribution of field inputs • Months 7-12: Expansion to additional farms and watershed areas • Years 1-2: Maintenance, seasonal monitoring and assessment of soil and yield improvements	moisture during prolonged dry spells.	• One soil and water conservation demonstration-input package comprising cover-crop seeds, compost materials and field markers — 67,000.00		• Percentage of farmers adopting cover cropping, mulching or related practices • Improvement in soil cover and moisture retention • Reduction in visible erosion and surface runoff	community-based organisations	
5th (41)	Agro-processing equipment and factories Timeline: • Months 1–6: Commodity feasibility assessment, site selection, environmental screening and community consultation • Months 7–18: Detailed design,	• Reduce post-harvest losses, improve value addition and increase producer incomes by establishing local processing capacity for priority commodities. • Processing facilities can reduce spoilage and distress sales while creating employment and strengthening local market resilience.	• Four community-consultation and facility-management training sessions for 100 participants, supported by five technical consultancy inputs covering site assessment, engineering design, contractor procurement, construction supervision and equipment	• Smallholder producers, women processors and traders, youth, FBOs and agricultural cooperatives.	• Feasibility and site assessments completed • One agro-processing facility constructed and equipped • Volume of agricultural produce processed annually • Reduction in post-harvest losses	Lead: District Assembly and Department of Agriculture Supporting partners: Ghana Enterprises Agency, Ministry of Trade and Industry, FBOs, cooperatives, private processors, financial institutions, utility providers and	1,449,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	procurement and construction • Months 19–24: Equipment installation, testing and operator training • Years 3–5: Facility operation, maintenance, market development and performance monitoring		installation — 249,000.00 • Construction and equipping of one agro-processing facility, including one processing-equipment package, one solar photovoltaic system and one packaging and quality-testing package — 1,200,000.00		• Number of jobs created, disaggregated by sex and age • Increase in producer and processor incomes • Percentage of facility users and managers who are women	traditional authorities	
6th (38)	Supporting Farmer-Based Organisations, cooperatives and savings groups Timeline: • Months 1–6: Mapping and assessment of existing farmer groups, including registration, cooperative formation, leadership training and VSLA establishment • Years 1: Digitisation,	• Strengthen collective action, access to finance and inputs, market power and knowledge sharing to improve farmers' resilience and adoption of climate-smart practices. Strong farmer organisations reduce transaction costs and support coordinated responses to production and market risks.	• Registration and formation or strengthening of ten FBOs and cooperatives, including five VSLA and financial-literacy sessions for 100 members, mobile-money onboarding and savings-group support — 133,200.00 • Ten smartphone and mobile-money training kits and ten VSLA recordkeeping and lockbox packages — 9,000.00	• Smallholder farmers, women's producer groups, young farmers, informal savings groups and farmers with limited access to formal finance and markets. • Women should be represented in leadership and financial decision-making positions.	• Ten cooperatives formed or strengthened • Number of FBOs formally registered • Number and proportion of women and youth members • Number of functional savings and lending groups • Value of savings and internal loans mobilised • Volume of inputs purchased or produce	Lead: Department of Agriculture and Department of Cooperatives Supporting partners: Ghana Enterprises Agency, financial institutions, FBO networks, NGOs, mobile-money service providers and commodity buyers	142,200.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	mobile-money onboarding and financial and market linkages • Years 1-3: Governance support, performance monitoring and expansion of collective marketing				marketed collectively • Number of groups using digital financial and recordkeeping systems		
7th (36)	Small-scale irrigation and water management for dry-season farming Timeline: • Months 1–12: Technical feasibility studies, environmental screening, engineering design and establishment of water-user associations • Years 1–3: Dam rehabilitation, civil works and installation of drip	Expand reliable dry-season production and reduce drought vulnerability through small-scale irrigation and efficient water management. The intervention addresses dependence on rain-fed agriculture but requires effective water governance, technical supervision and sustainable maintenance arrangements.	• Design of one small-scale irrigation scheme, establishment of one farmer water-user association, four irrigation and water-management training sessions for 100 farmers, five hydrological and engineering consultancy inputs and 16 radio sensitisation broadcasts — 227,000.00 • Rehabilitation of one priority small dam, installation of one motorised pump,	Smallholder farmers in communities with existing dams, ponds or viable water sources, particularly women vegetable farmers, youth and households highly exposed to rainfall failure. Women and youth should be represented in water-user associations.	• Engineering and environmental assessments completed • Number of dams or irrigation systems rehabilitated or established • Area of farmland brought under irrigation • Number of farmers accessing irrigation, disaggregated by sex and age • Increase in dry-season	Lead: District Assembly, Ghana Irrigation Development Authority and Department of Agriculture Supporting partners: Water Resources Commission, EPA, Agricultural Extension Agents, farmer water-user associations, NADMO, traditional authorities and beneficiary communities	3,127,000.00

[illegible]

4.3.1.1 Training Farmers on Climate-Smart Agroecological Practices

Objective: Improve the capacity of smallholder farmers to apply climate-smart agroecological, agronomic and post-harvest practices that stabilize yields under rainfall variability and heat stress.

Justification: In ANDA, rainfall variability, floods, and dry spells increase production risks. But many farmers have limited access to timely agronomic advice, climate information, and improved farm management practices. Targeted training improves decision-making on planting windows, input use, soil and water management and risk reduction actions.

Key provisions and how they will be implemented in ANDA: Develop a practical demonstration module package tailored to ANDA's cropping systems, local crops and seasonal or common risks (dry spells, waterlogging, storage losses, etc.). The training modules should be delivered in short, field-based sessions, translated into local-language, locally feasible and be updated each season based on observed challenges. Extension agents will establish the demonstration plots in representative communities and run a full seasonal learning cycle where farmers compare "business-as-usual" with improved practices. The district will integrate training calendars with seasonal advisories where available. Coordination will be led by the Department of Agriculture with support from disaster management and climate partners to ensure consistent messaging. Inclusion of women and youth, with practical sessions to reduce barriers for women (who are active in vegetable production and produce trading) and for youth.

4.3.1.2 Use of Improved, Climate-Resilient and Drought/Flood-Tolerant Crop Varieties

Objective: Increase yield stability and reduce crop failure by promoting adoption of varieties that perform better under drought stress, waterlogging, heat, and variable rainfall.

Justification: Rain-fed production systems in ANDA are highly exposed to rainfall shocks; improved varieties provide a direct productivity and risk-reduction pathway, especially where farmers repeatedly experience poor germination, pest pressure, and yield decline under changing conditions.

Key provisions and how they will be implemented in ANDA: ANDA will establish a participatory district variety shortlist in collaboration with MoFA, relevant research institutions, and certified seed producers, selecting varieties based on drought/flood tolerance, maturity period, pest resistance and market preferences. On-farm validation trials will be conducted through demonstration plots and lead farmers before wide rollout. Certified seed will be procured and distributed through transparent, traceable channels. Each variety will be accompanied by a simple agronomy package (planting date, spacing, seed rate, fertilizer options, drainage measures) delivered through extension follow-ups. To improve affordability and continuity, ANDA will promote group purchasing or strategies such as revolving seed schemes managed by farmer groups with clear repayment and re-distribution rules.

4.3.1.3 Vocational and Entrepreneurial Training

Objective: Diversify household income sources, especially for youth and women, to reduce dependence on climate-sensitive farming and strengthen adaptive capacity.

Justification: Climate shocks can rapidly reduce farm incomes; where alternative skills and micro-enterprises are limited, households face repeated livelihood stress. Enterprise and vocational training supports income smoothing, reduces distress migration, and strengthens local value chains.

Key provisions and how they will be implemented in ANDA: Deliver vocational and enterprise training based on a rapid market scan to identify local skills with real demand such as agro-processing operations, packaging and labeling, equipment repair, input retailing, aggregation/logistics, and service

provision (spraying, threshing, transport). Vocational and entrepreneurial training serves as alternatives to the overdependence on agricultural production. To enable start-up, ANDA will facilitate access to savings groups and microfinance products, and where feasible provide toolkits through matching grants or shared tool banks managed by groups. Selection will prioritize youth and women using transparent criteria, with safeguards against elite capture and follow-up tracking at 6–12 months (enterprise start-up, income proxies, loan performance).

4.3.1.4 Soil and Water Conservation Practices

Objective: Reduce erosion, improve soil moisture retention, and sustain yields through farm-level measures that conserve land and water resources under variable rainfall.

Justification: Intense rainfall events increase runoff and erosion, while dry spells reduce soil moisture and crop performance. Soil and water conservation reduces vulnerability in both directions by limiting flood-related soil loss and improving drought buffering.

Key provisions and how they will be implemented in ANDA: Promote a locally feasible soil and water conservation practices, including mulching, cover cropping, crop rotations, composting/manure management, grass barriers, and targeted drainage where waterlogging is a recurring problem. Extension agents will deliver hands-on coaching through demonstration plots that show runoff reduction, improved soil moisture, and yield benefits, supported by lead farmers who provide peer learning. Interventions will prioritize erosion hotspots and upstream areas that affect dams and streams, linking farm practices to watershed protection. Monitoring will rely on simple field indicators recorded seasonally and reviewed in community meetings to refine and scale practices.

4.3.1.5 Agro-Processing Equipment and Factories

Objective: Reduce post-harvest losses, improve value addition, and increase incomes through processing capacity for key commodities.

Justification: Climate variability can increase spoilage risk and disrupt market access. Without processing and storage options, farmers incur losses and sell at low prices. Processing capacity strengthens market resilience, stabilises incomes, and supports local employment.

Key provisions and how they will be implemented in ANDA: Develop agro-processing support based on commodity-specific feasibility assessments that consider agricultural production volumes in the district. Market linkages will be formalized with buyers, institutional markets and aggregators to ensure consistent throughput and revenue sustainability, including participation pathways for women processors and traders.

4.3.1.6 Supporting Farmer-Based Organisations, cooperatives, and savings groups

Objective: Strengthen collective action, access to inputs/finance, market power and knowledge-sharing to improve resilience and adoption of climate-smart practices.

Justification: Individual farmers often face constraints in purchasing quality inputs, credit, extension services and stable markets. Strong Farmer-Based Organisations (FBOs) and savings groups reduce transaction costs, improve bargaining power, and support coordinated responses to climate risks.

Key provisions and how they will be implemented in ANDA: Facilitate formation/strengthening of farmer based and other cooperative groups with clear mandates, leadership training, and transparent records. Support savings and internal lending to build buffers for shocks, and link mature groups to microfinance institutions and warehouse systems where possible. Use groups for extension delivery, bulk input purchase and collective marketing. ANDA should establish a group registry and periodic grievance mechanisms to sustain trust.

4.3.1.7 Small-Scale Irrigation and Water Management for Dry-Season Farming

Objective: Expand reliable dry-season production and reduce drought vulnerability through small-scale irrigation and efficient water management at community and farm levels.

Justification: Dependence on rainy season increases vulnerability to rainfall delays and dry spells. Small-scale irrigation can stabilise production and incomes, but requires strong water governance, technical support, and maintenance to remain functional.

Key provisions and how they will be implemented in ANDA: Implement small-scale irrigation and water-efficient farming as a targeted intervention focused on communities where water assets (dams or ponds/lakes) already exist and can be made reliable through rehabilitation. Particularly where dams are affected by siltation, aquatic weeds and flood risks, implementation will begin with desilting, spillway protection, and routine aquatic weed control to secure usable storage. Extension services should deliver training and demonstrations showing how timing and application rates affect yields and water use such as soil moisture practices (mulching, compost, ridging), and appropriate application methods (drip kits where feasible). The irrigation scheme design will also favour low-cost, maintainable technologies suitable for smallholders, combined with field drainage improvements to manage waterlogging during high flows. Communities with facilitation from the district assembly will constitute Local Community Water User Committees (with women and youth representation) to set water allocation schedules, enforce buffer protection around dams/streams, manage user fees and resolve conflicts. Further dry-season agronomy training on crop choice and efficient watering schedules will be conducted. Operational maintenance will be financed through a community managed fee system.

General Costed Agricultural Sector Considerations

Investment Logic

Costs are concentrated in production stabilisation and value-chain resilience. Small-scale irrigation and water management account for roughly half of the sector envelope, reflecting the high capital requirements of dam rehabilitation and irrigation infrastructure. Agro-processing equipment and facilities form the second major cost block, while the remaining allocation is spread across farmer training, climate-resilient seed systems, vocational support, tree planting, soil and water conservation, and farmer group strengthening. The overall logic is to combine structural investments that reduce rainfall dependence with lower-cost capacity, land management, and livelihood diversification actions. This design is consistent with the district's risk profile, where agriculture is the most climate-sensitive sector and where repeated dry spells, flooding, pests, and land degradation rapidly translate into food insecurity and unstable incomes.

Economic and Feasibility Assessment

The package has strong practical value because it mixes high-return livelihood actions with scalable extension-led measures. Farmer training, improved varieties, FBO strengthening, soil and water conservation, and vocational support are institutionally feasible through MoFA, existing farmer groups, and district extension systems. Irrigation and agro-processing offer larger medium- to long-term returns, but their feasibility depends more heavily on water governance, procurement quality, maintenance discipline, and market linkage arrangements. Overall, the sector is economically attractive because lower-cost actions protect and enhance the returns to higher-cost investments.

Operations and Maintenance Considerations

The agriculture package has mixed upkeep requirements. The lower-risk actions are farmer training, improved varieties, FBO strengthening, and soil and water conservation practices, since these depend mainly on continuity of extension support, periodic refresher training, and sustained adoption by farmers. Tree planting, agroforestry, and community tree campaigns require a moderate level of maintenance because their success depends on seedling survival, fire protection, grazing control, and follow-up monitoring. By contrast, small-scale irrigation and agro-processing investments present the highest maintenance risk, given their dependence on equipment functionality, water-user governance,

repairs, and affordable maintenance financing. Sustained functionality will therefore require community-based management arrangements, maintenance funds, routine technical supervision, and clear roles for user groups and district support services.

4.3.2 Biodiversity and Ecosystem

Biodiversity is a climate-sensitive sector in Akatsi North and requires priority attention because ecosystem degradation undermines agricultural productivity, water security, and livelihoods. The seven (7) biodiversity adaptation actions estimated at a total of GH¢3.44 million were identified and assessed using the Ranking and Performance Matrix (MCA) are discussed below. These actions focus on reducing vegetation loss, unsustainable biomass use, and fire risk, while strengthening local stewardship and governance.

Overall, the options emphasise ecosystem restoration and protection through nature-based measures supported by governance and demand-side interventions. Agroforestry and tree planting actions, including community tree planting campaigns and related training, emerge as the strongest priorities, reflecting high performance across indicators such as effectiveness, alignment, feasibility, acceptance, and environmental resilience. By-laws also feature prominently, underscoring the role of enforceable local rules in addressing bush burning and illegal felling. Other actions such as efficient cookstoves and alternative energy, community-led fire management, and vegetation restoration aim to reduce pressure on forest resources.

Table 5: Estimated cost of biodiversity and ecosystem sector prioritized adaptation action

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (48)	Agroforestry and community tree planting Timeline: - Months 1–6: Participatory mapping, selection of farms and planting sites and nursery preparation - Months 7–18: Community sensitisation, nursery establishment, distribution of starter kits and first planting cycle - Years 2–3: Additional planting, replacement of failed seedlings and survival monitoring. Thereafter: Routine pruning, fire protection, grazing control	Integrate trees into farming landscapes to restore degraded soils, reduce erosion and heat stress and strengthen ecosystem services that support agricultural production and rural livelihoods. The intervention responds to vegetation loss and land degradation, which reduce soil fertility, increase runoff and weaken ecological functions that buffer climate extremes.	- Community sensitisation workshops, participatory mapping, nursery establishment and tree planting, including the distribution of 100 starter kits — 223,900.00 - Establishment of one community tree nursery and planting infrastructure for 30,000 seedlings — 319,000.00	- Smallholder farmers, particularly women farmers, young farmers, livestock keepers and communities located in degraded agricultural landscapes - Women and youth should receive equitable access to starter kits, seedlings, training and benefits from tree products	- One community tree nursery established - Thirty thousand seedlings produced and planted - One hundred starter kits distributed - Number of farmers participating, disaggregated by sex and age - Area of farmland placed under agroforestry - Seedling survival rate after 6, 12 and 24 months	Lead: Department of Agriculture and Forestry Commission Supporting partners: District Assembly, EPA, FBOs, traditional authorities, landowners, community-based organisations, women's groups and youth groups	542,900.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	and tree maintenance						
1st (48)	Tree planting campaigns and training Timeline: - Months 1–4: Identification of priority planting sites, species selection, nursery preparation and training of community trainers - Months 5–12: District tree planting campaigns, school greening and first planting cycle - Months 13–24: Additional campaigns, replacement planting and survival monitoring	Scale ecosystem restoration by mobilising communities, schools, farmer organisations and other institutions to plant and maintain trees in priority degraded areas. Tree planting improves soil structure, shade, wind protection and moisture retention while providing useful tree products and contributing to long-term biodiversity restoration.	- District tree planting campaign events, school greening, training of community trainers and FBO engagement — 206,400.00 - Establishment of one campaign nursery and planting infrastructure for 50,000 seedlings — 398,000.00	- Farming communities, schools, FBOs, women's groups, youth groups and households located near degraded communal lands and public spaces - Women and youth should be represented among community trainers, nursery workers and tree-care groups	- One campaign nursery established - Fifty thousand seedlings produced and planted - Number of tree planting campaigns conducted - Number of schools, FBOs and communities participating - Number of community trainers trained, disaggregated by sex and age - Seedling survival rate after 6, 12 and 24 months - Area of degraded communal and public land restored	Lead: District Assembly and Forestry Commission Supporting partners: Department of Agriculture, schools, FBOs, traditional authorities, EPA, community committees, women's groups, youth groups and civil society organisations	604,400.00
1st (48)	Bye-law enforcement against illegal logging and	Strengthen district and community governance to control illegal logging,	Community consultations, bye-law drafting, legal review, gazettal, community	Communities located near forests, riparian areas, degraded lands and other	Bye-laws drafted, reviewed, approved and gazetted	Lead: District Assembly Supporting partners: District	233,900.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	charcoal production Timeline: - Months 1–6: Community consultations and preparation of draft bye-laws - Months 7–12: Legal review, validation, Assembly approval and gazettal - Months 13–18: Community sensitisation, provision of monitoring equipment and installation of signage - Months 19–24: Initial enforcement and compliance monitoring	unsustainable charcoal production and related activities that contribute to biodiversity loss and vegetation degradation. Restoration investments will not be sustained where degradation pressures continue without clear rules and consistent enforcement.	sensitisation and enforcement — 159,500.00 Community-monitoring equipment and bye-law signage — 2,400.00	sensitive ecosystems - Farmers, women fuelwood collectors, charcoal producers, traditional authorities and community monitors - Consultations should include women, youth, landowners and livelihood groups affected by the bye-laws	- Number of community consultations and sensitisation activities conducted - Community monitors provided with relevant equipment - Bye-law information signs installed - Number of enforcement and monitoring activities conducted - Reduction in illegal logging and unsustainable charcoal production - Percentage of communities demonstrating awareness of the bye-laws	Legal Unit, Forestry Commission, EPA, traditional authorities, Ghana Police Service, community-monitoring teams and civil society organisations	
4th (44)	Efficient cookstoves and alternative energy sources	Reduce household and institutional demand for fuelwood and charcoal while	Cookstove promotion, distribution, household training,	Fuelwood- and charcoal-dependent households, particularly women	One hundred and fifty cookstoves distributed and installed	Lead: District Assembly and Energy Commission	974,500.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Timeline: - Months 1–6: Beneficiary assessment, technology selection and procurement planning - Months 7–18: Cookstove promotion, household training and phased distribution - Months 19–24: Carbon monitoring and alternative-energy demonstrations - Months 25–30: Assessment of sustained use and establishment of maintenance arrangements	improving energy efficiency and indoor air quality. Biomass dependence contributes to deforestation and land degradation, while efficient technologies and alternative energy sources can reduce pressure on vegetation.	carbon monitoring and alternative-energy demonstration — 194,500.00 Procurement and distribution of 150 cookstoves and provision of monitoring infrastructure — 780,000.00	responsible for household cooking - Women food vendors, school kitchens and small food-processing businesses - Women should be prioritised in beneficiary selection, training and household monitoring	- Number and proportion of women beneficiaries - Percentage of beneficiary households consistently using the cookstoves - Reduction in household fuelwood or charcoal consumption - Reduction in household cooking-energy expenditure - Carbon-monitoring system established - Number of alternative-energy demonstrations conducted	Supporting partners: EPA, Department of Social Welfare and Community Development, Ghana Enterprises Agency, women's groups, local stove suppliers, artisans, financial institutions and community-based organisations	
5th (43)	Tree planting and vegetation cover Timeline: Months 1–6: Identification and mapping of	Restore vegetation cover in degraded communal areas, school compounds and riparian zones to reduce erosion, protect water bodies,	Community greening campaigns, school tree planting, riparian restoration and vegetation	- Communities located near degraded lands, schools, riparian zones and erosion-prone areas - School environmental clubs,	- Fifty thousand seedlings planted - Number of community greening campaigns conducted	Lead: Forestry Commission and District Assembly Supporting partners: EPA, Water Resources	480,400.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	degraded communal, school and riparian planting sites - Months 7–18: Community greening, school tree planting, riparian restoration and first planting cycle - Years 2–3: Additional planting, replacement of failed seedlings and vegetation monitoring	moderate local temperatures and strengthen biodiversity. Vegetation loss increases runoff and exposes soils and water resources to degradation.	monitoring — 200,400.00 Planting of 50,000 seedlings and provision of aftercare infrastructure — 280,000.00	women's groups, youth groups and households dependent on ecosystem services Women and youth should participate in planting, aftercare and vegetation monitoring	- Number of schools and communities participating - Area of riparian and degraded land restored - Seedling survival rate after 6, 12 and 24 months - Aftercare infrastructure established - Number of women and youth participating in restoration activities	Commission, Department of Agriculture, schools, traditional authorities, community groups, FBOs, women's groups and youth organisations	
6th (34)	Creating buffer zones Timeline: - Months 1–6: Technical and community mapping, consultations and identification of affected land users - Months 7–18: Buffer-zone demarcation,	Protect streams, dams, forest areas and other sensitive habitats by restricting harmful activities within designated buffer areas and stabilising surrounding land use. Fragile ecosystems are increasingly affected by farming expansion, logging, grazing, sand	- Buffer-zone demarcation, riparian planting, bye-law enforcement and alternative-livelihood support — 189,400.00 - Establishment of a buffer-zone nursery and livelihood infrastructure, including 20,000 seedlings — 256,000.00	- Communities located around streams, dams, forests and other sensitive habitats - Farmers, fishers, landowners, livestock keepers, women's groups and households whose livelihoods may be affected by land-use restrictions - Women and vulnerable	- Priority buffer areas mapped and demarcated - Twenty thousand seedlings produced and planted - Buffer-zone nursery established - Number and length of buffer zones created	Lead: District Assembly, EPA and Water Resources Commission Supporting partners: Forestry Commission, Department of Agriculture, traditional authorities, landowners, community	445,400.00

[illegible]

4.3.2.1 Agroforestry and Community Tree Planting

Objective: Integrate trees into farming landscapes to restore soils, reduce erosion and heat stress, and strengthen ecosystem services that support livelihoods.

Justification: Vegetation loss and land degradation reduce soil fertility, increase runoff, and weaken ecological functions that buffer climate extremes.

Key provisions and how they will be implemented in ANDA: As indicated in agriculture sector key considerations, agroforestry strategies should fit smallholder plots and avoid tree crop competition. Priority should be given to indigenous, drought-tolerant, multipurpose species (fruit, fodder, soil-improving) and provide clear technical guidance on spacing, pruning and establishment. Clarify tree rights and benefit-sharing if needed with chiefs and landowners to motivate maintenance. Integrate protection measures against bushfires and free grazing.

4.3.2.2 Tree Planting Campaigns and Training

Objective: Scale restoration by mobilising communities and institutions to plant and maintain trees in priority degraded areas. Similar to the justification for the adaptation option, Tree planting and vegetation cover.

Justification: Tree planting improves ecosystem services (soil structure, shade, windbreaks) and reduces sensitivity to heat and moisture stress while providing timber, fruits, fodder, and other products. It also supports biodiversity and contributes to long-term land restoration.

Key provisions and how they will be implemented in ANDA: Similarly as highlighted in the agricultural key considerations, tree planting campaigns should align to the selection of appropriate species selection, the training of communities on planting techniques, watering regimes, mulching, early-stage protection and assign responsibilities to community committees, schools, and youth groups. Prioritise planting sites with high public benefit such as schools, markets, roadsides or degraded communal lands. Conduct survival audits at 3/6/12 months and plan replanting. Combine campaigns with enforceable local rules on cutting, burning, and grazing to protect young trees.

4.3.2.3 Bye-Laws Against Deforestation, Illegal Logging and Indiscriminate Grazing

Objective: Strengthen local governance to reduce drivers of biodiversity loss, particularly bush burning, illegal felling, and encroachment into sensitive areas.

Justification: Restoration measures are undermined when degradation pressures persist without enforceable local rules and consistent compliance mechanisms.

Key provisions and how they will be implemented in ANDA: Update and harmonise bye-laws with traditional authority systems and district enforcement procedures, clearly defining prohibited activities, penalties, and reporting channels. Establish community enforcement teams, routine patrol schedules, and simple incident registers to support accountability. Pair enforcement with sustained risk communication so communities understand the purpose and benefits of rules, reducing resistance. Apply sanctions consistently to avoid perceptions of bias, and create grievance pathways to manage disputes. Link bye-laws to practical alternatives such as promoting efficient cook-stoves, designated woodlots and controlled burning protocols, so compliance is feasible. Review implementation annually to adjust weak provisions.

4.3.2.4 Efficient Cook-Stoves and Alternative Energy Sources

Objective: Reduce charcoal or fuelwood demand and pressure on vegetation while improving household energy efficiency and indoor air quality.

Justification: Biomass dependence accelerates deforestation and land degradation; efficient alternatives reduce extraction pressure and improve health outcomes.

Key provisions and how they will be implemented in ANDA: Target households and institutions with high fuelwood use (especially cooking-intensive households and small food businesses) and prioritise women-centered outreach. Distribute certified efficient stoves and provide practical user training to ensure correct and sustained use, not just one-off adoption. Build local supply chains for stove parts and repairs through trained artisans to prevent abandonment when stoves fail. Where feasible, pilot alternative energy options (LPG, briquettes, improved charcoal systems) with affordability mechanisms such as savings-group financing or phased subsidies. Monitor sustained use through periodic checks and user feedback, and link the intervention to by-laws and awareness campaigns to reinforce reduced wood harvesting.

4.3.2.5 Creating Buffer Zones

Objective: Protect sensitive ecosystems and water bodies by restricting harmful activities in designated areas and stabilising surrounding land use.

Justification: Forest zones and fragile habitats are highly vulnerable to encroachment, logging, farming expansion, sand winning, burning and other activities which degrade biodiversity.

Key provisions and how they will be implemented in ANDA: Identify and map priority buffer locations around forest areas, streams, dams and remaining natural habitats through joint technical-community mapping and formal demarcation. Define clear land-use restrictions and permitted activities, and secure community buy-in through consultations with chiefs, landowners, and user groups to reduce conflict. Restore buffers using appropriate vegetation (grasses, shrubs, trees) and integrate routine maintenance to control invasive species and prevent dumping. Where restrictions affect livelihoods, provide negotiated alternatives to sustain compliance over time.

General Costed Biodiversity and Ecosystem Sector Considerations

Investment Logic

The biodiversity package is built around ecosystem restoration, vegetation protection, and reduced pressure on forest resources. The largest allocation is for efficient cookstoves and alternative energy, followed by tree planting campaigns, agroforestry, vegetation restoration, and buffer zone creation. By-laws and community-led fire management are lower-cost but strategically important enabling actions. The investment logic is therefore to combine restoration measures with governance and demand-side interventions so that gains from tree planting are not reversed by uncontrolled burning, illegal felling, or biomass dependence.

Economic and Feasibility Assessment

This sector is relatively cost-effective because many actions generate multiple co-benefits at once, including erosion control, biodiversity protection, reduced siltation, and lower fire risk. Governance measures and fire management are low-cost and highly feasible. Tree-based actions are moderately feasible but require sustained local compliance and maintenance. Efficient cookstoves have strong environmental and health co-benefits, though adoption durability and affordability require close attention. The package is feasible where linked to community institutions, traditional authority, and practical incentives.

Operations and Maintenance Considerations

The biodiversity and ecosystem actions generally have moderate but manageable maintenance demands, although these vary by type of intervention. Governance-oriented actions such as bye-laws and community-led fire management have relatively low annual upkeep requirements, but their effectiveness depends on continuous enforcement, seasonal awareness efforts, and local compliance. Tree planting, agroforestry, vegetation restoration, and buffer zones require medium-term upkeep because seedling survival, land-use control, fire prevention, and protection against grazing are essential to securing ecological benefits. Efficient cookstoves and alternative energy interventions also require sustained follow-up, particularly to prevent abandonment, ensure repairs, and maintain user confidence. Overall, the main maintenance challenge in this sector is not engineering failure, but the risk that weak local stewardship and enforcement could reverse restoration gains over time.

4.3.3 Water Resources Sector

Water resources is a priority adaptation sector in Akatsi North and is identified as one of the most vulnerable sectors that requires significant attention. Eight (8) adaptation actions, estimated at GH¢23.56 million in total, were identified and assessed through the multicriteria analysis. These actions target water scarcity for household and agricultural use, water bodies pollution disasters from flooded water bodies.

Overall, the options emphasise improving access to safe and reliable water supply, strengthening local governance and maintenance systems, and protecting water sources from degradation and sedimentation. Higher-performing options reflect measures that are highly effective and widely acceptable, with strong alignment to district priorities and clear equity and gender benefits, particularly those that expand domestic water access and strengthen community capacity for water management. Mid ranked measures focus on promoting water-efficient use in farming, safeguarding dam catchments through vegetation cover, and maintaining existing water infrastructure through desilting. More capital-intensive actions such as expanding or constructing new dams/dugouts, remain strategic for long-term water security but require stronger technical capacity, higher upfront investment, and sustained institutional coordination to deliver and maintain climate-resilient functionality.

Photos 3: Some water sources in the District
Source: Author's field visits



The adaptation objectives, justifications, and estimated implementation costs for each of these actions are further elaborated upon below.

Table 6: Estimated cost of water resources sector prioritized adaptation action

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (43)	Mechanised boreholes, standpipes and hand-dug well Timeline: - Months 1–4: Community water-needs mapping, hydrogeological and geophysical surveys and selection of suitable drilling sites - Months 5–9: Community consultations, formation of Community Water and Sanitation Committees and procurement of contractors - Months 10–15: Borehole drilling, solar-pump installation and rehabilitation of the existing borehole	Improve access to reliable and climate-resilient water supplies for communities affected by drought, seasonal water shortages and unreliable surface-water sources. Mechanised boreholes and solar-powered systems can reduce the burden of water collection and provide a more dependable supply during prolonged dry periods.	- Three hydro-geological and geophysical survey assignments and four community mapping, consultation and Community Water and Sanitation Committee formation and training sessions for approximately 100 participants, including borehole-drilling supervision and solar-pump installation support — 197,800.00 - Construction of one mechanised borehole with a solar-powered pump and storage system and rehabilitation of one existing non-functional borehole — 230,000.00	- Households in water-stressed and underserved communities, particularly women and girls who bear primary responsibility for water collection - Schools, health facilities, persons with disabilities, older persons and low-income households - Women should hold meaningful leadership and financial-management roles on Community Water and Sanitation Committees	- Hydrogeological surveys completed and viable drilling sites identified - One mechanised solar-powered borehole constructed and commissioned - One existing borehole rehabilitated and functioning - Number of households accessing improved water services - Reduction in average time and distance required to collect water - Percentage of water samples meeting applicable quality standards - Functional Community Water and	Lead: District Assembly Works Department and Community Water and Sanitation Agency Supporting partners: Water Resources Commission, Environmental Health Unit, traditional authorities, Community Water and Sanitation Committees, EPA, borehole contractors and beneficiary communities	427,800.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Months 16–18: Water-quality testing, commissioning and training on operation and maintenance				- Sanitation Committee established - Percentage of committee members who are women		
2nd (40)	Training communities on safe water use and storage Timeline: - Months 1–3: Assessment of water-use, storage and management practices and preparation of training materials - Months 4–8: Community water-management, safe-storage and water-quality awareness training - Months 9–12: Distribution of trainer toolkits, follow-up visits and assessment	Strengthen community knowledge and practices relating to safe water collection, transport, storage and use while improving local capacity to manage water facilities. Unsafe handling and storage can undermine the health benefits of improved water access by increasing the risk of contamination and waterborne disease.	- Community water-management training, Dam Community Management Committee skills development and water-quality awareness activities reaching representatives from 100 communities — 122,600.00 - Distribution of 30 community-trainer toolkits comprising visual aids, reference materials and facilitation guides — 9,000.00	- Households using community water systems, particularly women and girls responsible for collecting and storing water - Community water committees, food vendors, schools, health facilities and caregivers of children - Women should be prioritised as community trainers and represented in water-management decision-making	- Representatives from 100 communities trained - Thirty community-trainer toolkits distributed - Number of participants trained, disaggregated by sex and age - Percentage of trained households practising safe water storage and handling - Number of communities applying water-safety and maintenance procedures	Lead: Community Water and Sanitation Agency and District Environmental Health Unit Supporting partners: District Assembly Works Department, Ghana Health Service, DCMCs, Community Water and Sanitation Committees, schools, traditional authorities, women's groups and community-based organisations	131,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	of knowledge and practices				- Reduction in reported contamination and waterborne-disease risks - Percentage of community trainers who are women		
3rd (38)	By-laws for enforcing local water-infrastructure management measures Timeline: - Months 1–4: Review of existing water-management rules and community consultations - Months 5–9: Drafting, legal review, stakeholder validation and Assembly approval - Months 10–12: Gazettal and public	Strengthen local governance and accountability for protecting and maintaining dams, boreholes, catchments and other community water infrastructure. Clear and enforceable rules are required to address encroachment, pollution, infrastructure misuse and weak maintenance practices that reduce the reliability of water systems.	- Three community consultation, validation and enforcement-training sessions for approximately 100 participants per session, one water by-law drafting, legal-review and gazettal process and eight drone-supported boundary-mapping and monitoring exercises — 240,600.00 - Provision of by-law enforcement equipment, including GPS units, cameras, monitoring tools and boundary signage, for 10 communities — 200,000.00	Communities dependent on dams, boreholes, streams and other local water sources• Farmers, livestock keepers, women water collectors, landowners, water-user groups and community monitors• Women and vulnerable livelihood groups should participate in consultations and be represented in community monitoring structures	- Water-management by-laws drafted, approved and gazetted - Number of community consultations and validation sessions completed - Enforcement equipment provided to 10 communities - Number of community monitors trained and active - Number of monitoring and enforcement exercises conducted	Lead: District Assembly and District Legal Unit Supporting partners: Water Resources Commission, Community Water and Sanitation Agency, EPA, traditional authorities, Ghana Police Service, DCMCs, community monitors and civil society organisations	440,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	sensitisation on responsibilities, prohibited activities and penalties • Months 13–18: Distribution of enforcement equipment, training of monitors and initial enforcement				- Reduction in encroachment, pollution and misuse of water infrastructure - Percentage of residents demonstrating awareness of the by-laws		
4th (36)	Community-led management and maintenance schedules Timeline: - Months 1–3: Assessment of existing dam-management arrangements and identification of committee members - Months 4–6: Formation and training of Dam Community Management Committees and	Establish effective community arrangements for operating, monitoring and maintaining dams and related water infrastructure. Without clear maintenance schedules and local accountability, minor defects, siltation and infrastructure misuse can develop into costly failures and reduce water availability.	- Formation and training of Dam Community Management Committees in 10 communities, preparation of dam-operation manuals, establishment of routine maintenance schedules and community monitoring arrangements — 130,600.00 - Installation of simple dam-monitoring infrastructure, including water-level gauges, markers, monitoring boards	- Communities relying on dams for domestic use, livestock watering, farming and other livelihoods - Farmers, women water users, livestock keepers, youth and households located near dam sites - Women should be represented in DCMC leadership, financial management and water-allocation decisions	- DCMCs established and trained in 10 communities - Ten dam-operation and maintenance schedules developed - Monitoring infrastructure installed at 10 dam sites - Number of routine inspections and maintenance activities completed - Percentage of identified defects	Lead: District Assembly Works Department and Community Water and Sanitation Agency Supporting partners: Water Resources Commission, Ghana Irrigation Development Authority, DCMCs, Department of Agriculture, traditional authorities and beneficiary communities	150,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	preparation of operation manuals - Months 7–9: Development of maintenance schedules and installation of monitoring infrastructure - Months 10–12: Initial inspections, community monitoring and review of committee performance		and logbooks, in 10 communities — 20,000.00		addressed within the scheduled period - Number and proportion of women serving on DCMCs - Reduction in infrastructure downtime and preventable dam damage		
5th (35)	Protecting dam catchments by promoting vegetation cover Timeline: - Months 1–6: Community entry, dam-site surveys, catchment mapping and identification of restoration areas - Months 7–12: Nursery establishment, community	Restore vegetation within dam catchments to reduce erosion, sediment inflow and the progressive loss of water-storage capacity. Vegetation cover can stabilise soils, protect water quality and reduce the rate at which dams become silted during intense rainfall events.	- Four community-entry and dam-site survey and mapping rounds for approximately 100 participants, including eight drone-assisted catchment survey and monitoring exercises — 264,600.00 - Establishment of one community nursery and environmental-restoration	- Communities and farmers located within dam catchments, livestock keepers, women water users and households dependent on dam water - Youth and community restoration groups involved in nursery management and planting - Women and youth should receive	- One community nursery established - Fifty thousand trees produced and planted - Priority dam catchments surveyed and mapped - Area of catchment restored with vegetation - Seedling survival rate after 6, 12 and 24 months	Lead: Forestry Commission, Water Resources Commission and District Assembly Supporting partners: Department of Agriculture, EPA, DCMCs, traditional authorities, landowners, youth groups, women's groups and beneficiary communities	532,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	mobilisation and production of seedlings • Years 2–3: Catchment planting, replacement of failed seedlings and monitoring of vegetation recovery		infrastructure for the production and planting of 50,000 native riparian and catchment trees — 268,000.00	equitable access to restoration employment, starter inputs and nursery-management opportunities	• Reduction in exposed soil and erosion within treated catchments • Reduction in sediment inflow at monitored dam sites • Number of women and youth participating in restoration		
6th (33)	Dredging and desilting dams Timeline: • Months 1–6: Technical assessment and sediment surveys of five dams, community consultations and environmental and social impact assessment • Months 7–10: Detailed works planning, contractor procurement and mobilisation	Restore the storage capacity, safety and functionality of existing dams affected by siltation, damaged embankments and deteriorating spillways. Dredging and rehabilitation can improve water availability for domestic use, livestock and agriculture while reducing the risk of structural failure and	• Technical assessment and environmental and social impact assessment for five dams, contractor procurement, supervision of dredging works and training of the relevant Dam Community Management Committees — 222,600.00 • Dredging, desilting, embankment reinforcement and spillway rehabilitation works	• Communities dependent on the five dams, particularly smallholder farmers, women water users, livestock keepers and dry-season producers • Households and settlements located downstream of deteriorating dams • Women and vulnerable water users should participate in consultations and DCMC	• Five dam assessments and environmental screenings completed • Five dams dredged, desilted and rehabilitated • Volume of sediment removed • Increase in estimated water-storage capacity • Five operation and maintenance toolkits provided	Lead: District Assembly and Ghana Irrigation Development Authority Supporting partners: Water Resources Commission, EPA, Works Department, Department of Agriculture, DCMCs, traditional authorities, contractors and beneficiary communities	6,222,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Months 11–24: Phased dredging, desilting and rehabilitation works at the five dam sites - Months 25–30: Works inspection, commissioning, DCMC training and transfer of operation and maintenance equipment	uncontrolled flooding.	at five dams, including one basic operation and maintenance toolkit for each dam — 6,000,000.00	management arrangements	- DCMCs trained for all rehabilitated dams - Reduction in dam leakage, spillway damage and infrastructure downtime - Increase in the duration of water availability during the dry season		
8th (29)	Expanding existing dams and constructing new dams and dugouts Timeline: Months 1–12: Water-demand assessment, hydrological and geotechnical studies, site selection, dam designs and environmental and social impact assessment	Increase water-storage capacity and improve access to water for domestic use, livestock and agricultural production in underserved communities. New and expanded dams can reduce vulnerability to drought and seasonal water scarcity but require adequate technical design,	- Hydrological studies, dam designs, environmental and social impact assessments, contractor procurement and construction supervision for five new dam sites and five existing dam-expansion sites — 372,600.00 - Construction of five new dams or dugouts and expansion and	- Water-stressed communities, smallholder farmers, livestock keepers, women water users and households dependent on seasonal water sources - Dry-season producers, local businesses and settlements requiring improved water security - Women and vulnerable groups	- Hydrological and engineering studies completed for all proposed sites - Five new dams or dugouts constructed and commissioned - Five existing dams expanded and rehabilitated• Additional water-storage capacity created - Number of households and	Lead: District Assembly and Ghana Irrigation Development Authority Supporting partners: Water Resources Commission, EPA, Works Department, Department of Agriculture, traditional authorities, landowners, DCMCs,	10,397,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Year 2: Contractor procurement, mobilisation and commencement of works at priority sites - Years 2–3: Construction of five new dams and phased expansion of five existing dams - Year 4: Completion of works, safety inspections, commissioning and establishment of management arrangements	environmental safeguards and long-term maintenance.	rehabilitation of five existing dams — 10,025,000.00	should participate in site selection, water-allocation planning and dam-management committees	farmers benefiting from improved water availability - Number of functional dam-management committees established - Percentage of committee members who are women - Compliance with environmental, safety and land-acquisition requirements	contractors and beneficiary communities	
9th (27)	Rainwater harvesting Timeline: Months 1–4: Site assessments, beneficiary selection and technical design of household, institutional and	- Supplement existing water supplies by capturing and storing rainfall for household, institutional and community use. - Rainwater harvesting can reduce pressure	Rainwater-harvesting site assessments, system design, installation support, user training and monitoring for five households, 10 institutions and one community system — 140,600.00	- Water-stressed households, schools, health facilities and communities with unreliable water supplies - Women, girls, children, patients and institutional staff who	- Five household rainwater-harvesting systems installed - Ten institutional systems installed and functioning - One community rainwater-	Lead: District Assembly Works Department and Community Water and Sanitation Agency Supporting partners: Water Resources Commission, EPA,	5,390,600.00

[illegible]

4.3.3.1 Mechanised Boreholes, Standpipes and Hand-Dug Wells

Objective: Expand reliable access to safe domestic water to reduce climate-related water stress for households and essential services.

Justification: Seasonal variability and dry-season scarcity increase time burdens and health risks, particularly where communities depend on limited or unsafe sources. Improved water points provide a high-impact adaptation and development co-benefit.

Key provisions and how they will be implemented in ANDA: ANDA should implement mechanised boreholes, standpipes and hand-dug wells as reliable domestic water points for communities that face dry-season scarcity. Selecting sites with groundwater potential, following hydrogeological surveys, while avoiding flood-prone areas and ensuring safe separation from latrines and waste dumps. Where grid power is unreliable or absent, solar-powered mechanised systems should be prioritised with clear responsibilities for routine cleaning and basic checks. Each facility should include proper drainage to prevent stagnant water and contamination during heavy rains. A community management model is essential. Local committees could be set up to set access rules, asset management and conflict-resolution procedures. ANDA in collaboration with community should agree upfront whether payment applies. Where fees are used, they should be transparent and linked to a routine local maintenance and repairs. Equity safeguards should protect vulnerable households through agreed waivers or targeted support.

4.3.3.2 Training and Educating Communities of Safe Water Use, Storage

Objective: Improve household and community practices for safe water collection, storage, and handling to reduce contamination and waterborne disease risks.

Justification: In ANDA, safe use and storage of water is a persistent challenge. Even where water is improved at source, contamination during collection, transport, and storage can negate health benefits, especially during floods and dry-season scarcity.

Key provisions and how they will be implemented in ANDA: ANDA should implement a structured programme focused on practical household routines. Training should cover safe collection, safe storage and safe handling, alongside simple treatment options where necessary. Sessions should be delivered in local languages through community health volunteers, schools, WASH committees, and routine community meetings, reinforced with demonstrations and visual job aids. The programme should target high-risk groups and locations with households in flood-prone communities. Link training to regular water-quality messaging, seasonal risk communication (flood contamination), and community accountability mechanisms so improved practices are sustained beyond the initial sessions.

4.3.3.3 Bye-Laws for Enforcing Local Water Infrastructure Management Measures

Objective: Strengthen protection of water sources and infrastructure through enforceable local rules that reduce pollution, encroachment, and misuse.

Justification: Water investments degrade quickly where dumping, open defecation, farming in buffer areas, and unregulated activities persist, undermining water quality and supply reliability.

Key provisions and how they will be implemented in ANDA: Develop and operationalise water-related bye-laws through a consultative process with chiefs, assembly members, and user groups to ensure legitimacy. Rules should clearly define prohibited practices and practical penalties, but also specify responsibilities for keeping water points clean, protecting catchments, etc. Enforcement should be community-led with formal backing, using designated monitors and a simple reporting system that records violations and actions taken. Compliance will improve if enforcement is paired with enabling

measures such as waste collection points, designated livestock watering areas, and public signage around water sources. Annual review of enforcement challenges should be built into district planning to refine provisions and strengthen consistency.

4.3.3.4 Community-Led Management and Maintenance Schedules

Objective: Sustain water infrastructure functionality through routine maintenance, transparent financing, and rapid fault response at community level.

Justification: Breakdowns often become prolonged due to unclear roles, weak fee collection, and lack of basic maintenance routines.

Key provisions and how they will be implemented in ANDA: Institutionalise functional WASH/water committees with clear roles for operations, finance, and technical liaison, including women in leadership positions. Each system should operate a simple maintenance schedule covering cleaning, inspections, and seasonal servicing, supported by a maintenance fund with transparent reporting to users. Local caretakers and pump mechanics should be trained and linked to spare-parts supply chains. Fault reporting should follow an agreed pathway from caretaker to committee to district technical support, with response time expectations. Functionality logs should be maintained to identify recurring faults, improve budgeting, and guide preventive maintenance rather than repeated emergency repairs.

4.3.3.5 Protecting Dam Catchments by Promoting Vegetation Cover

Objective: Reduce sedimentation and improve reliability of dams and water bodies by stabilising catchments zones with vegetation.

Justification: Catchment degradation drives siltation and reduces storage capacity, worsening dry-season shortages and flood-related turbidity.

Key provisions and how they will be implemented in ANDA: Prioritise dam catchments based on their importance to community water supply and visible erosion/siltation trends. Vegetation restoration should combine tree planting, grasses, and assisted natural regeneration, supported by community agreements to control farming encroachment, sand winning, and dumping near water bodies. Fire prevention and grazing controls must be integrated so vegetation establishes successfully. Maintenance plans should include periodic clearing of invasive plants that reduce water availability.

4.3.3.6 Dredging and Desilting Dams

Objective: Restore dam storage capacity and improve dry-season water availability for domestic and livelihood uses.

Justification: Sedimentation reduces effective water storage and quality, making communities more vulnerable during dry spells.

Key provisions and how they will be implemented in ANDA: ANDA should consistently select priority dams for desilting based on affordability, community dependence, silt loads and feasibility of restoration. Desilting must be bundled with upstream erosion control and catchment vegetation restoration to prevent rapid re-siltation. Works should be scheduled in the dry season, with safe disposal of dredged material to avoid blocking drains or creating new erosion sites. Post-desilting, embankments and spillways should be inspected and strengthened where needed. A routine maintenance plan covering debris removal, weed control, and periodic minor desilting, should be assigned to local management structures with a district-backed budget line.

4.3.3.7 Expanding Existing Dams and Constructing New Dams/Dugouts

Objective: Increase strategic water storage to strengthen long-term water security under climate variability.

Justification: Some areas may require additional dams to reduce persistent deficits.

Key provisions and how they will be implemented in ANDA: Dam expansion and new dams/dugouts are water-access investments, targeting communities with persistent dry-season shortages, limited borehole potential, and long travel times to reliable sources. Site selection ensures the storage location is close enough to serve multiple settlements and includes safe, year-round access paths. Designs should incorporate dedicated water collection points for domestic use and separate watering points for livestock to reduce congestion and contamination. Governance arrangements should be established before construction, including water-use rules, priority allocation during scarcity, and a conflict-resolution mechanism covering farmers, households, and livestock owners. Operations and maintenance plans must include routine desilting budgets, invasive-weed control, embankment/spillway upkeep and community roles, supported by enforceable by-laws to protect catchments and prevent pollution. Where feasible, link storage to small distribution extensions such as communal pipes and irrigation schemes to convert storage into dependable household and farm access.

4.3.3.8 Rainwater Harvesting

Objective: Provide supplementary water for households and institutions to reduce pressure on communal sources during dry periods.

Justification: Rainwater harvesting is flexible and can improve local water availability, but benefits depend on correct design, storage capacity, and safe handling.

Key provisions and how they will be implemented in ANDA: In promoting the household construction and use of rainwater harvesting, ANDA should promote the education of rainwater harvesting as a supplementary domestic-water measure, prioritising institutions (schools, CHPS compounds, markets) and households where roof catchments are suitable. Implementation must address the common local concern about hygiene by standardising designs that include gutter screens, tank position, covered tanks, and safe draw-off taps, alongside household training on routine cleaning and periodic disinfection. In preventing past contamination events, rainwater harvesting tanks should be constructed with safeguards, including siting tanks away from household toilets and latrines, elevating storage where feasible, and using sealed, covered tanks with first-flush diversion and tap-based draw-off to prevent seepage or faecal contamination during floodwater and nearby sanitation facilities as experienced as a major sanitation disaster in some communities. Clear user education guidance is required on when rainwater is appropriate for drinking versus non-potable uses, and where necessary, simple treatment protocols should be promoted.

General Costed Water Resources Sector Considerations

Investment Logic

The water sector is the most capital-intensive in the plan. New dams and dugouts, dredging/desilting, and rainwater harvesting account for the overwhelming share of costs, while boreholes, catchment protection, by-laws, community management, and training provide the enabling framework needed to sustain functionality. The investment logic reflects the district's acute water insecurity, the impaired condition of existing dams, and the central role of water as both an adaptation and development multiplier. The package deliberately combines major storage and supply investments with governance, maintenance, and safe-use measures to reduce rapid functionality loss.

Economic and Feasibility Assessment

The sector has high strategic value but variable feasibility. Training, management committees, and by-laws are low-cost and highly feasible. Boreholes and catchment restoration are moderately feasible and can yield broad benefits. Dredging, new dams, and large-scale rainwater systems offer major long-term returns but require high upfront capital, technical design quality, and strong O&M systems. The package is economically justified where phased delivery prioritises high-dependency communities and protects existing assets first.

Operations and Maintenance Considerations

Water-sector interventions carry the most significant maintenance implications in the plan. Training, bye-laws, and community management structures are comparatively low-cost to sustain, but they require regular follow-up to maintain compliance and institutional continuity. Boreholes, catchment protection, and water-efficient irrigation involve moderate upkeep, largely related to routine repairs, spare parts, local management, and monitoring of water use. The highest maintenance burden lies with dams, dredging works, new dugouts, and rainwater harvesting systems, all of which face recurrent risks of siltation, structural deterioration, poor drainage, and weak financing for repairs. This means that water investments will only remain functional if they are supported by clear maintenance schedules, dedicated O&M financing, catchment protection, trained local committees, and strong district oversight.

4.3.4 Health and Sanitation

Health and sanitation represent a critical adaptation frontier for Akatsi North because climate shocks translate quickly into disease risk. Five (5) actions, at a total estimation of GH¢8.14 million, are assessed under the Ranking and Performance Matrix that respond to this exposure pathway by combining preventive measures that protect water bodies and reduce environmental contamination with service-strengthening interventions that keep primary healthcare functional during floods and dry-season stress.

The highest-performing options reflect interventions that are readily actionable within existing institutional mandates, socially acceptable, and strongly aligned with district priorities particularly protection of streams and water bodies, upgrades to CHPS compounds and community facilities, and improved drainage that limits stagnant water and outbreak conditions. Adaptation options such as including community health outreach, mobile services, and social safety and support networks, strengthen continuity of care and reduce vulnerability for high-risk households. Waste management infrastructure is included to address persistent sanitation gaps that intensify during heavy rains.

Photo 4: Authors field visits – Adom Online (<https://www.adomonline.com/volta-regional-minister-inspects-akatsi-north-agenda-111-district-hospital-project/>)



The adaptation objectives, justifications, and estimated implementation costs for each of these actions are further elaborated upon below.

4.3.4.1 Social Safety Nets and Support Networks

Objective: Protect vulnerable households from climate-related health shocks by strengthening social assistance, emergency support, and community coping mechanisms.

Justification: Floods, heat stress, and disease outbreaks increase medical costs and disrupt incomes, while the poorest households especially women-headed households, the elderly, persons with disability, and households with young children have limited buffers. Strengthened safety nets reduce delayed care-seeking, prevent negative coping strategies, and improve recovery after shocks.

Key provisions and how they will be implemented in ANDA: Formalise a locally managed safety-net mechanism linked to health and disaster response. Targeting criteria should be transparent and community-validated, using CHPS zones, assembly members, and social welfare structures to identify high-risk households. Support should combine emergency transport assistance, temporary fee waivers, essential medicine support during outbreaks, and relief items that reduce disease exposure (chlorine, soap, mosquito nets). Community support networks—faith groups, savings groups, and volunteer teams—should be integrated into referral and check-in systems for the elderly and chronically ill during floods. The mechanism should be triggered by seasonal early warning and outbreak surveillance, with clear roles for NADMO, Health Directorate, and Social Welfare. Monitoring should track timeliness, coverage, and equity of support.

4.3.4.2 Upgrading Community Health Facilities and CHPS Compounds

Objective: Strengthen protection of water sources and infrastructure through enforceable local rules that reduce pollution, encroachment, and misuse.

Justification: Climate shocks disrupt access and service delivery when facilities are poorly equipped, flood-exposed, or lack basic WASH, power, and cold-chain capacity. Strengthening CHPS-level infrastructure increases early treatment, reduces outbreak escalation, and improves maternal and child health protection during climate events.

Key provisions and how they will be implemented in ANDA: ANDA should prioritise upgrades based on exposure and service criticality, for example focusing on facilities serving areas with long travel times to higher-level care. Service readiness should be reinforced through climate-relevant essential supplies and surge protocols for disease outbreaks. ANDA should also sequence upgrades from high-exposure and high-catchment facilities. Ensuring each site has reliable water and sanitation, safe waste segregation, disposal capacity and drainage works that keep compounds accessible and functional in heavy rains. Solar power and battery backup should be incorporated where feasible to maintain lighting, communications and basic hospital refrigeration needs.

Beyond CHPS upgrades, ANDA should formally engage central government to expedite completion and operationalisation of the district hospital currently at an advanced construction stage, since this is central to referral continuity and emergency response. To address staffing constraints, communities supported by ANDA should develop affordable accommodation options for health workers through locally agreed contributions and management arrangements.

4.3.4.3 Community Health Programmes and Health Outreach Programmes

Objective: Strengthen prevention, early detection, and behaviour change to reduce climate-sensitive disease burdens, particularly diarrhoeal diseases, malaria, and heat-related illness.

Justification: During floods and dry spells, health risks rise through contaminated water, poor sanitation, and increased vector breeding. Community outreach improves risk awareness and adoption of safe practices, and supports early care-seeking before conditions become severe.

Key provisions and how they will be implemented in ANDA: Deliver outreach through CHPS structures and community health practitioners and volunteers using practical, repeatable messages linked to local seasonal risks. Programming should emphasise safe water handling and storage, household water treatment during floods, sanitation and handwashing, and vector control measures, with targeted engagement of caregivers, food vendors, and schools. Outreach should be scheduled around high-risk periods (onset of rains, flood season, dry-season water stress) and supported by local radio and community meetings. Risk communication should be integrated with surveillance so communities receive timely alerts when cases rise. Outreach should include referral guidance and basic screening at community level, supported by simple reporting tools for volunteers. Monitoring should track participation, adoption of practices, and links to reduced outbreak incidence.

4.3.4.4 Mobile Health Clinics and Outreach Services

Objective: Maintain access to essential health services for remote and flood-affected communities through periodic mobile clinics and outreach delivery.

Justification: Distance to facilities and disrupted/inaccessible transport routes can delay care, increase complications, and reduce immunisation coverage. Mobile services improve equity by extending care to populations that are otherwise excluded during climate shocks.

Key provisions and how they will be implemented in ANDA: Deploy mobile clinics strategically, prioritising communities with limited facility access and those frequently cut off during heavy rains. Service packages should include maternal and child health, immunisation, basic diagnostics, health education, and outbreak response support, coordinated with CHPS staff to ensure continuity of records and referrals. Logistics planning must include reliable transport arrangements, fuel budgeting, and contingency routes for flood periods. Where feasible, solar-powered cold boxes and portable power should support vaccine integrity and essential equipment. Scheduling should be predictable and communicated in advance through community leaders and local information channels. Mobile services should integrate with surveillance and early warning so outreach intensity increases during outbreak signals. Feedback mechanisms should capture service gaps and inform facility upgrade priorities.

4.3.4.5 Construction of Improved Community Waste Management

Objective: Restore dam storage capacity and improve dry-season water availability for domestic and livelihood uses.

Justification: Sedimentation reduces effective water storage and quality, making communities more vulnerable during dry spells.

Key provisions and how they will be implemented in ANDA: Improve waste management services particularly in markets, schools, densely settled areas and flood-prone communities. By combining infrastructure (bins, communal skips, protected transfer points) with reliable collection schedules and clear operational responsibility. Toilet facilities should be designed to prevent leachate and dispersal during floods through raised platforms, covered containment, and controlled access. In parallel, ANDA should strengthen sanitation enforcement by promoting and enforcing by-laws on liquid waste management, including the requirement that every household provides or has access to a safe, sanitised toilet facility and that open defecation and unsafe disposal are penalised. Targeted behaviour change and WASH outreach should support compliance, complemented by practical options for vulnerable households (subsidised latrine upgrades or communal facilities).

General Costed Health and Sanitation Sector Considerations

Investment Logic

Health and sanitation costs are dominated by upgrading community health facilities and CHPS compounds, followed by improved drainage channels. The remainder supports community health outreach, waste management, mobile clinics, stream protection, and social safety nets. The investment

logic is to secure continuity of essential services while reducing flood- and water-related disease risks. This is appropriate in Akatsi North, where climate shocks affect water quality, sanitation conditions, facility access, and the reliability of service delivery.

Economic and Feasibility Assessment

The package has strong public welfare returns because it combines preventive and service-strengthening measures. Stream protection, social safety nets, and community outreach are relatively low-cost and readily implementable. Drainage and facility upgrades are more capital-intensive but address major risk pathways affecting both infrastructure and disease outbreaks. Mobile clinics are feasible where logistics and recurrent operating costs are planned early. Overall, the package is economically sound because preventive WASH and outreach measures help protect larger investments in facilities and service systems.

Operations and Maintenance Considerations

The health and sanitation package includes both low-maintenance and infrastructure-dependent interventions. Protection of streams and water bodies, social safety nets, and community health outreach require relatively modest annual upkeep, but their effectiveness depends on continuous community engagement, targeted support, and coordination with CHPS and WASH actors. Mobile health services and community waste management have moderate maintenance needs because they rely on transport, equipment, routine servicing, and active local management. The most demanding interventions are facility upgrades and drainage works, which require periodic inspection, repair budgets, utility support, and institutional discipline to avoid rapid deterioration. In this sector, maintenance risks arise not only from infrastructure wear, but also from weak continuity in preventive health, sanitation oversight, and service delivery systems.

Table 7: Estimated cost of health and sanitation sector prioritized adaptation action

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (42)	Social safety nets and support networks Timeline: - Months 1–4: Identification and validation of vulnerable households and assessment of existing social-protection and savings structures - Months 5–10: LEAP registration support, formation or strengthening of VSLAs and establishment of community-level support structures - Months 11–15: GPSNP2 linkages, digital-finance training and distribution of management tools	Strengthen the capacity of vulnerable households to withstand climate-related health, livelihood and income shocks by improving access to formal social-protection programmes, savings groups and community support networks. Poor households, women-headed households and persons with disabilities often have limited financial buffers to meet healthcare, food and sanitation needs during climate emergencies.	- LEAP registration, formation of VSLAs, linkage to GPSNP2, establishment of Community-Level Intersectoral Committees and digital-finance training for a target group of 100 participants, supported by two field mobilisation rounds, seven group formation and validation sessions, 1,200 printed registration and training materials and 12 months of follow-up visits — 173,600.00 - Provision of 10 VSLA and CLIC management packages comprising record books, lockboxes, calculators and group-management materials and 10 digital devices for	- Poor and vulnerable households, women-headed households, persons with disabilities, older persons, unemployed youth and households affected by climate-related health and livelihood shocks - Women should be prioritised for LEAP and savings-group registration and represented in VSLA and CLIC leadership and financial-management positions	- Number of vulnerable households identified and registered for LEAP or related programmes - Number of households linked to GPSNP2 and other social-protection interventions - Ten VSLA or community-support structures established or strengthened - Ten VSLA and CLIC management packages distributed - Ten digital devices provided and in use - Number and proportion of women	Lead: Department of Social Welfare and Community Development Supporting partners: District Assembly, LEAP Secretariat, Ghana Productive Safety Net Project, Ghana Enterprises Agency, financial institutions, CLICs, traditional authorities, women's groups and community-based organisations	188,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Months 16–18: Follow-up, verification of programme enrolment and assessment of group functionality		VSLA leaders and CLIC coordinators — 15,000.00		- participating in savings and support groups - Value of savings and internal loans mobilised - Percentage of supported groups remaining functional after 12 months		
2nd (41)	Upgrading community health facilities and CHPS compounds Timeline: - Months 1–6: Assessment and prioritisation of health facilities, community consultations and preparation of technical designs - Months 7–12: Procurement of contractors and equipment and commencement	Improve the resilience, safety and functionality of community health facilities and CHPS compounds under heat, flooding, water shortages and unreliable electricity supply. Many facilities require improved WASH infrastructure, water storage and reliable energy to maintain essential services during climate-related disruptions.	Facility assessments, climate-resilient construction planning, rainwater-harvesting installation, solar-system installation and CHPS upgrading, supported by two technical field-assessment rounds for a target group of 100 stakeholders, five community and facility review meetings, 1,200 technical and training documents	- Patients, pregnant women, nursing mothers, children, older persons, persons with disabilities and health workers using community health facilities - Residents of remote communities that depend on CHPS compounds for primary healthcare - Facility designs should provide safe and accessible toilets	- Five health facilities or CHPS compounds upgraded - Five functional WASH and wastewater-management systems installed - Five rainwater-harvesting systems installed and functioning - Five solar photovoltaic and battery-	Lead: Ghana Health Service and District Assembly Works Department Supporting partners: District Health Directorate, Community Water and Sanitation Agency, Energy Commission, EPA, health-facility management committees, traditional authorities, contractors and beneficiary communities	4,157,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	of climate-resilient facility upgrades - Months 13–24: Construction and rehabilitation works and installation of WASH, rainwater-harvesting and solar-energy systems - Months 25–30: Testing, commissioning, staff and facility-management training and correction of defects		and 12 months of construction-monitoring visits — 157,600.00 - Climate-resilient upgrading of five community health facilities or CHPS compounds with toilets, handwashing stations and wastewater-management systems — included in the capital cost - Installation of five institutional rainwater-harvesting systems with storage tanks — included in the capital cost - Installation of five solar photovoltaic and battery-backup systems at priority health facilities — 4,000,000.00 combined capital cost	and handwashing facilities for women, girls and persons with disabilities	backup systems installed - Number of patients and health workers benefiting from upgraded facilities - Reduction in interruptions to health services caused by water or electricity shortages - Percentage of facilities maintaining functional sanitation and handwashing systems - Patient and staff satisfaction with the upgraded facilities		
3rd (40)	Community health programmes and	Strengthen community-level prevention, early detection and	Formation of Community Health Action Teams, HeMAB model	Pregnant women, nursing mothers, infants, children under five,	Community Health Action Teams	Lead: District Health Directorate	691,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	health outreach programmes Timeline: - Months 1–4: Community health-needs assessment, selection of participating communities and formation of Community Health Action Teams - Months 5–10: HeMAB training, malaria and WASH outreach, nutrition screening and maternal heat-health education - Months 11–15: Distribution and installation of community health information and screening equipment and integration with CHPS services	referral for climate-sensitive health risks, including malaria, WASH-related disease, malnutrition and heat stress affecting pregnant women and other vulnerable groups. Community outreach can improve access to preventive services in settlements that face physical, financial or informational barriers to healthcare.	training, malaria and WASH outreach, nutrition screening and integration with CHPS services for a target cohort of 100 participants and community health actors, supported by four field outreach rounds, eight health-outreach and screening events, 2,400 health-promotion and registration materials and 24 radio broadcasts across four FM stations — 249,600.00 - Provision of 12 community health-information boards and registration kits for 12 communities — included in the capital cost - Provision of 12 MUAC and nutrition-screening equipment sets for 12 community health	adolescents, older persons and households in underserved communities - Community health volunteers, caregivers and households exposed to malaria, poor sanitation, malnutrition and heat stress - Women should be prioritised for maternal-health and heat-adaptation support and represented within Community Health Action Teams	established and functional - Number of community health workers and volunteers trained, disaggregated by sex - Twelve communities provided with health-information boards and registration kits - Twelve nutrition-screening equipment sets distributed and used - Two hundred maternal heat-adaptation kits distributed - Number of people reached through malaria, WASH and nutrition outreach	and Ghana Health Service Supporting partners: CHPS compounds, District Environmental Health Unit, Nutrition Unit, National Malaria Elimination Programme, Community Health Action Teams, traditional authorities, women's groups, schools and community-based organisations	

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Months 16–18: Follow-up outreach, referral tracking and assessment of programme coverage and uptake		- teams — included in the capital cost - Distribution of 200 heat-adaptation kits for maternal-health support — 442,000.00 combined capital cost		- Number of children screened for malnutrition and referred for care - Number of pregnant women receiving heat-health support - Increase in referrals and uptake of CHPS services		
4th (40)	Mobile health clinics and outreach services Timeline: - Months 1–3: Assessment of underserved communities, formation of outreach teams and preparation of mobile-clinic schedules - Months 4–6: Procurement of medical, cold-chain and telemedicine	Improve access to essential health services in remote and underserved communities through mobile outreach, diagnostic services, vaccine cold-chain support and telemedicine. Climate events and poor road access can further isolate communities and delay access to maternal, child-health and general medical services.	Mobile-clinic coordination, cold-chain support, outreach-team deployment and telemedicine integration, supported by two field coordination rounds for a target group of 100 community and health stakeholders, four mobile outreach and community health events, 1,200 patient-registration and information materials and eight radio broadcasts	- Residents of remote and underserved communities, particularly pregnant women, children, older persons, persons with disabilities and people with limited mobility - Patients requiring routine screening, immunisation, maternal healthcare and specialist consultation - Outreach schedules should	- Two mobile health teams equipped and operational - One solar vaccine cold-chain system installed and functioning - Ten telemedicine and connectivity devices provided and in use - Number of mobile outreach visits conducted - Number of patients served,	Lead: District Health Directorate and Ghana Health Service Supporting partners: CHPS compounds, regional and referral hospitals, National Ambulance Service, telecommunications providers, traditional authorities, community health volunteers and	523,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	equipment and training of outreach personnel - Months 7–10: Deployment of mobile teams, community health outreach and integration of remote consultation services - Months 11–12: Assessment of service coverage, equipment performance, referrals and patient follow-up		across four FM stations — 153,600.00 - Provision of medical and diagnostic equipment for two mobile health teams — included in the capital cost - Installation of one solar-powered vaccine cold-chain system at a mobile health hub — included in the capital cost - Provision of 10 telemedicine devices and connectivity equipment for remote consultations and referrals — 370,000.00 combined capital cost	prioritise communities where women and vulnerable groups experience the greatest barriers to accessing health facilities	disaggregated by sex, age and disability status - Number of vaccinations, screenings and maternal-health services delivered - Number of telemedicine consultations and referrals completed - Reduction in travel time and cost for patients in underserved communities	beneficiary communities	
5th (39)	Construction of improved community waste-management infrastructure	Improve solid-waste and sanitation management to reduce indiscriminate dumping, open defecation, drainage	Formation of Community Waste Management Committees, waste-management and composting training and ODF promotion	Residents of communities with inadequate waste and sanitation facilities, particularly women, children,	Community Waste Management Committees established and functional in 20 communities	Lead: District Environmental Health Unit and District Assembly Supporting partners:	646,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Timeline: - Months 1–4: Community sanitation assessment, selection of priority communities and formation of Community Waste Management Committees - Months 5–9: Waste-management training, ODF sensitisation, infrastructure design and procurement - Months 10–20: Installation of waste bins, construction of public sanitation and composting facilities and distribution of tools and protective equipment - Months 21–24: Commissioning,	blockage, vector breeding and contamination of land and water resources. Community-based waste systems are required to improve environmental health while promoting local responsibility for sanitation infrastructure.	for a target cohort of 100 community representatives and sanitation actors, supported by one mobilisation round, three committee formation and sanitation events, 900 training and ODF materials and eight radio broadcasts across four FM stations — 106,600.00 - Installation of durable covered communal waste bins with platforms and drainage arrangements in 20 communities — included in the capital cost - Construction of one public toilet and handwashing facility with a water-supply connection in a priority community — included in the capital cost - Construction of one community	persons with disabilities and low-income households - Waste handlers, market traders, food vendors and households located near open dumping and open-defecation areas - Women should be represented in Community Waste Management Committees and facility-management decisions and sanitation facilities should meet women's safety and menstrual-hygiene needs	- Covered waste-bin infrastructure installed in 20 communities - One public toilet and handwashing facility constructed and functioning - One community composting facility established - Waste-collection tools and protective equipment provided to 20 committees - Number of communities progressing towards or achieving ODF status - Volume of waste collected and organic waste processed - Reduction in indiscriminate	Community Water and Sanitation Agency, EPA, traditional authorities, Community Waste Management Committees, Ghana Health Service, private waste-service providers, women's groups, youth groups and beneficiary communities	

[illegible]

4.3.5 Gender Targeted Adaptation Options

Gender mainstreaming is treated in Akatsi North as specific gender targeted activities for effective adaptation because climate risks interact with gender differently due to unequal access to land, water, finance, information and decision-making. The six (6) options totaling GH¢2.74 million, assessed under the Ranking and Performance adaptation options proposed by stakeholders therefore concentrate on removing structural barriers that limit women's adaptive capacity and ensuring that district investments translate into fair participation and benefits. The package combines empowerment-oriented actions such as women-led reforestation and targeted training with institutional measures that strengthen gender-sensitive governance, monitoring, and accountability. It also includes practical economic enablers, including subsidised irrigation kits and agro-processing equipment, which aim to reduce time burdens, stabilise incomes, and improve women's control over productive resources within climate-stressed livelihoods. Overall, the sector options reflect a balance between social systems change and targeted support mechanisms that can be integrated into agriculture, water, and livelihood programmes to improve equity outcomes and sustained resilience.

Photos 5: Discussions with gender groups.



Source: Author's field visits

Table 8: Estimated costing of gender targeted adaptation options sector prioritized adaptation actions

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (41)	Women-led reforestation initiatives Timeline: - Months 1–6: Identification of participating women's groups, selection of restoration sites and establishment of the women's group nursery - Months 7–18: Nursery management, first tree-planting cycle, establishment of community apiaries and fire-management and livelihood training - Years 2–3: Additional planting, replacement of failed seedlings, beekeeping and income-diversification	Strengthen women's participation and leadership in ecosystem restoration while creating complementary livelihood opportunities. Women-led nurseries, tree planting and beekeeping can restore degraded landscapes, reduce climate-related livelihood risks and improve women's access to income-generating environmental resources.	- Women's group nursery establishment, tree planting, beekeeping, fire-management and income-diversification activities for 100 participants, supported by two local travel rounds, 12 months of field monitoring transport, 1,300 training and monitoring materials, seven training and community-engagement sessions and 12 radio broadcasts across four FM stations — 182,600.00 - Establishment of one women's group tree nursery and provision of one planting-tools and protective-	- Women farmers, women's groups, young women, female-headed households and women whose livelihoods depend on degraded natural resources - Women should lead nursery management, tree planting, beekeeping, fire prevention and the management of income generated from restoration activities - Participation should include women with disabilities and economically vulnerable women	- One women-managed tree nursery established - Fifty thousand seedlings produced and planted - Number of participating women, disaggregated by age and disability status - Two community apiaries established and functioning - Seedling survival rate after 6, 12 and 24 months - Area of degraded land restored - Number of women earning income from beekeeping or other tree-based activities - Number of women's groups	Lead: District Gender Desk, Department of Agriculture and Forestry Commission Supporting partners: District Assembly, EPA, Ghana National Fire Service, Ghana Enterprises Agency, traditional authorities, women's groups, FBOs, landowners and community-based organisations	457,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	activities and monitoring of restoration outcomes		equipment package — included in the capital cost • Production and planting of 50,000 climate-resilient seedlings — included in the capital cost • Establishment of two community apiaries with beekeeping and honey-processing equipment — included in the capital cost • Provision of two fire-belt materials and equipment packages for women's groups — 275,000.00 combined capital cost		applying fire-management measures		
2nd (38)	Gender-sensitive training Timeline: • Months 1–3: Gender and skills-needs assessment,	Strengthen women's technical, leadership and entrepreneurial capacities to participate effectively in climate adaptation	• Gender-transformative skills training, women's leadership development and economic-empowerment	• Women farmers, women entrepreneurs, young women, women leaders, women with disabilities and women from	• One hundred women completing gender-sensitive training • Eleven training and review	Lead: District Gender Desk and Department of Social Welfare and Community Development	171,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	beneficiary selection and preparation of gender-transformative training materials - Months 4–12: Delivery of technical skills, leadership-development and economic-empowerment training - Months 13–18: Post-training monitoring, follow-up support and assessment of leadership and livelihood outcomes	planning, livelihood development and community decision-making. Gender-sensitive training is required to address unequal access to skills, information, productive opportunities and leadership positions.	activities for 100 participants, Supported by two local travel rounds, five follow-up field visits, 1,100 training manuals and workbooks, 11 training and review sessions and 16 radio broadcasts across four FM stations — 171,000.00	vulnerable households - Training content, locations and schedules should consider literacy differences, local-language needs, mobility constraints and women's unpaid care responsibilities - Women should be supported to apply their acquired skills through leadership, employment and enterprise opportunities	sessions conducted - Number of participants demonstrating improved technical, leadership or entrepreneurial knowledge - Number of trained women assuming leadership or decision-making roles - Number of women establishing or strengthening income-generating activities - Percentage of participants applying acquired skills within 6–12 months - Change in income or economic participation	Supporting partners: Ghana Enterprises Agency, Department of Agriculture, TVET institutions, National Commission for Civic Education, financial institutions, women's groups, traditional authorities and civil society organisations	

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
					among supported women		
3rd (38)	Subsidised irrigation kits Timeline: - Months 1–4: Assessment of women farmers' irrigation needs, identification of beneficiary groups and selection of suitable irrigation and water-source sites - Months 5–12: Procurement of irrigation kits and implementation of minor repairs, desilting and pump installation at selected dams and dugouts - Months 13–18: Distribution and installation of irrigation kits, farmer training and establishment	Improve women farmers' access to affordable water-control technologies and reliable water sources for dry-season and climate-resilient agricultural production. Women often face greater constraints in accessing irrigation equipment, finance, land and productive water infrastructure, limiting their ability to respond to drought and rainfall variability.	- Women farmer irrigation-needs assessment, kit procurement support, training, demonstrations and monitoring for 100 participants, supported by four local travel rounds, 12 months of delivery and monitoring transport, 1,100 irrigation and water-management materials, seven training and water-user engagement sessions and 16 radio broadcasts across four FM stations — 198,600.00 - Procurement and distribution of 100 subsidised irrigation kits comprising drip-irrigation, treadle-	- Women smallholder farmers, women vegetable producers, young women farmers and female-headed farming households affected by rainfall failure - Women should receive priority access to the irrigation kits, irrigated plots, water-user groups and irrigation-management training - Beneficiary-selection procedures should prevent elite capture and include low-income women and women with limited access to productive assets	- One hundred subsidised irrigation kits distributed and functioning - Number of women farmers trained in irrigation and water management - Five dams or dugouts repaired, desilted and fitted with pumps - Area of land cultivated using the subsidised irrigation systems - Increase in the number of women participating in dry-season production - Reduction in crop losses associated with rainfall failure	Lead: Department of Agriculture and Ghana Irrigation Development Authority Supporting partners: District Assembly, Water Resources Commission, EPA, Agricultural Extension Agents, women's FBOs, water-user groups, traditional authorities, equipment suppliers and beneficiary communities	798,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	of demonstration activities Months 19–24: Monitoring of system use, water management, dry-season production and equipment performance		pump or gravity-fed systems for women farmers — 350,000.00 Minor repairs, desilting and pump installation at five dams or dugouts serving women's irrigation schemes — 250,000.00		- Increase in production, cropping cycles and income among beneficiary women - Percentage of irrigation systems functioning after 12 and 24 months		
4th (37)	Gender-sensitive governance Timeline: - Months 1–4: Assessment of women's participation in district and community governance and review of existing planning and bye-law processes - Months 5–12: Gender-responsive planning workshops, women's	Strengthen women's meaningful participation and influence in climate adaptation planning, local governance and resource-allocation decisions. Women may be represented in consultation processes without having sufficient influence over final decisions, budgets, local rules or	Gender-responsive planning workshops, support for women's participation in Assembly processes and bye-law review for 100 participants, supported by two local travel rounds, 12 months of governance-monitoring transport, 2,000 planning guides, rights materials and governance checklists, seven	- Women elected and appointed representatives, women leaders, women's groups, young women, women with disabilities and women from marginalised communities - Women should be supported to participate beyond attendance by contributing to decisions, budgets, bye-laws and adaptation priorities	- Number of gender-responsive planning and governance workshops conducted - Number and proportion of women participating in Assembly and community decision-making processes - Number and proportion of women holding leadership positions	Lead: District Planning Coordinating Unit and District Gender Desk Supporting partners: District Assembly, Department of Social Welfare and Community Development, National Commission for Civic Education, traditional authorities, women's organisations, assembly members,	221,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	leadership support and facilitation of women's participation in Assembly and community decision-making processes Months 13–18: Review of relevant bye-laws, establishment of gender-governance management systems and assessment of women's representation and influence	implementation priorities.	workshops and 16 radio broadcasts across four FM stations — 205,600.00 - Establishment of one Gender Information Management System for tracking women's participation in governance — 15,000.00 - Installation of one gender-governance information board displaying participation targets, women's representation data and bye-law information — 1,000.00	Representation should include women of different ages, socioeconomic groups and disability statuses	- One Gender Information Management System established and operational - One gender-governance information board installed - Number of plans, budgets and bye-laws reviewed using gender-responsive criteria - Percentage of women reporting that their priorities influenced decisions - Number of gender-related decisions and commitments implemented	decentralised departments and civil society organisations	
5th (37)	Agro-processing equipment and facilities Timeline:	Improve women's access to climate-resilient agro-processing infrastructure, energy and value-	Women-focused agro-processing facility planning, equipment installation, cooperative	Women farmers, processors, traders, women's cooperatives, young women and female-headed	One women-focused agro-processing centre constructed or rehabilitated and	Lead: District Assembly, Ghana Enterprises Agency and Department of Agriculture	1,085,600.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Months 1–6: Commodity and facility-needs assessment, identification of women's cooperatives, site selection and preparation of technical designs - Months 7–18: Construction or rehabilitation of the women-focused agro-processing facility and installation of solar-energy systems at community processing centres - Months 19–24: Installation and testing of processing, packaging and food-safety equipment - Months 25–30: Training of women's cooperatives,	addition technologies. Women producers and processors often experience high post-harvest losses, limited access to equipment, unreliable electricity and weak market power, which restrict their income and resilience to climate and market shocks.	training and management activities for 100 participants, supported by four local travel rounds, 12 months of construction-monitoring transport, 1,700 technical drawings, equipment manuals, food-safety guides and management materials and six community consultation and training sessions — 200,600.00 - Construction or rehabilitation of one women-focused agro-processing centre with storage and sanitation facilities — 500,000.00 - Provision of one processing-equipment package comprising	households involved in agricultural value chains - Women's cooperatives should hold defined management and decision-making responsibilities for the facility and processing centres - Facility access, employment and benefit-sharing arrangements should prioritise women, including women with disabilities and low-income processors	operational• Ten community processing centres provided with solar-energy systems - Processing, packaging and food-safety equipment installed and functioning - Number of women trained in processing, equipment operation, food safety and facility management - Number of women's cooperatives using the facilities - Volume and value of agricultural products processed - Reduction in post-harvest losses	Supporting partners: Ministry of Trade and Industry, Energy Commission, Food and Drugs Authority, women's cooperatives, financial institutions, utility providers, equipment suppliers, traditional authorities and private-sector buyers	

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	commissioning of the facility and establishment of management arrangements		cassava graters, palm-nut crackers, groundnut shellers and dryers — 100,000.00 • Provision of one packaging-equipment package comprising packaging machines, weighing scales and sealing equipment — 80,000.00 • Installation of solar-power systems for 10 community-based processing centres operated by women's cooperatives — 200,000.00 • Provision of one food-safety and quality-testing equipment package and certification support — 5,000.00		• Number of jobs and enterprises created for women • Increase in income among participating women processors		

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
6th (35)	Developing gender-responsive monitoring Timeline: - Months 1–4: Review of existing monitoring systems, identification of gender-data gaps and development of the gender-responsive monitoring and evaluation framework - Months 5–9: Development of data-collection tools, installation of digital systems and training of district and community data collectors - Months 10–15: Collection and verification of gender-disaggregated data, preparation	Establish a consistent system for collecting, analysing and reporting gender-disaggregated information across district adaptation interventions. Without gender-responsive monitoring, differences in participation, access to resources, benefits and climate impacts among women, men and vulnerable groups may remain invisible in implementation reports and decisions.	Gender-disaggregated data collection, monitoring and evaluation framework development, reporting and documentation for 100 participants, supported by four local travel rounds, 12 months of gender-data collection transport, 1,100 monitoring frameworks, gender-data forms and reporting templates, seven data-review and validation workshops, 16 radio broadcasts across four FM stations and one consultancy assignment for framework and system	- Women and men participating in district adaptation programmes, particularly women, young women, persons with disabilities and vulnerable households whose experiences may be inadequately captured - District gender officers, planning officers, monitoring and evaluation officers and community data collectors - Data-collection tools should capture sex, age, disability and other relevant vulnerability characteristics	- One gender-responsive monitoring and evaluation framework developed and adopted - Ten digital data-collection devices procured and in use - One district gender-data management software system installed - One community gender-data repository board established - Number of district and community officers trained - Percentage of adaptation programmes reporting sex-disaggregated data - Number of gender-responsive	Lead: District Planning Coordinating Unit and District Gender Desk Supporting partners: Department of Social Welfare and Community Development, Ghana Statistical Service, decentralised departments, project-monitoring teams, women's groups, civil society organisations and community data collectors	254,600.00

[illegible]

The adaptation objectives, justifications, and estimated implementation costs for each of these actions are further elaborated upon below.

4.3.5.1 Women-Led Reforestation Initiatives

Objective: Linked to the objective of afforestation: integrating trees into farming landscapes to restore soils, reduce erosion and heat stress, and strengthen ecosystem services that support livelihoods but with increased involvement and leadership of women.

Justification: Women often face higher climate burdens through fuelwood collection, water fetching, and climate-sensitive livelihoods, yet have limited control over natural resource decisions. Women-led restoration improves equity in participation while delivering biodiversity and land protection benefits that reduce flood and heat impact.

Key provisions and how they will be implemented in ANDA: ANDA should work through existing women's groups and community leadership to identify suitable sites (riparian edges, degraded communal lands, school compounds, home gardens) and agree on land and tree-use rights before planting. Seedling supply should prioritise drought-tolerant, multipurpose species that align with women's livelihood needs (fuelwood alternatives, fruit trees, shade). Practical training should cover planting, aftercare, and fire protection, with clear group responsibilities for watering and guarding. Small incentives, survival audits, and linkages to by-laws on bush burning and illegal felling will be needed to protect gains.

4.3.5.2 Gender-Sensitive Training

Objective: Improve women's and men's capacity to plan, adopt, and sustain adaptation practices by delivering targeted training that addresses unequal access to information, resources, and decision-making.

Justification: Skills and information gaps constrain adoption of climate-smart practices, and women are more likely to be excluded from extension, finance and technical training due to time burdens and social norms. Gender-sensitive training increases uptake and ensures benefits reach those most exposed.

Key provisions and how they will be implemented in ANDA: Deliver training in local languages using practical demonstrations, with schedules and venues that reduce barriers for women (timing, childcare-sensitive arrangements, shorter sessions). Content should cover climate-risk awareness, livelihood and farm decision-making, water management, post-harvest handling, and basic financial literacy for adaptation investments. Selection should intentionally include women farmers, processors, and traders, as well as men who influence resource allocation at household level. Training should be linked to service delivery such as extension follow-up, input access, and group-based mentoring, so skills translate into practice. Participation and outcomes should be tracked by sex and vulnerability group.

4.3.5.3 Subsidised Irrigation Kits for Women and marginalised groups

Objective: Reduce dry-season production constraints for women, persons with disabilities and vulnerable farmers by improving access to small-scale irrigation technologies and water-saving application methods.

Justification: Women often face limited access to land, capital, and equipment, restricting participation in dry-season farming and income diversification. Low-cost irrigation kits can improve productivity and household food security if water availability and governance are addressed.

Key provisions and how they will be implemented in ANDA: ANDA should target the subsidized delivery of irrigation kits to water-feasible sites and organise distribution through transparent criteria prioritising women, persons with disability and vulnerable households, using FBOs, women's groups, disability groups, migrant groups, youth groups and other resource constrained groups to reduce elite capture. The package should include training on efficient watering schedules, drip or controlled application, and soil moisture conservation to limit water waste. Water-user arrangements must be defined where sources are shared to prevent conflict, including rules on timing, maintenance, and contributions. Subsidies should be partial and time-bound, combined with savings mechanisms so farmers can replace parts. After supply support through local technicians and spare parts, should be arranged to avoid rapid breakdown and abandonment.

4.3.5.4 Gender-Sensitive Governance

Objective: Embed gender equality and inclusion into adaptation planning, budgeting, and implementation by strengthening participation, accountability and decision rules within district and community structures.

Justification: Even well-designed interventions can reproduce inequality if women and other minority groups are absent from decision-making or if benefits are captured by influential groups. Governance reforms ensure that adaptation investments respond to differential needs and distribute benefits fairly.

Key provisions and how they will be implemented in ANDA: ANDA should institutionalise minimum participation standards for women in relevant committees (water management, disaster planning, natural resource protection) and require gender screening in project selection, budgeting, and monitoring. Clear roles and reporting lines should be established for gender focal persons and sector leads, supported by training on gender analysis and safeguards. Community engagement processes should deliberately include women's voices through separate consultations where needed and documented feedback loops. Grievance and conflict-resolution mechanisms should be made accessible to women. Governance measures should be tied to operational incentives, approval conditions, performance reporting, and public disclosure, so they influence real implementation decisions rather than remaining procedural.

4.3.5.5 Gender-targeted Agro-Processing Equipment and Facilities

Objective: Increase income security and reduce post-harvest losses by improving access to processing technologies, hygienic facilities, and market linkages for climate-sensitive commodities. Particularly for youth employment, women and vulnerable groups participation.

Justification: Climate variability increases spoilage risks and price volatility, while women are heavily represented in processing and trading but often operate with low-capacity tools and limited infrastructure. Processing improvements strengthen resilience by stabilising value chains and income. Youth and other vulnerable groups such as persons with disabilities in the communities also often do not have any source of employment leading to increased dependance on limited available resources.

Key provisions and how they will be implemented in ANDA: Facilitate, co-partner and attract investments in agro-processing support as a livelihood-resilience intervention that deliberately expands access for women, youth, persons with disabilities and other gender groups. Agro-processing investment area should follow a value-chain feasibility check on priority commodities with current local agricultural production, clear market demand and strong participation of women processors/traders. To assure price volatility is better managed through storage, drying and basic processing. Siting of such agro-processing facilities should be accessible and flood-safe, with water, drainage, and hygiene infrastructure that meets food safety needs. Governance arrangements must guarantee inclusive access through transparent user schedules, affordability rules, and representation of women, youth, and PWDs on management committees. ANDA should bundle agro-processing with skills development

in quality control, packaging, record-keeping, and marketing, plus mentoring for youth enterprises and inclusive workplace adaptations for PWDs to increase employment and livelihood access to all.

4.3.5.6 Developing Gender-Responsive Monitoring

Objective: Improve accountability and learning by ensuring adaptation results are measured in ways that capture differential impacts on women, men, youth, and vulnerable groups.

Justification: Without gender-responsive monitoring, implementation may appear successful while reinforcing inequities, and decision-makers lack evidence on who benefits, who is excluded, and what design adjustments are needed.

Key provisions and how they will be implemented in ANDA: Define a small set of practical gender indicators across sectors, such as participation in decision-making, access to services and assets, time burden changes and benefit distribution for gender-responsive monitoring. Data collection tools should be integrated into routine reporting systems rather than treated as a separate project requirement, with simple templates usable by field staff and community focal persons. Baselines should be established for priority interventions, and monitoring should include qualitative feedback mechanisms (women's focus discussions, community scorecards) to capture lived experience. Findings should be reviewed periodically in planning meetings and used to adjust targeting, delivery modalities, and safeguards.

General Costed Gender-Targeted Adaptation Options Sector Considerations

Investment Logic

Gender investments combine structural inclusion measures with practical livelihood support. Agro-processing equipment and facilities form the largest cost item, followed by subsidised irrigation kits and women-led reforestation. Lower-cost actions include gender-sensitive governance, training, and gender-responsive monitoring. The investment logic is to reduce women's time poverty and constrained access to land, water, finance, information, and decision-making, while ensuring that adaptation benefits are distributed more equitably across vulnerable groups.

Economic and Feasibility Assessment

This package is feasible because several actions can be mainstreamed into other sector programmes at modest cost. Governance reform, training, and monitoring are low-cost, early-stage measures with strong enabling value. Women-led reforestation and subsidised irrigation offer tangible livelihood benefits where targeting and follow-up are well managed. Agro-processing yields larger economic potential but depends on procurement quality, market access, and management arrangements. The sector's value-for-money lies in improving the equity and effectiveness of all other adaptation investments.

Operations and Maintenance Considerations

The gender targeting package is relatively light in direct physical maintenance but requires sustained institutional and social follow-through. Governance, training, and gender-responsive monitoring actions have low annual maintenance requirements, though they depend on continued reporting, coordination, and mainstreaming within district planning structures. Women-led reforestation and subsidised irrigation support require moderate upkeep because they involve beneficiary targeting, equipment use, survival of planted materials, and ongoing technical follow-up. Agro-processing support presents the highest maintenance risk within the sector, particularly where machinery, facilities, and shared-use arrangements are involved. The main challenge is therefore less about capital replacement alone and more about ensuring equitable access, strong group management, financial accountability, and continued support to women beneficiaries.

4.3.6 Disaster and Risk Reduction

Disaster risk reduction in Akatsi North is cross-cutting across all sectors and the climate adaptation according to stakeholders should focus on limiting loss and disruption from hazards through prevention, preparedness, and resilient access infrastructure. In all, nine (9) priority actions were agreed, estimated at a total of GH¢3.94 million and assessed which reflect an emphasis on reducing exposure to floods and fires, strengthening response readiness at community level, and protecting the lifelines of roads, bridges, culverts, and drainage, which determine whether services and markets remain reachable during climate shocks. The adaptation options also combine ecosystem-based risk reduction (reforestation and woodlots, fire management) with preparedness and systems measures (capacity building, early warning, evacuation planning, and collaboration), recognising that risk information and coordination are central to reducing losses. It also includes community dialogues and conflict mediation to manage tensions that can emerge during resource scarcity and displacement. Structural measures such as upgrading bridges and culverts, improving drainage, and constructing flood barriers are included to reduce physical vulnerability in priority corridors, while acknowledging the higher financing and technical requirements needed to maintain these assets over time.

Photos 6: Effects of heavy rainfall in Ave Xevi



Source: Author's field visits and observation

Table 9: Estimated costing of disaster and risk reduction sector prioritized adaptation actions

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
1st (46)	Community-led fire management and bushfire control Timeline: - Months 1–4: Identification of bushfire hotspots, mobilisation of volunteers and formation of community fire brigades - Months 5–9: Fire-management training, establishment of fire belts and distribution of equipment - Months 10–18: Early-burning activities, inter-community coordination, practical drills and firebreak monitoring	Strengthen community capacity to prevent, detect and control bushfires before they cause extensive damage to farms, forests, settlements and restored landscapes. Prolonged dry and hot conditions increase the likelihood and severity of uncontrolled fires, requiring coordinated local prevention and response systems.	- Two fire-brigade formation, fire-belt establishment, early-burning and inter-community fire-coordination events for approximately 100 participants, supported by 1,800 printed fire-management materials, 12 firebreak inspection and monitoring rounds and 16 radio broadcasts across four FM stations — 147,000.00 - Provision of one firefighting-equipment package comprising fire beaters, knapsack sprayers, machetes, protective equipment and first-aid supplies and one community	- Communities located in bushfire-prone areas, farmers, livestock keepers, forest-fringe households and community fire volunteers - Women fuelwood collectors, women farmers and households located close to farms, woodlots and restored areas - Women and youth should participate in fire-awareness, early-warning and appropriate brigade-support roles, with protective equipment provided for active responders	- Community fire brigades formed and operational - Number of volunteers trained, disaggregated by sex and age - Fire belts established and maintained in priority areas - Fire-management and alert equipment provided - Number of early-burning and practical drill activities conducted - Number of fire incidents reported and controlled - Reduction in the area affected by	Lead: Ghana National Fire Service and NADMO Supporting partners: Forestry Commission, District Assembly, Department of Agriculture, EPA, traditional authorities, community fire volunteers, farmer organisations and local radio stations	153,500.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
			alert-system package comprising drums, bells and megaphones — 6,500.00		uncontrolled bushfires • Number of farms, woodlots and restored sites protected		
2nd (46)	Capacity building to assess risks, plan, coordinate and sustain DRR actions Timeline: - Months 1–6: Assessment of district DRR capacity, identification of training needs and development of training modules and partnership arrangements - Months 7–18: NADMO staff training, district DRR capacity-development activities and construction of the training resource centre	Strengthen the institutional, technical and coordination capacity required to assess disaster risks, prepare effective plans and sustain district-level DRR actions. Limited staff skills, inadequate training facilities and weak institutional partnerships can undermine risk assessment, preparedness and coordinated emergency response.	- Twelve NADMO staff-training, district DRR capacity-development and partnership-engagement sessions for approximately 100 participants, supported by 2,000 printed DRR training and assessment materials, 10 field follow-up rounds and 16 radio broadcasts across four FM stations — 411,000.00 - Construction and establishment of one district DRR training resource centre — 250,000.00	- NADMO staff, district planning and technical officers, emergency-service personnel, community disaster volunteers and decentralised departments - Women officers, young professionals and persons responsible for addressing the needs of vulnerable groups during disasters - Training participation and leadership opportunities should be monitored by sex, age and institutional role	- One district DRR training resource centre constructed and operational - Number of NADMO and district officers trained, disaggregated by sex - Number of DRR capacity-development sessions completed - District risk-assessment and preparedness tools developed or improved - Number of institutional partnerships established or strengthened	Lead: NADMO and District Planning Coordinating Unit Supporting partners: District Assembly, Ghana National Fire Service, Ghana Police Service, Ghana Health Service, Ghana Meteorological Agency, Hydrological Authority, decentralised departments, civil society organisations and academic or training institutions	661,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	Months 19–24: Equipping and commissioning of the resource centre, partnership strengthening and assessment of institutional capacity				- Improvement in staff knowledge and preparedness capacity - Number of coordinated DRR plans and activities implemented		
3rd (44)	Early warning systems Timeline: - Months 1–4: Hazard and communication assessment, identification of monitoring locations and preparation of community alert protocols - Months 5–9: Installation of warning and monitoring equipment and training of community volunteers	Establish accessible and timely systems for monitoring hazards and warning communities before floods, storms and other climate-related emergencies occur. Limited monitoring equipment and weak communication protocols can delay evacuation and increase losses, particularly among households	- Three community early-warning installation, volunteer-training and flood-drill events for approximately 100 participants, supported by 1,700 printed alert-protocol and monitoring materials, 12 system-testing and monitoring rounds and 16 radio broadcasts across four FM stations — 152,000.00 - Provision of one community warning-equipment	- Residents of flood-prone and hazard-exposed communities, particularly women, children, older persons and persons with disabilities - Farmers, traders, schools, health facilities and households located near rivers, low-lying areas and vulnerable infrastructure - Warning messages and evacuation procedures should be accessible to women, persons with disabilities and	- Community early-warning system installed and operational - Warning, rainfall and river-level monitoring equipment installed - Number of community volunteers trained, disaggregated by sex and age - Flood drills conducted and evaluated - Alert and evacuation protocols	Lead: NADMO Supporting partners: Ghana Meteorological Agency, Hydrological Authority, Water Resources Commission, District Assembly, Ghana National Fire Service, Information Services Department, telecommunications providers, traditional authorities and community volunteers	163,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Months 10–15: Flood drills, testing of alert procedures and establishment of rainfall and river-level monitoring - Months 16–18: Evaluation of system performance, correction of communication gaps and finalisation of operating protocols	located in high-risk areas.	package comprising sirens, drums, bells and megaphones, one rainfall and river-level monitoring package and one community information and notice-board package displaying risk maps and evacuation routes — 11,000.00	people with low literacy	- developed and tested - Percentage of at-risk households receiving warnings within the required period - Reduction in warning dissemination time - Number of people safely participating in evacuation drills		
4th (44)	Community dialogues and conflict mediation' Timeline: Months 1–4: Conflict mapping, stakeholder identification and establishment of community grievance arrangements	Reduce the risk that climate-related resource scarcity, displacement, land-use pressures and competition over water, grazing land and relief support escalate into community conflict. Structured dialogue, mediation and grievance mechanisms can strengthen social	Four community peace-dialogue, mediation-training, grievance-resolution and reconciliation events for approximately 100 participants, supported by 1,200 printed mediation and grievance materials, five mediation follow-up	- Communities affected by land, water, grazing, boundary and disaster-response disputes - Farmers, livestock keepers, women, youth, migrants, traditional authorities and vulnerable households whose access to	- Priority conflict risks mapped - Number of community dialogues and mediation sessions conducted - Number of participants, disaggregated by sex and age - Conflict-resolution documentation	Lead: District Assembly, District Security Committee and National Peace Council Supporting partners: NADMO, traditional authorities, Ghana Police Service, National Commission for Civic Education, Department of	120,250.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Months 5–10: Community peace dialogues, mediation training and facilitated grievance resolution - Months 11–15: Reconciliation activities, follow-up mediation and documentation of agreements and unresolved cases	cohesion and support peaceful implementation of adaptation and disaster-response measures.	rounds and 16 radio broadcasts across four FM stations — 119,750.00 Establishment of one conflict-resolution documentation system comprising grievance-recording boxes, community dialogue boards and conflict-tracking registers — 500.00	resources may be affected Women and youth should participate as dialogue representatives, mediators and members of grievance-management structures	system established - Number of grievances registered and addressed - Number of mediation agreements reached and implemented - Reduction in unresolved resource-related disputes - Percentage of women and youth represented in dialogue and mediation structures	Social Welfare and Community Development, farmer and livestock groups, women's organisations, youth groups and civil society organisations	
5th (44)	Upgrading bridges and culverts Timeline: Months 1–6: Bridge and culvert assessments, community mapping,	Improve the climate resilience and safety of bridges and culverts that provide access to communities, farms, schools, markets and health facilities. Undersized or deteriorated crossings can fail	Three bridge and culvert assessment, community-mapping and engineering-survey engagements for approximately 100 participants, supported by 2,000 printed engineering and	- Residents of communities served by vulnerable bridges and culverts, particularly women, children, older persons and persons with disabilities - Farmers, traders, schoolchildren, health workers and	- Priority bridges and culverts assessed and mapped - Engineering designs and environmental assessments completed - One priority bridge and	Lead: District Assembly Works Department and Department of Feeder Roads Supporting partners: Ghana Highway Authority, Hydrological Authority, EPA,	1,246,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	engineering surveys and prioritisation of vulnerable crossing points - Months 7–10: Preparation of designs, environmental screening and contractor procurement - Months 11–24: Construction and upgrading works, erosion protection and supervision - Months 25–30: Structural inspections, commissioning and training of community infrastructure-maintenance teams	during intense rainfall and flooding, isolating communities and disrupting emergency response, economic activity and access to essential services.	supervision materials, 12 construction-monitoring rounds, 16 radio broadcasts across four FM stations and one engineering design consultancy — 191,000.00 Implementation of one priority bridge and culvert construction and upgrading package, including associated erosion and scour-protection works and maintenance support — 1,055,000.00	emergency responders requiring reliable year-round access Community consultations should capture the mobility and safety needs of women, children and persons with disabilities	culvert upgrading package completed - Length or number of crossings upgraded - Erosion and scour-protection works completed - Reduction in flood-related road closures and community isolation - Number of households and public-service users benefiting - Community infrastructure-maintenance teams trained	NADMO, traditional authorities, community infrastructure-maintenance committees, contractors and beneficiary communities	
6th (43)	Disaster preparedness training, evacuation plans and collaboration Timeline:	Improve the ability of district institutions and communities to prepare for, respond to and recover from floods,	Four NADMO training, community disaster-planning, evacuation-drill, first-aid and search-and-rescue events for approximately	Residents of hazard-prone communities, community disaster volunteers, emergency	- Community disaster-preparedness plans developed - Evacuation routes and	Lead: NADMO Supporting partners: Ghana National Fire Service, Ghana Police Service,	233,750.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
	- Months 1–4: Community risk assessment, identification of evacuation routes and preparation of disaster-preparedness plans - Months 5–9: NADMO training, first-aid and search-and-rescue training and distribution of equipment - Months 10–15: Community evacuation drills, testing of emergency coordination arrangements and revision of plans - Months 16–18: Final preparedness assessment and documentation of lessons from the drills	fires, storms and other emergencies. Preparedness training, clear evacuation plans and collaboration among response agencies can reduce confusion, response delays, injuries and loss of life during disasters.	100 participants, supported by 1,500 printed preparedness and evacuation materials, five drill-monitoring rounds and 16 radio broadcasts across four FM stations — 208,750.00 Provision of one disaster-preparedness and rescue-equipment package comprising first-aid kits, ropes, stretchers and cutting tools — 25,000.00	personnel, schools and health facilities - Women, children, older persons, pregnant women and persons with disabilities requiring additional evacuation and emergency support - Preparedness and evacuation plans should assign specific support responsibilities for vulnerable groups	assembly points identified - Number of volunteers and officers trained, disaggregated by sex - Number of evacuation and emergency-response drills completed - Disaster-preparedness and rescue equipment provided - First-aid and search-and-rescue teams established - Improvement in evacuation and response times - Percentage of preparedness plans containing provisions for vulnerable groups	National Ambulance Service, Ghana Health Service, District Assembly, Ghana Education Service, traditional authorities, community disaster volunteers and civil society organisations	

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
7th (41)	Creating flood barriers and embankments Timeline: - Months 1–5: Flood-barrier site assessment, identification of vulnerable locations and community consultations - Months 6–9: Engineering design, environmental screening and contractor procurement - Months 10–20: Construction of the flood barrier and embankment and supervision of works - Months 21–24: Inspection, commissioning and distribution of community maintenance tools	Protect flood-prone settlements, farms, roads and public facilities by constructing barriers and embankments that reduce the movement of floodwater into vulnerable areas. Recurrent flooding can cause displacement, property loss, erosion and disruption of essential services where natural or constructed protection is inadequate.	- Five flood-barrier site-assessment, community-consultation, contractor-procurement and construction-supervision engagements for approximately 100 participants, supported by 2,000 printed engineering and supervision materials and 12 site-monitoring rounds — 209,000.00 - Construction of one flood-barrier and embankment package comprising earthworks, gabion or concrete protection and flood-diversion structures and provision of one community maintenance-tools	- Residents of flood-prone settlements, smallholder farmers, traders and users of roads and public facilities located in vulnerable areas - Women-headed households, children, older persons, persons with disabilities and low-income households with limited capacity to recover from flood losses - Community consultations should ensure that women and vulnerable households influence site selection and maintenance arrangements	- Flood-barrier site assessment and engineering design completed - One flood barrier and embankment constructed - Community maintenance tools provided - Length or area protected by the flood structure - Number of households, farms and public facilities protected - Reduction in floodwater entering the protected area - Reduction in flood-related displacement and property damage	Lead: District Assembly Works Department and Hydrological Authority Supporting partners: NADMO, EPA, Department of Agriculture, traditional authorities, community disaster-management committees, contractors and beneficiary communities	512,000.00

Priority Rank (MCA Score)	Priority Adaptation Action	Objective & Justification	Actions Proposed	Main Beneficiaries (Gender Responsiveness)	Key Indicators of Success	Lead Institution, Supporting Partners	Indicative Cost (GHS)
			package — 303,000.00		Community maintenance arrangement established		
8th (41)	Improved drainage channels in communities Timeline: - Months 1–4: Drainage mapping, identification of flood and waterlogging hotspots and community consultations - Months 5–8: Channel design, environmental screening and contractor procurement - Months 9–20: Construction and improvement of priority drainage channels and supervision of works	Improve stormwater conveyance and reduce flooding, erosion, stagnant water and disruption of community access. Inadequate, undersized or blocked drainage channels increase the severity of local flooding and can contribute to property damage, vector breeding and contamination of residential areas.	- Five drainage-mapping, community-consultation, channel-design, contractor-procurement and supervision engagements for approximately 60–80 participants, supported by 2,000 printed drainage and maintenance materials, 12 construction-monitoring rounds, 16 radio broadcasts across four FM stations and one engineering design consultancy — 199,000.00 - Implementation of one priority drainage-channel construction and maintenance	- Residents of flood-prone and poorly drained communities, particularly women, children, older persons and persons with disabilities - Households, businesses, schools, health facilities and road users affected by flooding and waterlogging - Women and vulnerable groups should participate in drainage mapping, community consultations and maintenance committees	- Priority drainage and flood hotspots mapped - Engineering design completed - One priority drainage-channel package constructed - Length of drainage constructed or improved - Community maintenance tools and waste-bin infrastructure provided - Reduction in waterlogging and duration of standing water - Reduction in drainage blockage and	Lead: District Assembly Works Department and Hydrological Authority Supporting partners: Environmental Health Unit, NADMO, EPA, traditional authorities, community disaster-management committees, waste-management groups, contractors and beneficiary communities	714,000.00

[illegible]

The adaptation objectives, justifications, and estimated implementation costs for each of these actions are further elaborated upon below.

4.3.6.1 Community-Led Fire Management and Bushfire Control

Objective: Prevent and rapidly control fires to protect farms, settlements, and ecological assets during the dry season.

Justification: Bush burning is a recurrent hazard driver that destroys vegetation cover, damages livelihoods, and weakens long-term resilience, particularly under hotter and drier conditions. Community-level response is critical because fires spread quickly and formal response may be delayed.

Key provisions and how they will be implemented in ANDA: As revealed during stakeholder discussions, of the Akatsi North District Fire Service Department plans to form community fire volunteer groups with defined command structures, training, and basic equipment such as beaters, rakes, protective clothing, and communication tools. Nonetheless, the prevention of fires should be prioritised through seasonal education, clear prohibitions on uncontrolled burning, and community-agreed fire calendars where controlled burning is unavoidable. Fire belts should be created around vulnerable zones such as woodlots, forest patches, settlement boundaries, and key infrastructure and maintained before peak dry months. Reporting pathways should be established from community focal persons to the District Fire Service Department and NADMO as well as relevant community agencies for escalation.

4.3.6.2 Capacity Building to Assess Risks, Plan, Coordinate and Sustain DRR Actions

Objective: Strengthen institutional and community ability to assess risks, plan, coordinate and sustain DRR actions before, during, and after hazard events.

Justification: DRR effectiveness depends on skills, coordination, and routine practice; without capacity, early warning is not acted upon, infrastructure is poorly maintained, and response is reactive rather than preventive.

Key provisions and how they will be implemented in ANDA: Implement capacity building as a structured programme for Assembly departments, NADMO structures, area councils, and community volunteers, focusing on risk mapping, incident management, communication protocols, and integration of DRR into annual planning and budgeting. Training should include practical drills and after-action reviews, not only workshops, so roles become operational in real events. A district coordination platform should define who leads alerts, evacuation support, and relief logistics, and how information flows across communities. Capacity building should also cover infrastructure inspection and maintenance planning for culverts, drainage, and flood-prone assets. Inclusion is essential: women, youth, and persons with disabilities should be represented and trained for specific roles. Progress should be tracked through performance indicators such as drill frequency, response times, and maintenance compliance.

4.3.6.3 Early Warning Systems

Objective: Improve timely hazard information and community action to reduce casualties and losses from floods, storms, and bushfires.

Justification: Many losses occur because warnings do not reach households in time or do not translate into clear actions. Early warning is only effective when linked to preparedness and response arrangements.

Key provisions and how they will be implemented in ANDA: ANDA should establish an end-to-end early warning strategy that connects hazard monitoring, dissemination, and community response.

Practical dissemination channels should include community information centres, phone calls to assembly members and unit committee representative, local radio, and trusted focal persons, with messages delivered in local languages and simplified into clear triggers and actions. Each high-risk community should agree on response protocols such as who is alerted first, where people move, how children, the elderly, and persons with disabilities are supported, and how livestock and valuables are managed. Warning systems should be coordinated with NADMO and sector agencies, and tested periodically through drills. Feedback loops are required so communities confirm receipt and understanding. Early warning should also link to health alerts during floods to reduce water contamination and outbreak risks.

4.3.6.4 Community Dialogues and Conflict Mediation

Objective: Reduce tensions and prevent conflict linked to disaster impacts, resource scarcity, and response decisions through structured community dialogue and mediation mechanisms.

Justification: Floods, fire control measures, land use for reforestation, dam construction and other social amenities can trigger disputes over land, access routes, water points, and relief distribution, which can undermine cooperation and delay response.

Key provisions and how they will be implemented in ANDA: Institutionalise dialogue platforms at community and area council levels that bring together chiefs, assembly members, women leaders, youth groups, farmer groups, and service providers to address disputes proactively. Mediation should be integrated into DRR planning, especially where interventions impose restrictions or where shared resources are stressed. Clear grievance channels should be established for complaints about relief targeting, evacuation arrangements, or enforcement actions, with agreed timelines for resolution. Dialogues should be timed ahead of peak hazard seasons and after major events to capture lessons and rebuild trust. Trained mediators should document issues and outcomes to inform planning, and inclusion safeguards should ensure women and vulnerable groups can raise concerns without intimidation.

4.3.6.5 Upgrading Bridges and Culverts

Objective: Construct and maintain safe access and service continuity during floods by strengthening critical crossings and drainage structures on key routes.

Justification: When bridges and culverts fail or are undersized, communities become isolated, emergency response is delayed, and market and health access collapses, multiplying disaster losses beyond direct flood damage.

Key provisions and how they will be implemented in ANDA: Implement bridge and culvert upgrading through a simple, practical process that starts with mapping and prioritisation. The Assembly should map the areas that regularly overflow or flood during heavy rains and record which communities are cut off from essential services such as markets, schools, and health facilities when this happens. Priority should go to routes that serve multiple settlements and emergency referral access. Designs should follow basic flood-safe standards so structures are not undersized, and where flows are strong, multi-cell culverts or short-span bridges should be used. Supervision should enforce quality materials and staged inspections before payments. Maintenance must be planned from day one through routine desilting and debris removal, backed by a clear budget line and community reporting after storms.

4.3.6.6 Disaster Preparedness Training, Evacuation Plans and Collaboration

Objective: Improve readiness for hazard events through coordinated planning, evacuation protocols, and joint response arrangements across institutions and communities.

Justification: Preparedness reduces panic, speeds response and protects vulnerable groups. But it requires well known plans, clear roles, and inter-agency collaboration rather than ad-hoc reactions.

Key provisions and how they will be implemented in ANDA: Develop community-level evacuation plans for flood- and fire-prone areas, identifying safe routes, assembly points, temporary shelters, and responsibilities for guiding different groups, including children, pregnant women, the elderly, and persons with disabilities. Training should include practical drills and scenario exercises that test communication, transport, and shelter management, followed by after-action reviews to correct gaps. Collaboration arrangements should be formalised among NADMO, health services, security agencies, and community volunteers to coordinate alerts, first aid, and logistics. Preparedness should include household-level guidance on safeguarding documents, medicines, and basic supplies. Plans must be updated annually before the rainy season and aligned with early warning triggers, so evacuation is activated at the right time and in a coordinated manner.

4.3.6.7 Creating Flood Barriers and Embankments

Objective: Reduce flood impacts on settlements, farms, and critical assets by introducing protective structures in priority high-risk locations.

Justification: In locations with repeated inundation, structural protection can prevent damages. While many households constantly battling flood have self-constructed semi permanent structures to serve this purpose, general community flood barriers must be properly designed and maintained to avoid failure or transferring risk to adjacent areas.

Key provisions and how they will be implemented in ANDA: ANDA should only implement barriers and embankments where risk mapping confirms recurrent flood pathways and where non-structural measures alone are insufficient. Design should account for expected peak flows, seepage control, and safe discharge points, supported by technical oversight to reduce failure risks. Embankments must be integrated with drainage networks and upstream catchment management to prevent water backing up and flooding new areas. Land and access implications should be negotiated with affected households and landowners, and enforcement should prevent encroachment that weakens structures. A maintenance plan is essential, including routine inspections before and after rains, repair budgets, and community reporting of cracks or erosion. Where feasible, combine embankments with vegetative reinforcement to stabilise banks and reduce erosion.

4.3.6.8 Improved drainage channels in communities

Objective: Reduce local flooding, stagnant water, and service disruption by improving stormwater drainage within settlements and around key facilities.

Justification: Blocked or undersized drains amplify flood impacts, spread contamination, and create conditions for vector breeding, while also damaging roads and limiting mobility during shocks.

Key provisions and how they will be implemented in ANDA: Prioritise drainage upgrades in flood hotspots identified by communities, especially around markets, schools, health facilities, and densely settled areas where runoff accumulates. Designs should ensure adequate capacity, safe discharge routes, and erosion control at outlets to avoid downstream damage. Drainage infrastructure investment must be paired with routine maintenance systems such as scheduled desilting, refuse removal, and enforcement against dumping, because poor solid waste management is a major driver of blockage. Community clean-up days should be institutionalised before peak rains, supported by supervision and accountability. Drainage works should be coordinated with road and culvert upgrades to ensure continuity of flow across corridors. Monitoring should track reductions in inundation frequency, blockage incidents, and access disruptions during heavy rainfall events.

General Costed DRR Sector Considerations

Investment Logic

The DRR package balances ecosystem-based risk reduction, preparedness systems, and critical protective infrastructure. The largest costs are improved drainage channels, upgrading bridges and culverts, reforestation/woodlots, and district capacity building, while early warning, fire management, preparedness training, and conflict mediation remain comparatively low-cost. The investment logic is to reduce immediate exposure to floods and bushfires while also strengthening the systems needed for preparedness, response, and infrastructure continuity.

Economic and Feasibility Assessment

The sector combines quick wins with medium-term structural measures. Fire management, early warning, and preparedness training are low-cost and immediately actionable. Capacity building is also highly feasible and strengthens the performance of the wider package. Drainage, culverts, bridges, and embankments have high protective value but require stronger design, procurement, and supervision capacity. Reforestation and woodlots offer broader co-benefits but depend on land access and maintenance. The package is economically defensible because lower-cost preparedness measures improve the returns to larger engineering works.

Operations and Maintenance Considerations

Operations and maintenance needs within the disaster risk reduction package vary considerably between preparedness measures and physical protective infrastructure. Early warning systems, preparedness training, community dialogue, and fire management are relatively low-cost to maintain, but they depend on regular drills, volunteer motivation, functioning local reporting systems, and refresher support. Reforestation and woodlot establishment require moderate upkeep because they must be protected from fire, neglect, and weak community ownership. The highest-maintenance interventions are flood barriers, drainage channels, bridges, and culverts, as these are vulnerable to blockage, sediment accumulation, structural wear, and deferred repairs. For this reason, the long-term effectiveness of the DRR package will depend on routine inspections, minor repair budgets, district engineering oversight, and the integration of maintenance into seasonal preparedness and local infrastructure management systems.

4.4 Cross-Cutting Impacts and Adaptation Considerations

Cross-cutting impacts and adaptation considerations describe the issues that determine whether priority actions across agriculture, water resources, health and sanitation, biodiversity, gender targeting actions and disaster risk reduction deliver sustained resilience in Akatsi North. These considerations recognise that many interventions share the same enabling conditions such as community legitimacy, functioning institutions, dependable operations and maintenance and safeguards for vulnerable groups, and that weakness in any one area can reduce overall effectiveness. Integrating these cross-cutting considerations strengthens the coherence of district investments, improves cost-effectiveness by bundling complementary measures, and supports equitable outcomes across communities.

Financing and phased delivery

Affordability constraints are a cross-sector issue in Akatsi North, particularly for water infrastructure, upgrades to health facilities, and flood protection works. Implementation should use phased investment strategies that prioritise high-risk communities and high-dependency assets first, while bundling lower-cost measures that protect returns on infrastructure spending. Funding strategies should combine district budget allocations, earmarked central government support where applicable, and locally appropriate cost-sharing mechanisms, while protecting access for vulnerable households and avoiding exclusion through unaffordable charges.

Gender responsiveness and inclusion of vulnerable groups

Gender and social inclusion should be applied as an implementation requirement across all sectors, not as a stand-alone activity. Actions should explicitly reduce inaccess to communal interventions,

encourage involvement in decision making and consider time burdens linked to particular vulnerable genders. Youth employment and inclusion of persons with disabilities should be integrated through targeted skills training, adapted infrastructure access, and transparent criteria for access to productive support such as irrigation kits, processing equipment, and cash-for-work activities during ecosystem restoration and drainage maintenance.

Operations, maintenance, and functionality protection

A recurrent risk across Akatsi North interventions is rapid functionality loss after project delivery, especially for water systems such as dams and boreholes, drainage works, culverts and community assets affected by floods and sedimentation. Each priority action should include a clear maintenance plan from the outset defined roles, routine schedules, simple tools and spare parts, and budget lines for minor repairs. Where community management is used, it should be supported with basic training, oversight by the appropriate district departments, and rules on contributions or user fees that balance affordability with predictable funding for upkeep and conflict prevention.

Institutional coordination and implementation discipline

Adaptation outcomes rely on coordination among district departments and front-line services, including agriculture extension, water and sanitation functions, disaster management, health services, and environmental enforcement. The district should operationalise coordination through practical routines such as joint planning for seasonal actions, aligned community engagement calendars, and shared supervision of infrastructure quality and safeguards. Clear lead and supporting roles reduce duplication and ensure that actions such as catchment protection, drainage improvements, and solid waste management reinforce each other instead of working at cross-purposes.

Environmental integrity and ecosystem-based resilience

Many priority actions depend on ecosystem condition including vegetation cover around dams and waterways, reduced bush burning, and improved land management practices. Environmental safeguards should therefore be integrated into investments, including erosion control around bridges and culverts, catchment protection around water sources, and flood-resilient siting of facilities. Implementation should prioritise measures that reduce sedimentation and maintain water quality, because degraded catchments increase costs for dredging, shorten infrastructure lifespan, and elevate health risks during flood events.

Risk information, early warning, and preparedness as enabling systems

Early warning and preparedness should be treated as enabling systems that increase the performance of sector actions, rather than as stand-alone DRR activities. Seasonal advisories, community alert mechanisms, and practical preparedness protocols can reduce agricultural losses, improve safe water management during floods, and support continuity of health services and market access. Implementation should ensure that information reaches communities in usable formats and local languages, and that responsibilities for dissemination and response actions are clearly assigned.

Community legitimacy, behaviour change, and local accountability

Most adaptation actions in Akatsi North depend on household and community practices. For instance, safe water handling, sanitation use, waste disposal, fire control, protection of water bodies, and adoption of improved farming practices. Implementation should therefore combine infrastructure with structured community engagement, using local leaders and practical demonstrations to clarify responsibilities, expected behaviours, and enforcement arrangements. Community-level accountability mechanisms are also essential to sustain these facilities, reduce misuse, and prevent disputes over shared resources such as water points and small dams.

Conflict sensitivity and fair access to shared resources

Shared-resource interventions such as water points, small dams, irrigation support, and communal restoration areas due to limited financing and development in districts such as Akatsi North can trigger disputes among community members if access rules are unclear. Implementation should therefore establish transparent governance arrangements covering location selection, beneficiary targeting,

water-use rules, and contribution systems. Where land tenure or competing livelihood uses create friction, the district should use community dialogue and mediation processes to secure consent and reduce enforcement tensions.

Monitoring, learning, and adaptive management

Given climate uncertainty and the district's evolving risk profile, implementation should include simple monitoring that tracks functionality, service coverage, and social outcomes, not only completion of activities. Routine learning reviews, especially after flood seasons should inform adjustments to designs, siting, maintenance schedules, and community engagement strategies. Gender-responsive monitoring should be embedded across sectors to verify who benefits, who bears costs, and whether barriers to participation are being reduced over time.

4.5 Implementation Needs and Resource Mobilization

The costing of Akatsi North district's prioritised adaptation plan recognises that adaptation actions will only translate into sustained resilience if key implementation constraints are addressed alongside financing. The main needs cut across institutional capacity, community buy-in, technical delivery and reliable resource mobilisation pathways that can support both capital investments and routine operations and maintenance.

Inadequate and inflexible financing for adaptation delivery

ANDA's fiscal space is limited relative to the scale of priority needs, particularly for water infrastructure, drainage, roads, and flood protection works. Budgeting therefore needs to be structured around phased implementation, with clear separation of CapEx and recurrent costs (O&M, staffing, monitoring) to avoid infrastructure that cannot be maintained.

Institutional capacity and coordination constraints

Several actions require multi-departmental execution (e.g., water protection linked to sanitation enforcement; drainage linked to waste management; agriculture resilience linked to early warning). ANDA should strengthen coordination through a practical implementation arrangement that assigns lead departments, clarifies supporting roles, and aligns work plans and procurement cycles to reduce fragmentation and delays.

Technical skills gaps for climate-resilient design, supervision, operations and maintenance

The plan implies a need for strengthened technical competence in areas such as climate-resilient works design (drainage, culverts, flood protection), WASH and water-point sustainability, catchment protection, and climate-smart agriculture extension. This should be addressed through targeted training, mentoring support from regional/national technical agencies, and standardized supervision checklists that improve build quality and lifecycle maintenance.

Community engagement, compliance, and behaviour change requirements

Several priority options depend on household and community practices (safe water handling, sanitation compliance, bushfire prevention, protection of water bodies, and by-law adherence). Investment in adaptation options should be accompanied with continuous community engagement, using practical incentives, credible enforcement, and locally trusted communication channels to secure long-term buy-in rather than one-off sensitisation.

Policy and enforcement gaps affecting service sustainability

Enforcement of by-laws is central to protecting water bodies, reducing indiscriminate waste disposal, limiting illegal burning and logging, and improving sanitation outcomes. ANDA should strengthen enforcement systems with clear reporting pathways, consistent sanctions, and practical alternatives (e.g., waste collection options, designated livestock watering points, safer household sanitation pathways) to make compliance feasible.

Resource mobilisation approach

ANDA should pursue a blended financing strategy:

- i. Integrate priority actions into the MTDP and annual action plans to access routine district funding and statutory transfers;
- ii. Prepare bankable concept notes for partner support for higher-cost infrastructure and service upgrades;
- iii. Leverage sector programmes through regional/national ministries and agencies (health facility completion, water systems, roads/bridges);
- iv. Use community contribution models where appropriate (labour, local materials, co-management arrangements), with equity safeguards for poorer households; and
- v. Engage private actors where value chains can sustain services (agro-processing, input supply, repairs/spare parts markets), using transparent agreements and accountability mechanisms.

4.6 Knowledge Co-Creation and Information Sharing

Strengthening knowledge co-creation and information sharing is treated as a practical requirement for implementing, monitoring, and improving adaptation actions over time. The plan therefore promotes mechanisms that connect community experience, sector expertise, and district planning processes so decisions remain risk-informed, inclusive, and adaptive.

- **Strengthening community-level learning and feedback:** Facilitate community-based forums and routine feedback channels (including CHPS engagement platforms, farmer groups, WASH committees, and disaster volunteers) to capture seasonal climate impacts, service failures, and implementation bottlenecks early. These mechanisms should feed into quarterly or seasonal district review sessions.
- **Capacity building for district staff and frontline actors:** Knowledge sharing must be matched with capability. Priority training areas include risk-informed planning, basic climate information interpretation, supervision and maintenance planning, participatory monitoring tools, and gender-responsive data collection so results are visible across women, men, youth, and vulnerable groups.
- **Use of accessible local communication systems and infrastructure:** Information sharing should rely on channels that communities already use such as local radio, community information centres, phone-based alerts, and extension/outreach schedules, especially for early warning, WASH risk messaging during floods, and seasonal agriculture advisories. Materials should be delivered in local languages and reinforced through demonstrations.
- **Partnerships with external technical actors:** ANDA should strengthen collaboration with research institutions, NGOs/CSOs, and relevant technical agencies to support targeted studies, pilot interventions, learning events, and improved technical guidance for agriculture, water, sanitation, biodiversity restoration, and DRR works.
- **Multi-stakeholder platforms for coordination and learning:** A district adaptation learning platform can convene sector heads, traditional leaders, community representatives, and partners periodically to review progress, share lessons, resolve coordination constraints, and agree on adjustments. This platform should also serve as a pathway for packaging evidence for funding proposals and scaling effective interventions across communities.

5. FINANCING, PHASING AND RESOURCE MOBILISATION

5.1 Introduction

This chapter presents the financing and implementation pathway for the priority adaptation actions in Akatsi North District. It summarises the district's investment requirements, outlines the phasing of actions over time, and identifies potential funding and partnership opportunities to support delivery. The chapter links the costed adaptation options to district planning, budgeting, and resource mobilisation processes so that priority actions can be integrated into annual action plans and medium-term development planning.

5.2 Financing Principles Guiding the CAP

The financing strategy for Akatsi North District rests on five guiding principles:

- **Alignment with District Planning and Budget Cycles:** All proposed financing pathways are designed to fit within the MTDP, Annual Action Plans, and Composite Budgets of the District Assembly.
- **Prioritisation Before Fundraising:** Only MCA-prioritised actions documented in Chapter Four are presented for financing, ensuring that limited resources are channelled into the highest-value investments.
- **Gender-Responsive and Inclusive Allocation:** Financing pathways explicitly support interventions benefiting women, youth, persons with disabilities, and other vulnerable groups identified in the CRVA.
- **Phased and Scalable Investment:** Actions are structured to allow incremental implementation and co-financing where full resources cannot be secured immediately.
- **Blended Financing:** Public funds are strategically used to leverage international climate finance, development partner resources, and private sector participation.

5.3 Overview of Investment Requirements

The investment requirements for Akatsi North District highlights the key resources needed by the district to translate priority adaptation actions from costing into implementable investment plans through mediums such as the annual action plans and the medium-term development plan. These requirements go beyond one-time capital spending and include the inputs needed to deliver and sustain adaptation outcomes.

The Costed Adaptation Plan produced a consolidated investment envelope of approximately GH¢48.96 million. This aggregate requirement reflects the level of financing needed to convert prioritised adaptation actions into implementable investment plans within district planning instruments such as the Annual Action Plans, Composite Budgets, and the Medium-Term Development Plan. The investment envelope covers not only one-time capital expenditure, but also the recurrent, institutional, and operational inputs required to sustain adaptation outcomes over time, including operations and maintenance, training, monitoring, coordination, and community-level implementation support.

Water Resources accounts for the largest share of the portfolio, representing nearly half of the total estimated cost, driven mainly by the high capital requirements of dams, dugouts, dredging, rainwater harvesting, and related water infrastructure. Health and Sanitation constitutes the second-largest share, followed by Agriculture and Food Security, reflecting the importance of service continuity, livelihood protection, and food-system resilience in the district's adaptation agenda. Ecosystem and Biodiversity, Disaster Risk Reduction, and Gender Mainstreaming account for smaller but strategically important shares of the portfolio, providing enabling investments in restoration, preparedness, inclusive resilience, and local adaptive capacity.

Table 10: Consolidated CAP investment envelope for Akatsi North

Sector	Estimated Cost (GHS)	Share of CAP (%)
Agriculture and Food Security	GH¢ 5,656,100	12.4%
Ecosystem and Biodiversity	GH¢ 3,281,500	7.2%
Water Resources	GH¢ 23,694,000	51.9%
Health and Sanitation	GH¢ 6,208,000	13.6%
Gender Targeted Actions	GH¢ 2,989,000	6.6%
DRR	GH¢ 3,803,500	8.3%
TOTAL	GH¢ 45,632,100	100.0%

Overall, the district's investment needs are concentrated in six areas:

- **Climate-resilient infrastructure and basic services:** Investment is required in water supply systems, drainage improvements, culverts and bridges, and the upgrading of health and community facilities. These investments are necessary to reduce exposure to climate risks and improve the reliability of essential services.
- **Livelihood and ecosystem resilience:** Investment is needed to support climate-smart agriculture, soil and water conservation, tree planting, catchment protection, and fire management. These actions are important for protecting natural resources while also strengthening household livelihoods.
- **Institutional and implementation capacity:** The district requires investment in project costing, planning, procurement, technical supervision, and interdepartmental coordination. This is necessary to ensure that adaptation actions are properly designed, managed, and delivered.
- **Operation and maintenance:** Resources are needed to sustain adaptation investments over time, including routine repairs, desilting, asset management, and dedicated maintenance financing. This is important to prevent infrastructure and services from deteriorating after implementation.
- **Gender responsiveness, social inclusion and safeguards:** Investment must ensure that adaptation actions effectively reach climate-exposed and vulnerable groups, including women, children, the elderly, persons with disabilities, and low-income households.
- **Monitoring, evidence generation and learning:** The district needs investment in systems for tracking implementation progress, assessing results, and strengthening future planning and decision-making.

For ANDA, this means adaptation investment should be packaged as a combination of capital works, service delivery, capacity strengthening, and recurrent financing. Priority actions should therefore be integrated into district budgets with clear responsibilities, realistic timelines, and provision for operations, maintenance, supervision, and monitoring. This will help ensure that adaptation options are not only funded, but also implemented and sustained over time.

5.4 Potential Funding Sources Mapped to Actions

This section identifies the potential financing sources available for implementing the prioritised adaptation actions and indicates the types of investments for which each source is most suitable. It focuses on the sources from which finance may be mobilised.

Mapping the potential funding sources for adaptation actions in Akatsi North District reflects the need for a blended financing approach that can support both implementation and long-term sustainability. As the costing of adaptation priorities are intended to serve as practical inputs into district budgeting, medium-term planning, proposal development and implementation. The identification of funding

sources therefore focuses on both internal and external financing channels through which the district can progressively mobilise resources for adaptation delivery. That is, given the scale and diversity of the prioritised investments needs, no single funding source may be sufficient. This is particularly important because ANDA has limited fiscal space for capital expenditure and recurrent costs of ANDA and the importance of sustaining operation, maintenance, supervision, and monitoring over time. The main potential funding sources for adaptation actions in Akatsi North include:

1. District-level public financing, including routine district budget allocations and other internally mobilised resources, which provide the most immediate entry point for mainstreaming adaptation into existing planning and expenditure systems.
2. Sector-based public financing, where decentralised departments and relevant government agencies can support priorities that fall within their sector mandates, particularly in agriculture, water, health, sanitation, disaster risk reduction and local infrastructure.
3. Development partner and NGO support, which is particularly relevant for community-based interventions, technical assistance, capacity building, safeguards implementation, piloting and co-financing of priorities that also deliver wider social and environmental benefits.
4. Climate finance and project-based external grants, which are more suitable for larger or integrated investments that require stronger project preparation, a clearer climate rationale, and more substantial capital mobilization.
5. Complementary private, community and producer-based contributions, which may support selected investments through co-financing, collaborative project proposal developments, equipment provision, user-based maintenance arrangements, local labour contributions, or value-chain-based investments where appropriate.

Mapping funding sources to adaptation actions thus reflects the cost profile, implementation modality and sustainability requirements of the adaptation priorities. Actions with lower capital requirements and strong institutional alignment are more easily integrated into district and sector budgets. Actions requiring moderate investment, community engagement, and implementation support are more likely to benefit from combined district and partner financing. Capital-intensive investments with complex technical and infrastructure requirements are more likely to depend on phased financing and broader resource mobilisation efforts.

5.5 Private Sector and Partner Engagement Pathways

This section outlines the engagement and project-development pathways through which ANDA can access and coordinate private-sector, partner, and technical support. Private sector and partner engagement pathways are important for linking Akatsi North's adaptation priorities to external finance, technical expertise, and implementation support. These pathways create opportunities for co-financing, project preparation, technology transfer, service delivery, and collaborative implementation through private actors, including firms and individual investors, as well as NGOs, development partners, research consultants, and technical agencies. In practical terms, this means that partner engagement is tied to how projects are packaged, how implementation responsibilities are shared, how safeguards and standards are maintained, and how external support is coordinated within the district system. The objective of private sector and partner engagement pathways is therefore to outline the strategies through which the district can engage potential funding and implementation partners more effectively. The main private sector and partner engagement pathways in Akatsi North include:

- Project proposal development and packaging with research consultants and technical experts, particularly to strengthen project design, climate rationale, costing, safeguards, and the preparation of bankable proposals for partner consideration;
- Targeted engagement with donor partners, NGOs and development partners, especially where priorities require technical assistance, piloting, community mobilisation, capacity building, or grant-based support beyond district resources;

- Public-private partnership (PPP) pathways and local investor outreach, particularly for productive, service-delivery and infrastructure-related investments where private participation in financing, implementation, or management is feasible;
- Technical collaboration with regional and national agencies, especially in areas requiring engineering design, procurement support, supervision, quality assurance (QA), climate-resilient construction, wash systems, and sector-specific implementation guidance;
- Alignment of incoming partner projects with the district adaptation plan, so that NGO decentralised department, and private-sector support responds to agreed district priorities, vulnerable communities, and shared implementation standards rather than operating as disconnected initiatives;
- Joint planning, supervision, and reporting arrangements, through which ANDA, sector departments, and external partners can use shared work plans, routine implementation reviews, and coordinated field monitoring to improve accountability and reduce delivery bottlenecks; and
- Community-linked partnership arrangements, where external support works through community committees, local focal persons, producer groups, and user structures to strengthen legitimacy, accountability, local ownership, and the long-term functionality of investments.

Overall, private sector and partner engagement in Akatsi North is most effective where it is anchored in district planning, aligned with the costed adaptation priorities, and linked to clear implementation, financing, and accountability arrangements. This makes engagement pathways the funding strategy of the district, which is closely linked to the phasing strategy and the sequencing of adaptation options implementation across sectors.

5.6 Financing Strategy by Adaptation Action Type

The Akatsi North CAP includes interventions ranging from low-cost governance and capacity-building measures to high-cost water, health, and infrastructure investments, financing needs to be differentiated by cost scale, implementation complexity, and institutional readiness. A tiered financing strategy is therefore required to ensure that district-controlled resources are directed toward actions that can begin immediately, while larger and more technically demanding investments are prepared for phased co-financing and external resource mobilisation. This approach is consistent with the CAP's broader financing logic, which recognises that no single funding source will be sufficient to support the full range of adaptation priorities in the district and that financing must combine internal and external channels over time.

Table 11: Financing strategy by action category

Action Category	Typical Cost Scale	Primary Financing Source	Secondary Source	Financing Strategy
Low-cost, high-impact actions (gender-sensitive governance, gender-responsive monitoring, community dialogues, disaster preparedness training, community-led fire management, safe water use training, by-laws, FBO strengthening, farmer training, soil and water conservation)	< GH¢ 500,000	District-level public financing; routine district budgets; DACF	Sector-based public financing; NGOs; SIGRA support; community contributions	Immediate integration into Annual Action Plans, Composite Budgets, and sector work plans

Action Category	Typical Cost Scale	Primary Financing Source	Secondary Source	Financing Strategy
Medium-scale investments (boreholes, standpipes and wells, women-led reforestation, subsidised irrigation kits, community tree planting, agroforestry, catchment protection, waste management, mobile outreach services, drainage improvements, flood barriers, reforestation)	GH¢ 500,000–2,000,000	Combined district and sector financing; development partner and NGO support	Climate-related grants; co-financing from communities, producer groups, and local partners	Co-financing and phased implementation, with packaging into sector proposals and district resource mobilisation plans
High-cost infrastructure and capital-intensive actions (dams and dugouts, dredging and desilting, rainwater harvesting systems, agro-processing facilities, upgraded CHPS/ community health facilities, bridges and culverts, major drainage works)	> GH¢ 2,000,000	Climate finance and project-based external grants; development partner programmes	National government support; PPP pathways; local investor engagement; blended finance arrangements	Project bundling, phased delivery, and preparation of bankable concept notes and investment proposals

This tiered strategy implies that many lower-cost and institutionally aligned actions, particularly in agriculture, gender, governance, preparedness, and community-based risk management, can begin in the short term through district and sector budgeting channels. Medium-scale actions are more likely to depend on combined district and partner financing, especially where they require technical support, procurement, community mobilisation, or implementation safeguards. High-cost actions, particularly in water infrastructure, health facilities, and resilient local infrastructure, will need to be treated as phased external financing propositions supported by stronger project preparation, proposal development, and broader engagement with development partners, climate finance windows, and private or blended financing pathways. In this way, the financing strategy helps align adaptation action types with realistic funding routes and improves the district's ability to sequence implementation according to both urgency and financing readiness.

5.7 Institutional Arrangements for Financial Management

Effective financing in Akatsi North District depends on clearly assigned institutional responsibilities, coordination across departments, and functioning accountability systems. Given that the Costed Adaptation Plan (CAP) spans multiple sectors and financing channels, financial management cannot be treated as the responsibility of a single department alone. Rather, it requires a coordinated arrangement in which planning, budgeting, implementation, and reporting functions are linked through the existing structures of Akatsi North District Assembly (ANDA). In this context, financial management responsibilities should be shared across the District Planning Coordinating Unit (DPCU), the Budget and Finance functions of the Assembly, and the sector departments responsible for implementation, with oversight provided through the district's management and coordination structures. This arrangement is consistent with the broader intention of the CAP to mainstream adaptation into routine district planning and budgeting systems rather than establish parallel financing mechanisms.

➤ Lead Coordination

The District Planning Coordinating Unit (DPCU) should serve as the central coordination body for CAP financing and implementation oversight in Akatsi North. Its role should include integrating prioritised adaptation actions into the Medium-Term Development Plan, Annual Action Plans, and Composite Budgets, as well as coordinating sector inputs, phasing priorities, and tracking implementation progress across departments. The Budget Officer and Finance Unit should oversee budget preparation, disbursement processes, expenditure management, and financial reporting. At the sector level, implementation and expenditure responsibilities should rest with the relevant departments and agencies, including Agriculture, Works, Physical Planning, Health, Environmental Health, Gender and Social Protection, and NADMO, depending on the nature of the adaptation action. This arrangement ensures that adaptation finance remains embedded within district systems while maintaining sectoral ownership of implementation.

➤ The Role of EPA and SIGRA

The Environmental Protection Agency (EPA-Ghana), in its national climate governance role, together with the SIGRA programme, should provide technical support and strategic oversight for adaptation financing in Akatsi North. This support should include the technical validation of adaptation investments and costing assumptions, alignment of CAP priorities with Ghana's National Adaptation Plan (NAP), Nationally Determined Contributions (NDCs), and national climate finance architecture, as well as capacity support to the DPCU and sector departments for concept-note preparation and the development of bankable proposals. EPA and SIGRA also have an important role in ensuring that district adaptation financing remains consistent with national adaptation priorities, reporting requirements, and broader climate planning frameworks.

➤ Accountability and Financial Governance

To strengthen transparency and effective resource use, climate adaptation expenditures should be explicitly identified within the District Composite Budget and linked to the relevant sector work plans and annual implementation priorities. Quarterly financial and physical progress reporting should be institutionalised through DPCU-led cross-sector review processes, enabling the Assembly to track both financial execution and implementation performance. In addition, CAP-related financial performance should be integrated into district monitoring systems and linked, where relevant, to SIGRA reporting requirements. Such arrangements would improve accountability, reduce fragmentation across departments and partners, and ensure that adaptation finance is monitored not only in terms of resource allocation, but also in relation to actual delivery and results.

5.8 Risks to Financing and Mitigation Measures

Financing of the Akatsi North CAP is exposed to several structural and operational risks that could weaken delivery if they are not actively managed. These risks concern not only the availability of resources, but also institutional readiness, proposal quality, coordination across departments and partners, and the fit between the scale of adaptation ambitions and the district's actual fiscal space. Given the size of the CAP investment envelope and the concentration of costs in water, health, and infrastructure-related actions, a risk-aware financing strategy is necessary to anchor implementation within realistic planning and financing conditions.

Table 12: Key financing risks and mitigation measures

Risk	Implication	Mitigation Measure
Weak district level mobilization of IGF or delay in allocation of DACF for climate finance	Continued dependence on transfers from external partners, inadequate financing for recurrent costs, and weak district implementation	Include priority adaptation actions in annual IGF planning and the Composite Budget; identify specific low-cost and recurrent actions that can be financed locally; track IGF allocations and

Risk	Implication	Mitigation Measure
		expenditure on adaptation through DPCU and budget reviews
Overreliance on external climate finance	Delays in implementing high-cost adaptation options until funding is secured. only a limited number of CAP actions may be funded where donor support is unavailable or delayed	Integrate smaller actions into district and sector budgets first; phase larger infrastructure behind confirmed finance
Weak costing credibility or poor proposal quality	Reduced confidence from development partners and climate finance windows	Maintain standardised costing templates, strengthen documentation, and support proposal preparation through technical assistance
Limited district human capacity for climate finance mobilisation	Weak proposal development, delayed submissions, and low success rates	Continuous coaching, mentored concept-note development, and practical training in climate finance and procurement planning
Fragmented donor, NGO, and partner support	Duplication, inconsistent targeting, and weak coordination	Align partner support to the CAP through DPCU-led coordination, shared work plans, and routine implementation reviews
Financing-implementation mismatch	Selection of actions that exceed available funding or delivery capacity	Match project scope to realistic financing windows and phased delivery plans
Weak operations and maintenance financing	Rapid deterioration of completed investments and reduced long-term functionality	Build O&M requirements into project design, district budgets, and community management arrangements from the outset
Partner withdrawal or delayed disbursement	Disruption of implementation and unfinished adaptation actions	Maintain an alternative pipeline of district-funded and co-financed priorities; prepare proposals early for higher-cost actions

5.9 Linking Financing to Learning and Capacity Building

Financing in the Akatsi North CAP should be understood not only as a resource mobilisation task, but also as a district capacity development process. The preparation of the CAP already demonstrated the importance of strengthening district skills in activity-based costing, implementation planning, coordination, and the translation of climate priorities into budget-relevant actions. Going forward, CAP implementation provides a practical opportunity to deepen these capacities through real financing and delivery processes. In particular, district staff can strengthen skills in bottom-up costing, proposal preparation, procurement planning, financial tracking, and the structuring of co-financing arrangements for both district-funded and externally financed priorities. Cross-sectoral planning and financing coordination can also be improved through routine DPCU-led review mechanisms and joint supervision processes. The tools and financing alignment approaches used in preparing the Akatsi North CAP are therefore not only relevant for this plan, but also replicable for future district planning cycles, sector investment planning, and later updates of the CAP.

6. IMPLEMENTATION, MONITORING, EVALUATION AND LEARNING

This chapter presents the practical arrangements that would enable Akatsi North District Assembly (ANDA) to translate the costed adaptation actions into deliverable annual programmes and sustained services. It clarifies institutional roles, training needs, gender safeguards and coordination routines needed to keep investments functional after delivery. The framework prioritizes district-appropriate capacity development and capacity needs.

6.1 Implementation Framework for the CAP

6.1.1 Phased Implementation Approach

CAP actions will be implemented using an adaptive and a rolling phased approach. The phases indicate when actions should be initiated, advanced or scaled, allowing flexibility and cost effectiveness. Phasing is therefore not solely a financial exercise, but also a planning and implementation mechanism that aligns adaptation ambitions with feasible financing and delivery conditions. The phases sequence indicates when investments should be initiated. Sequencing should be guided according to their priority ranking, urgency of the climate risk addressed, institutional and technical readiness, cost, financing availability, and long-term operational requirements. Actions requiring substantial capital investment or specialised technical inputs may be initiated through preparatory activities, including feasibility assessments, detailed design, proposal development, and resource mobilisation, before full implementation.

Table 13: Phased implementation approach

Phase	Focus	Activities
Phase 1	Priority actions, quick wins, capacity building	Implementation of high-priority and institutionally ready actions through district and sector work plans; capacity strengthening, coordination, community engagement, monitoring arrangements, costing refinement and preparation of larger investments.
Phase 2	Scaling priority actions, infrastructure investments	Expansion of prioritised actions requiring 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	Consolidation, learning, and institutionalisation	Sustained delivery and scaling 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.

Table 14: Phasing of adaptation priorities in Akatsi North District

Sector	Adaptation Option	Overall Cost (GH)	Time Phase	Remarks
Agriculture	Training farmers on climate-smart agroecological practices	GH¢231,200	Short term	Low-cost capacity-building action that can be mainstreamed quickly through extension and farmer training platforms.
	Supporting Farmer-Based Organisations (FBOs), cooperatives, savings groups	GH¢142,200	Short term	Institutionally feasible and low-cost; strengthens coordination, finance access, and uptake of later adaptation actions.
	Vocational and entrepreneurial training	GH¢293,200	Short term	Provides early livelihood diversification and can be rolled out through existing district/community structures.
	Use of improved, climate-resilient and drought/flood-tolerant crop varieties	GH¢191,500	Short term	Quick-yielding farm support measure with strong relevance to current rainfall and productivity risks.
	Soil and water conservation practices	GH¢222,000	Short term	Relatively low-cost and easily integrated into extension and community demonstration activities.
	Small-scale irrigation and water management for dry-season farming	GH¢3,127,000	Medium term	Capital-intensive and dependent on water asset rehabilitation, governance arrangements, and sustained O&M.
	Agro-processing equipment and factories	GH¢1,449,000	Short - Long term	Requires feasibility checks, site development, equipment procurement, and market linkage arrangements.
Biodiversity	Bye-laws enforcement against illegal logging and charcoal production	GH¢233,900	Short term	Governance and enforcement measure that should begin early to protect later restoration investments.
	Agroforestry and community tree planting	GH¢542,900	Medium term	Requires nursery establishment, site identification, community agreements, and maintenance.
	Creating buffer zones	GH¢445,400	Medium term	Needs demarcation, local consultation, enforcement, and alternative livelihood arrangements.
	Tree planting and vegetation cover	GH¢480,400	Medium term	Requires restoration planning and post-planting care over time.
	Tree planting campaigns and training	GH¢604,400	Medium term	Suitable after initial mobilisation and planning; depends on seasonal implementation and follow-up.
	Efficient cookstoves and alternative energy sources	GH¢974,500	Medium term	Requires procurement, distribution systems, user training, and behaviour change for sustained uptake.

Sector	Adaptation Option	Overall Cost (GH)	Time Phase	Remarks
Water resources	Community-led management and maintenance schedules	GH¢150,600	Short term	Enabling measure that should start early to improve functionality and sustainability of water assets.
	Bye-laws for Enforcing Local Water Infrastructure Management Measures	GH¢440,600	Short term	Needed early to protect infrastructure, catchments, and water quality before larger investments scale up.
	Training communities on safe water use and storage	GH¢131,600	Short term	Low-cost behaviour and management intervention that can be integrated quickly into district programming.
	Protecting dam catchments by promoting vegetation cover	GH¢532,600	Medium term	Requires site-based restoration, community compliance, and seasonal establishment.
	Mechanised boreholes, standpipes and hand-dug wells	GH¢427,800	Medium term	Important for domestic water security but needs siting, surveys, procurement, and installation.
	Dredging and desilting dams	GH¢6,222,600	Medium term	High-cost but urgent restorative action for existing assets; can be phased for priority dams first.
	Expanding existing dams and constructing new dams/dugouts	GH¢10,397,600	Long term	Major capital investment requiring studies, design, procurement, and likely external financing.
	Rainwater harvesting	GH¢5,390,600	Long term	Large-scale infrastructure rollout needing design standardisation, procurement, and phased installation.
Health and sanitation	Community health programmes/ health outreach programmes	GH¢691,600	Short term	Service-delivery action that can be mainstreamed quickly through CHPS and community health systems.
	Social safety nets and support networks	GH¢188,600	Short term	Lower-cost support mechanism for vulnerable households that can be integrated early.
	Mobile health clinics and outreach services	GH¢523,600	Medium term	Requires vehicles/equipment and operational planning but offers important continuity benefits.
	Construction of improved community waste management	GH¢646,600	Medium term	Requires infrastructure, operational responsibility, and behaviour change for sustained effectiveness.
	Upgrading community health facilities and CHPS compounds	GH¢4,157,600	Long term	High-cost facility investment requiring phased financing, procurement, and technical works.
Gender	Gender sensitive governance	GH¢221,600	Short term	Enabling governance reform that should be mainstreamed early across all sector actions.
	Gender-sensitive training	GH¢171,000	Short term	Capacity-building action that supports early inclusion in planning and implementation.
	Developing gender-responsive monitoring	GH¢254,600	Short term	Foundational monitoring system that should start early to track equitable benefits across phases.

Sector	Adaptation Option	Overall Cost (GH)	Time Phase	Remarks
	Women-led reforestation initiatives	GH¢457,600	Medium term	Requires nursery support, group mobilisation, and sustained implementation across seasons.
	Subsidised irrigation kits for women and marginalised groups	GH¢798,600	Medium term	Moderate-cost livelihood support requiring targeting, procurement, and extension follow-up.
	Gender-targeted agro-processing equipment and facilities	GH¢1,085,600	Long term	Capital-intensive investment requiring facility development, equipment procurement, and management arrangements.
DRR	Community-led fire management and bushfire control	GH¢153,500	Short term	Immediate risk-reduction measure for recurrent dry-season fire exposure.
	Early warning systems	GH¢163,000	Short term	High-priority enabling system that improves the performance of multiple sector actions.
	Disaster preparedness training, evacuation plans and collaboration	GH¢233,750	Short term	Preparedness measure that can be rolled out quickly and strengthens response coordination.
	Community dialogues and conflict mediation	GH¢120,250	Short term	Low-cost governance action that supports fair access and reduces implementation tensions.
	Capacity building to assess risks, plan, coordinate and sustain DRR actions	GH¢661,000	Short term	Foundational systems-strengthening measure needed before more complex DRR investments scale up.
	Creating flood barriers and embankments	GH¢512,000	Medium term	Structural measure that requires risk mapping, design, and supervision, but may be phased in hotspot areas.
	Improved drainage channels in communities	GH¢714,000	Medium term	Important engineering measure that requires design, procurement, and maintenance planning.
	Upgrading bridges and culverts	GH¢1,246,000	Medium term	Critical for resilient access, but dependent on technical design, procurement, and quality assurance.

6.1.2 Institutional Roles in Implementation

Each lead department is responsible for both the delivery of its allocated actions and for reporting on physical progress and financial utilisation, ensuring alignment between implementation performance and expenditure. 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 shall consolidate these reports for review through the DPCU Cross-Sector Review process including the District Chief Executive. On an annual basis, the DPCU shall prepare the CAP annual progress brief, incorporating and updating the districts Annual Action Plans and in line local monitoring systems. The brief shall 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 shall guide adjustments to implementation sequencing, budgets and corrective actions.

Table 15: Institutional roles in implementation

Institution / Unit	Key Responsibilities
MPCU / District Assembly	Coordination; integration into DMTDP and AAP; cross-sector oversight
Finance Department	Budgeting; disbursement tracking; composite budget tagging
Department of Works / CWSA	Infrastructure, boreholes, solar pumps, retrofitting of community facilities
Department of Agriculture (MoFA)	CSA, seed systems, dry-season water access, post-harvest actions
Forestry Commission	Reforestation, bushfire control, riparian and degraded land restoration
District Health Directorate	Women-Led groups, health education, Mobile Health Units, PWD access
NADMO	Community-Based Early Warning Systems, preparedness, post-event reporting
Social Welfare Department	Gender and inclusion mainstreaming, safeguard screening
Traditional Authorities and Area Councils	Community mobilisation, land access, bye-law enforcement
SIGRA / EPA-Ghana	Technical backstopping, climate finance facilitation, national alignment

6.2 Monitoring, Evaluation and Learning

6.2.1 Introduction and Purpose

Monitoring, Evaluation, and Learning (MEL) is critical to the implementation of the costed adaptation plan in Akatsi North District as it provides the tracking implementation progress and streamlining of adaptation options over time. MEL supports accountability, strengthens evidence-based decision-making, and helps ensure that adaptation resources are used efficiently and in line with planned priorities. It also enables adaptive management by generating timely information for reviewing progress, identifying implementation bottlenecks and adjusting actions where necessary. By capturing lessons from both successful and constrained interventions, MEL contributes to continuous learning, improves future planning and budgeting, and provides evidence for scaling up effective adaptation measures across the district.

Monitoring in the Akatsi North CAP is conceived as an active management tool rather than a passive reporting exercise. It serves three core functions:

- Tracking the progress of the priority actions against agreed timelines, outputs, and budgets;
- Detecting implementation bottlenecks early, particularly for high-cost interventions;
- Informing adaptive decisions on work plans, budget reallocation, and implementation modalities.

Monitoring data feed directly into the structured learning loops described in Section 6.5 and into the adaptive management triggers set out in Section 6.9.

6.3 Monitoring Framework

6.3.1 Indicators, Data Sources and Responsibilities

The MEL system for the costed adaptation plan proposes pathways or areas of focus for effective monitoring and learning with emphasis on tracking functionality, service coverage, and social outcomes rather than only completion of activities. The MEL system requires a practical set of indicators, clear data sources, and defined institutional responsibilities. The indicators should cover five broad areas:

- Financial and implementation progress, including budget releases, procurement milestones, activities completed, and partner contributions.
- Output delivery, such as infrastructure installed, trainings conducted, committees formed, or by-laws operationalised.
- Functionality and service performance, including whether completed investments remain functional and whether services are actually reaching intended users.
- Social inclusion and safeguards, including participation, beneficiary reach, and whether women, youth, PWDs, and climate-exposed groups are benefiting as intended.
- Adaptation outcomes and learning, including changes in preparedness, access, resilience, and lessons arising from implementation.

Table 16: Illustrative indicators, data sources, and responsibilities for MEL

Monitoring Area	Illustrative Indicators	Main data Sources	Lead Responsibility	Supporting Responsibility
Financial and implementation progress	Budget allocated and released; % of planned activities implemented; procurement milestones met	Budget records, procurement files, work plans, payment certificates	DPCU / Budget Unit	Finance, Procurement Unit, sector heads
Output delivery	Number of trainings held; infrastructure completed; committees formed; by-laws operationalised	Activity reports, completion reports, attendance sheets, site records	Sector leads	Area councils, community committees

Monitoring Area	Illustrative Indicators	Main data Sources	Lead Responsibility	Supporting Responsibility
Functionality and service performance	Functionality of water points, drainage, early warning systems, health/outreach services; maintenance actions undertaken	Site inspections, functionality logs, maintenance records, community feedback	Sector M&E focal persons	Works, WASH/ Environmental Health, NADMO
Inclusion and safeguards	Participation of women, youth, PWDs; grievance cases logged/resolved; gender-responsive targets met	Beneficiary records, grievance logs, meeting records, monitoring templates	Social Welfare / Gender Desk	DPCU, sector leads, NGOs/ CSOs
Adaptation outcomes and learning	Service continuity, preparedness improvements, access gains, lessons from implementation reviews	Quarterly dashboards, learning briefs, seasonal review notes, field verification	DPCU	NADMO, sector focal persons, area council secretaries

6.3.2 Monitoring Levels

Monitoring operates across four interconnected levels to ensure both operational detail and strategic oversight:

Table 17: Monitoring levels

Level	Focus
Activity Level	Delivery of specific tasks such as borehole drilling, nursery establishment, and training sessions
Output Level	Immediate results, including facilities retrofitted, WASHCOMs formed, and EWS sirens installed
Outcome Level	Changes in resilience, livelihoods, water access, health, and infrastructure functionality
Portfolio Level	Overall CAP performance across the five sectors, financial utilisation, and sector balance

The inclusion of a portfolio-level perspective gives the District Chief Executive and the District Assemblies planning and coordinating committee, a clear line of sight on cross-sector delivery.

6.3.3 Data Collection Methods

Monitoring data are drawn primarily from existing district systems, supplemented where necessary to capture sector-specific performance.

Table 18: Data collection methods

Method	Responsible Unit
Administrative records (work plans, beneficiary registers)	MPCU and sector departments
Field inspections	Works; Agriculture; Forestry; Environmental Health
Contractor and implementation reports	Works Department / MPCU
Community feedback and scorecards	Community MEL Focal Persons; Assembly Members
Financial reports	District Finance Officer
Disease surveillance and facility audits	District Health Directorate
Borehole logs and WASHCOM minutes	CWSA; WASHCOMs

6.4 Evaluation Framework

6.4.1 Purpose of Evaluation

Evaluation focuses on assessing the overall effectiveness, efficiency, and equity of CAP investments. Key evaluation questions include:

- What worked, what did not, and why across the five sectors;
- Whether investments delivered value for money, particularly for the large EWS, Mobile Health, and Facilities programmes;
- Whether benefits reached women, youth, PWDs, and hotspot communities;
- Whether interventions are sustainable and scalable beyond the initial CAP period.

Particular attention will be given to comparing performance across sectors—for example, whether low-cost community-scale actions deliver greater resilience returns per GHS invested than large capital programmes.

6.4.2 Types of Evaluation

Evaluations will combine quantitative data with qualitative insights from communities, implementers, and stakeholders.

Table 19: Types of evaluation

Evaluation Type	Timing	Purpose
Mid-term CAP Review	End of Year 2 (2027)	Identify implementation challenges; enable course correction; revise priority actions and costing for Year 3
End-of-Plan Evaluation	End of Year 3 (2028)	Assess overall effectiveness, impact, and lessons; inform the next DMTDP and CAP cycle

6.4.3 Evaluation Criteria

Evaluations are guided by the following criteria:

- Relevance to CRVA risks and vulnerable populations;
- Effectiveness in delivering outputs and outcomes;
- Efficiency and cost performance;
- Equity and inclusion across gender, disability, and youth dimensions;
- Sustainability of investments beyond the plan period;
- Scalability and replicability within the Northern Region.

These criteria ensure a balanced assessment of both technical performance and social outcomes.

6.5 Learning and Adaptive Management

Learning loops and adaptive management are central to the effective implementation of the costed adaptation plan in Akatsi North District. The combine effects of climate variability, local vulnerabilities, implementation conditions and financing constraints, imply that adaptation implementation conditions cannot remain static over the life of the plan. Thus, a structured MEL system should incorporate stakeholder feedback continuously into planning and decision-making.

In this MEL plan, learning loops refer to the regular use of implementation evidence to assess progress, identify emerging gaps, and inform adjustments to actions, timelines, financing arrangements, coordination mechanisms, and delivery approaches. Thereby serving as a mechanism for improving implementation quality over time. Within ANDA governance systems, project management is expected to operate through routine review processes, including:

- Quarterly reviews, to assess progress against planned outputs, budget execution, implementation schedules, and assigned responsibilities;
- Annual reviews, to consolidate lessons across sectors and inform revisions to planning, budgeting, and implementation priorities; and
- Seasonal or event-based reviews, particularly following floods, droughts, bushfires, water stress, or other climate-related events, to assess whether implementation assumptions remain valid under changing conditions.

These review processes help identify and incorporate feedback and coordination bottlenecks that may affect adaptation performance. Where monitoring evidence shows that expected results are not being achieved, the MEL system provides the basis for revising implementation approaches, refining targeting, strengthening supervision, adjusting procurement and phasing arrangements and improving community engagement and accountability mechanisms. In this way, learning loops and adaptive management strengthen the responsiveness, efficiency and long-term sustainability of adaptation implementation in Akatsi North District.

6.6 Gender-Responsive MEL

6.6.1 Gender Integration in Monitoring and Evaluation

Gender responsiveness should be systematically integrated into the monitoring, evaluation, and learning framework for the Akatsi North CAP. This requires:

- Use of sex-, age-, and disability-disaggregated indicators across all adaptation sectors;
- Tracking of benefits reaching women, youth, persons with disabilities (PWDs), and other vulnerable groups identified in the district risk profile;

- Inclusion of participation and decision-making indicators that go beyond simple beneficiary counts to assess the quality of inclusion in implementation, governance, and benefit-sharing;
- Monitoring of representation targets for women and vulnerable groups within farmer groups, water user committees, wash structures, community fire groups, and other local management bodies; and
- Systematic use of community scorecards and feedback forums to capture the perspectives of groups that are often underrepresented in district planning processes.

6.6.2 Accountability for Inclusion

The Gender and Social Protection functions of the District Assembly, working in collaboration with the DPCU and sector departments, should be responsible for monitoring gender and inclusion outcomes across the CAP. Their role should include:

- Validating the inclusion of women, youth, PWDs, and other vulnerable groups in beneficiary lists;
- Identifying patterns of exclusion or unequal benefit distribution across sectors and locations;
- Triggering safeguard review and corrective action where systematic exclusion is observed; and
- Supporting community-level dialogue forums and participatory review processes in locally accessible language so that vulnerable groups can effectively contribute to implementation feedback.

6.7 Reporting and Alignment with Existing Systems

6.7.1 Reporting Schedule

The reporting schedule is designed to provide regular oversight of implementation, financing, and learning at different decision levels. Quarterly reports focus on operational progress and support routine district coordination, while annual briefs consolidate implementation performance for the District Assembly, SIGRA, and national stakeholders. Additional reporting is linked to district planning cycles through annual integration reports, and post-event reports ensure that major climate shocks are rapidly documented for management response.

Table 20: Reporting schedule for MEL

Report	Frequency	Audience
Implementation progress report	Quarterly	DPCU Cross-Sector Review; District Chief Executive
CAP annual progress brief	Annual	District Assembly management; SIGRA; EPA-Ghana
MTDP integration report	Annual	District Assembly; NDPC; relevant local government reporting channels
Post-event report	Within 30 days of a major climate event	DCE; NADMO; DPCU
Learning brief	Annual	SIGRA, EPA-Ghana, and relevant national institutions

6.7.2 Alignment with Existing Systems

The MEL framework for Akatsi North should be aligned with existing district and national reporting systems. These include:

- MTDP annual review processes, Composite Budget preparation, and district data and planning systems;
- SIGRA monitoring and reporting requirements;
- EPA-Ghana climate reporting processes linked to Ghana's NAP and NDC frameworks; and
- NDPC-linked district performance reporting.

Reports should combine financial performance, physical delivery, implementation progress, and functionality of completed actions so that accountability reflects both spending and outcomes.

6.7.3 Sustainability of the MEL Framework

Sustainability of the MEL system should be achieved by embedding responsibilities, tools, and review processes within established district structures rather than operating MEL as a stand-alone programme requirement. This should include:

- Assigning MEL responsibilities to the DPCU, sector departments, gender and social protection functions, NADMO, and designated community focal persons where relevant;
- Use of standardised and replicable tools such as scorecards, feedback forums, committee reporting templates, and simple implementation tracking forms;
- Continuous practical capacity-building for district and community actors involved in implementation and reporting; and
- Integration of MEL into routine planning, budgeting, sector review, and MTDP reporting cycles.

These measures would strengthen continuity of monitoring and learning beyond external programme support and make adaptive management more feasible over time.

6.8 Using MEL to Strengthen Future Costing and Planning

MEL is also important because it strengthens future costing and planning within ANDA. Implementation of adaptation options will generate evidence of implementation such as costing, phasing (timelines), procurement, gender inclusivity and operational experience or human capacity. Over time, this evidence can help the district refine future cost estimates and improve budgeting accuracy.

6.9 Results Framework Linked to Cost Actions

The framework for the Akatsi North District Assembly (ANDA) adaptation MEL system is designed to support the implementation, tracking, and continuous improvement of the costed adaptation plan through the following objectives:

- Track the implementation of the costed adaptation priorities to ensure that planned measures are executed in line with agreed timelines, responsibilities, and budget allocations.
- Assess the effectiveness of adaptation investments in reducing climate-related risks and strengthening the resilience of communities, livelihoods, infrastructure, and basic services in the district.
- Generate evidence and learning to inform district decision-making, policy adjustment, future planning, and stakeholder awareness on adaptation progress and results.
- Provide data for district and national reporting in order to strengthen transparency, accountability, and alignment with broader development and climate reporting processes.
- Strengthen systems for collecting, managing, and storing climate and adaptation-related data to support the monitoring of implementation progress, outcomes, and emerging district-level risks over time.
- Support communication and information sharing on the adaptation plan, including progress, challenges, lessons, and implementation results across district stakeholders and partners.

Operationalising the adaptation MEL system within ANDA involves integrating adaptation monitoring into district planning and policy processes, particularly the Annual Action Plans (AAPs) and the Medium-Term Development Plan (MTDP). This creates a clear link between the implementation of the costed adaptation plan and the district's broader development priorities, budgeting processes, and reporting systems.

7. INSTITUTIONAL COORDINATION AND CAPACITY BUILDING

7.1 Introduction

An effective climate adaptation requires not only sound technical design, but also strong institutional coordination, clear accountability, and sustained capacity to manage complex investments. For the Akatsi North District, implementation of the CAP represents a transition from planning to delivery of a multi-sector, costed adaptation portfolio, requiring enhanced coordination across departments, alignment with financing mechanisms, and continuous performance management.

This chapter outlines the institutional arrangements and capacity development measures required to coordinate implementation across sectors, align financing and budgeting with CAP priorities, ensure accountability for results, and strengthen long-term institutional capability for climate adaptation. The approach builds on existing district governance systems, reinforcing them to manage climate adaptation as a core development function, rather than a stand-alone project.

7.2 Institutional Coordination Framework

Implementation of the Akatsi North costed adaptation plan should be organised as sector-led delivery supported by a district-level integration function to ensure that priority actions translate into annual work plans, compliant procurement, quality delivery, and sustained functionality.

- Within ANDA, each adaptation cluster should have a recommended lead unit accountable for planning, technical standards, community engagement, and reporting.
- The District Planning Coordinating Unit (DPCU) should provide overall integration into the MTDP and annual action plans, consolidate progress reporting, and ensure that prioritisation and costing remain consistent across sectors.
- The Budget and Finance functions should translate costed actions into realistic budget lines and manage releases, while the Procurement Unit will lead tendering and contract documentation aligned to approved procurement plans.

Where mandates fall under decentralised departments or national agencies, implementation will rely on formal coordination and joint delivery. Across all sectors, minimum institutional outputs, progress and learning reports should align annual implementation plans to and progress and learning reports of adaptation options to inform adaptive management.

Table 21: Institutional roles and responsibilities by adaptation sector

Sector	Implementation Focus	Recommended Lead Unit (ANDA)	Supporting Institutions	Key Deliverables (Adaptation Options)
Agriculture	Scale climate-smart production support; reduce yield losses from drought/flood stress; strengthen extension and farmer organisation delivery	Department of Agriculture (MoFA/ANDA)	DPCU; NADMO; Environmental Health Unit; Forestry Commission; CSOs/NGOs; input dealers/seed producers; FBOs	(i) District CSA training package + seasonal training plan (ii) Demonstration plots/FFS established in priority communities (iii) District shortlist and rollout plan for resilient crop varieties + distribution modality (iv) Soil and water conservation adoption plan linked to erosion/watershed hotspots (v) FBO/savings group strengthening package (governance, records, procurement/marketing)
Biodiversity	Nature-based restoration and protection; reduce bushfire/illegal felling pressures; strengthen local rules and compliance	Development Planning Unit / Forestry Commission	Environmental Health Unit; NADMO; traditional authorities; community committees; NGOs	(i) Community tree planting and aftercare plan (ii) Enforced environmental by-laws (burning, tree felling, buffer protection) + compliance strategy (iii) Community-led fire management system (fire volunteer groups, fire belts, response protocols) (iv) Efficient cookstove/alt-energy promotion plan with targeting and uptake monitoring
Water & Sanitation	Improve safe water access and reliability; protect water sources and catchments; establish sustainable O&M and household WASH compliance	Physical planning Unit/ Development Planning Unit/ Ghana Water Company	CWSA; Environmental Health Unit; WATSAN/Water User Committees; NADMO; NGOs; traditional authorities	(i) Water point delivery plan (boreholes/standpipes/wells) including siting, safeguards, and maintenance model (ii) Community training package on safe use/storage and hygiene (iii) By-laws for source protection and household sanitation compliance (iv) Catchment protection measures around dams/streams (vegetation cover, buffer enforcement) (v) O&M schedule, tariff/fee or contribution rules, and conflict-resolution pathway for shared water points

Sector	Implementation Focus	Recommended Lead Unit (ANDA)	Supporting Institutions	Key Deliverables (Adaptation Options)
Health	Maintain service continuity under floods/heat and WASH-related outbreaks; strengthen primary care readiness and referral access	District Health Directorate (GHS) with ANDA Social Services	ANDA (DPCU/Works); NADMO; Environmental Health Unit; CHPS committees; NGOs	(i) Climate-resilient CHPS/facility upgrade plan (WASH, drainage, solar backup/cold chain where feasible) (ii) Outreach and community health programme schedule for hotspot communities (iii) Surge preparedness package (supplies, referral protocols, risk communication) (iv) Access improvement actions coordinated with Works/NADMO for emergency periods
Gender targeted adaptation options	Ensure adaptation benefits and implementation access are equitable; expand women/youth livelihood resilience and voice in governance	Gender Desk / Social Welfare & Development Planning Unit (ANDA)	DPCU; Department of Agriculture; Works; NADMO; traditional authorities; women/youth groups; PWD reps; NGOs	(i) Gender-sensitive training package embedded across sectors (timing, language, participation support) (ii) Targeted support instruments (e.g., subsidised irrigation kits, women's value-chain support) with transparent eligibility and safeguards (iii) Gender-sensitive governance actions (representation rules for committees/WUAs) (iv) Gender-responsive monitoring framework (indicators, reporting, grievance channels)
DRR	Reduce exposure to floods/bushfires; strengthen preparedness, early warning, and resilient access infrastructure	NADMO	Development Planning Unit; Physical planning Unit; Ghana Fire Service; Police; traditional authorities; community volunteer groups; Hydromet info sources; NGOs; Forestry Commission	(i) Community early warning dissemination and preparedness protocol (ii) Community fire management and bushfire control system (iii) Risk reduction reforestation/woodlots in priority areas (iv) Priority bridges/culverts/drainage improvement plan for critical access routes (v) Evacuation planning, drills, and multi-agency coordination procedures

7.3 Safeguards for Gender, and Social Inclusion in Implementation

Safeguards, gender, and social inclusion must be treated as implementation requirements. For ANDA, 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 leads 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:** 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. ANDA should 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 ensures 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 should be planned and budgeted, with minimum requirements for representation of women, youth, PWDs and vulnerable livelihood groups. Where social norms limit participation, ANDA should conduct 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, should 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:** Ensure that adaptation infrastructure and services are usable by all groups. For example, 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:** 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 ANDA to consistently reduces risk without transferring harm, and to strengthen equitable resilience for those most exposed.

7.4 Coordination Mechanisms during Implementation

Coordination during implementation should ensure that sector actions are delivered in a sequenced and consistent manner, using shared standards for procurement, supervision, safeguards, and reporting. Because the adaptation plan spans multiple departments and depends on community participation and external support, ANDA should apply a simple coordination arrangement that clarifies who leads what, how progress is tracked, and how implementation challenges are resolved quickly. Recommended coordination mechanisms include:

- **District-level oversight:** Assign overall oversight to the district leadership, with periodic reviews of progress, budget performance, key risks, and decisions needed to remove bottlenecks.
- **Technical coordination through Development Planning Unit:** Use the DPCU to integrate sector work plans into one implementation schedule, consolidate reporting, and follow up on agreed actions across departments.
- **Sector-led delivery:** Each sector lead unit should manage day-to-day implementation of its activities, including community engagement, procurement inputs, site supervision, and routine updates to the coordination team.
- **Alignment to the district adaptation plan:** All new collaborative projects in the district should be advised to align to targeting the district's adaptation plans to ensure consistency with district priorities, target communities, and agreed implementation standards.
- **Joint supervision and quality checks:** Conduct regular joint field monitoring involving the relevant technical units to verify quality, safeguards compliance, and readiness for operation and maintenance.
- **Community coordination structures:** Use community committees and focal persons to support mobilisation, safeguard assets, manage local disputes, and maintain feedback channels throughout implementation.
- **Partner alignment:** Where NGOs, decentralised departments, or private actors support implementation, align their activities to ANDA priorities using shared work plans and simple reporting requirements.
- **Routine monitoring, learning and adjustment:** Hold quarterly implementation reviews to identify what is not working, assign corrective actions, and update work plans, designs, or targeting to improve delivery.
- **Financing and sustainability coordination:** ANDA should work with technical and financial partners to jointly develop, package, and deliver priority projects.

Effective coordination determines whether ANDA's adaptation priorities are delivered as coherent, rather than fragmented activities. Clear roles, development planning integration, sector ownership, joint supervision and community feedback improve problem-solving. Requiring all incoming partner projects to align with the district adaptation plan ensures external support targets the right communities and priorities, strengthens standards, and builds a consistent pipeline of resilient investments.

7.5 Capacity Development Strategy

Capacity development should focus on the practical gaps that most directly determine deliverability:

- (i) costing that separates capital costs from recurrent costs and sets realistic inflation and contingency assumptions;
- (ii) procurement that secures value-for-money and compliant documentation;
- (iii) supervision that enforces climate-resilient specifications and prevents premature failure of works; and
- (iv) monitoring that tracks functionality, inclusion, and maintenance performance—not only completion.

Training needs begin with life-cycle adaptation costing, so that sector leads and budgeting can cost actions consistently and convert priority options into budget-ready lines for the MTDP and annual action plans. This is critical for avoiding under-budgeting of maintenance, supervision, safeguards, and monitoring costs that commonly undermine functionality.

Table 22: Training plan mapped to participants and timing

Training Topic	Target Participants	Suggested Duration and Modality	Learning Outcomes (practical)
Life-cycle adaptation costing	Budget Unit; Finance; Development Planning Units; Sector heads (Agriculture, Works, WASH/Environmental Health, Social Services/Health liaison); NADMO focal person	Short-term (≤ 1 year): Short workshops + costing trainings which develops an ANDA templates with sector options	Produce CapEx/O&M; apply inflation/contingency assumptions; cost supervision, safeguards and M&E; generate budget-ready cost notes for MTDP/AAP and partner proposals
Procurement planning	Procurement Unit; Stores; Finance; Works/Physical Planning; user departments; Internal Audit	Short-medium term, practice-based support (≤ 1 year): procurement packaging sessions + mentored preparation of specs/BoQs/ToRs	Convert priority actions into procurement packages and schedules; prepare compliant specifications; set milestones and payment triggers; manage variations and defects-liability conditions
Supervision and Quality Assurance for culverts/bridges, drainage, flood works	Works/Engineers; Physical Planning; NADMO; selected area council reps/community monitors	Medium-long term pathway: initial orientation (≤ 1 year) + continued on-site mentoring and periodic refreshers	Apply site supervision checklists; verify sizing, materials and workmanship; enforce safety and environmental controls; document inspections and certify stages; detect defects early to prevent failure
Operation asset maintenance planning	Works; WASH/Environmental Health; area councils/unit committees; water-point caretakers; market management; NADMO	Short-to-medium term pathway: maintenance planning workshops + community co-design + routine performance reviews	Create asset registers; assign ownership and schedules; set O&M budgets and contribution rules; establish fault reporting and rapid-response repairs; reduce downtime and abandonment of assets
Monitoring and Evaluation indicator tracking, data and evidence management	DPCU; sector M&E focal persons; NADMO; Social Welfare/Gender desk; area council secretaries	Continuous (short to long term): Generate template for data collection and reviews for learning reviews	Set indicators, baselines and targets; collect and manage evidence (logs, photos, beneficiary records); track functionality and inclusion outcomes; produce quarterly dashboards and learning briefs
Safeguards and inclusion	Gender Desk; Development Planning Unit; Budget Unit; Finance; Procurement; Physical Planning Unit; Social Welfare; sector leads (Agric, Water resources, health and environmental, biodiversity, DRR); NADMO; selected community committee reps; NGOs/CSOs	Continuous (short to long term) - education of gender sensitivity in planning	Translate findings into gender-responsive activities, budgets, and targets; design inclusive targeting and participation plans; integrate safeguards checks into concept notes, agreements, and procurement decisions; establish and operate grievance and feedback systems; report on gender and social inclusion results using simple indicators and evidence logs

7.6 Institutional Learning and Knowledge Management

Institutional learning in Akatsi North should be directly linked to the Monitoring, Evaluation, Learning, and Adaptive Management framework established in this plan. Learning should not be treated as a separate or occasional activity, but as an integral part of implementation review, financial tracking, and adaptive decision-making across sectors. In practical terms, this requires regular reflection on what is working, what is underperforming, where costs are diverging from estimates, and how implementation approaches may need to be adjusted in response to emerging challenges or local experience. Such learning is essential if the CAP is to remain a living planning instrument rather than a fixed document. Key learning mechanisms in the Akatsi North context should include:

- Annual reflection sessions organised around the district's adaptation priorities and implementation experience across sectors;
- Structured learning briefs shared with SIGRA, EPA-Ghana, NDPC, and other relevant national institutions to support upward reporting and policy feedback;
- Peer learning exchanges with nearby districts and other MMDAs implementing related climate adaptation and district planning interventions;
- Systematic documentation of cost variation, implementation innovations, maintenance challenges, and operational lessons emerging from agriculture, water, health, ecosystem, gender, and DRR actions; and
- Community-level knowledge capture through participatory dialogue platforms, local review meetings, and citizen-based feedback processes that reflect local priorities and lived experience.

These processes would help ensure that implementation experience feeds directly into future Annual Action Plans, Medium-Term Development Plan revisions, subsequent CAP updates, and broader district adaptation planning.

7.7 Risk Management and Institutional Sustainability

The long-term effectiveness of the CAP depends on the district's ability to anticipate and manage institutional, financial, technical, and coordination-related risks. These risks do not only threaten implementation speed; they also affect the sustainability, inclusiveness, and credibility of adaptation investments over time. A risk management approach is therefore necessary to reduce the likelihood that adaptation actions are delayed, poorly coordinated, under-maintained, or captured by narrow interests.

Table 23: Risk management approach

Risk	Implication	Mitigation
Weak coordination across sectors	Delivery delays, duplication, and inconsistent work planning	Quarterly DPCU-led cross-sector review meetings and routine joint planning across departments
Limited technical supervision capacity	Poor quality delivery of infrastructure and capital-intensive actions	Technical supervision training, backstopping from SIGRA and relevant technical agencies, and stronger quality assurance arrangements
Financing constraints	Delayed or incomplete implementation of larger adaptation actions	Active resource mobilisation, phased delivery, and early preparation of bankable concept notes

Risk	Implication	Mitigation
Staff turnover	Loss of institutional memory and disruption of implementation continuity	Systematic documentation, cross-training, handover protocols, and mentorship arrangements
Weak O&M systems	Premature failure of boreholes, drainage, irrigation, agro-processing, and other infrastructure	Early O&M planning, local management structures, maintenance financing, and periodic technical inspections
Partner fragmentation	Duplication, coordination gaps, and uneven support across sectors or communities	DPCU-led harmonisation of partner support and alignment with the CAP
Elite capture or exclusion	Women, PWDs, and vulnerable groups sidelined in access to adaptation benefits	Transparent beneficiary targeting, grievance mechanisms, and oversight by Gender and Social Protection structures

7.8 Resource Mobilisation Responsibilities

Resource mobilisation in Akatsi North should be treated as a shared institutional function rather than the task of one office alone. The DPCU should lead coordination, concept-note preparation, and partner engagement, ensuring that financing proposals remain aligned with district priorities and planning instruments. The Budget and Finance functions of the Assembly should support financial structuring, budget tagging, co-financing arrangements, and the integration of adaptation expenditures into the Composite Budget. EPA-Ghana and SIGRA should provide technical support, national alignment, and facilitation in relation to external climate finance and proposal development. The District Chief Executive and district leadership should provide the political backing, institutional legitimacy, and external engagement needed to secure Assembly endorsement, deepen partner confidence, and strengthen access to higher-level government and development financing channels.

8. CONCLUSION AND WAY FORWARD

This costed adaptation plan provides Akatsi North District with a practical basis for moving from climate risk evidence to prioritised, costed and implementable adaptation investments. The plan responds to a district risk profile shaped by sectoral vulnerabilities of agriculture, water resources, health, infrastructure, disaster risk reduction and climate-exposed gender groups.

8.1 Key Investment Priorities

The Costed Adaptation Plan for Akatsi North District identifies a set of high-impact investment priorities with strong cross-sectoral implications. In total, 47 ranked adaptation options with an indicative total investment requirement of GH¢48.96 million across six climate-sensitive sectors. The portfolio is strongly weighted towards water security, with nine Water Resources actions estimated at GH¢24.29 million, reflecting the central importance of domestic and productive water access to livelihoods, agriculture, sanitation and service delivery in the district. This is followed by Health and Sanitation, comprising seven actions estimated at GH¢8.14 million, and Agriculture and Food Security, comprising nine actions estimated at GH¢6.42 million, reflecting the need to reduce climate-related health risks and strengthen the resilience of rain-fed livelihoods. The remaining investments provide complementary measures for resilience building: nine Disaster Risk Reduction actions are estimated at GH¢3.94 million; seven Biodiversity and Ecosystem actions at GH¢3.44 million; and six Gender Mainstreaming actions at GH¢2.74 million.

The adaptation priorities of the district differ in scale, cost intensity and implementation requirements. Together, these priorities combine higher-cost infrastructure investments with lower-cost but essential actions for livelihood protection, ecosystem restoration, disaster preparedness, inclusive governance and equitable access to adaptation benefits, defining the district's main adaptation investment profile. In summary, the key investment priorities identified, align with the district's socioeconomic sector and are as follows:

- **Water security and water infrastructure:** Water investments are observed to be the most prominent investment area in the report. Particularly in relation to dam rehabilitation and desilting, expansion of existing dams and dugouts, rainwater harvesting, mechanised boreholes, and small-scale irrigation. The concentration of investment in this area reflects the central role of water insecurity in shaping agricultural vulnerability, household welfare, sanitation conditions, and service reliability across the district.
- **Climate-resilient agriculture and livelihood protection:** This priority area includes farmer training, climate-resilient crop varieties, soil and water conservation, agroforestry, irrigation support, and livelihood diversification. The investment needs in this area highlights critical vulnerability to the district's livelihood structure as majority of the district sustenance depends on both protecting agricultural production and strengthening the resilience of climate-exposed households.
- **Health, sanitation, and climate-resilient basic services:** Priority investments in this health and sanitation confirm that adaptation in Akatsi North should reduce exposure to climate-sensitive health and sanitation risks, improve environmental health conditions and strengthen the resilience of basic service delivery systems across the district. These investments include CHPS and facility upgrading, improved drainage, community health outreach, protection of streams and water bodies, and improved waste management.
- **Ecosystem restoration and natural resource protection:** The concentration of investments in this area reflects the need to protect ecological systems that support water availability, land productivity, biodiversity, and the long-term resilience of local livelihoods. This area includes tree planting, catchment protection, fire management, buffer zones and bye-laws.
- **Disaster risk reduction and climate-resilient local infrastructure:** This includes early warning systems, preparedness training, flood barriers, drainage, and bridges and culverts.

The concentration of investments in this area reflects the need to reduce exposure to climate hazards, limit damage to local infrastructure, improve preparedness, and strengthen the district's capacity to withstand and respond to climate-related shocks.

- **Gender-responsive and socially inclusive adaptation measures:** Inclusive investments are proposed to be mainstream in the plan and reinforce the need to ensure that climate-exposed groups are included in access, implementation and benefit-sharing.

8.2 Immediate Next Steps

With the completion of the costed adaptation plan, the immediate priority for ANDA is to move from costed prioritisation to implementation readiness. The next phase requires the plan to be absorbed into district systems and converted into operational actions. These steps define the district's immediate post-plan agenda and provide the basis for moving from costed planning to structured implementation. The immediate next steps include:

1. Finalisation and validation of the costed plan

Review and confirm cost assumptions, phasing logic, responsible institutions and cross-sector consistency so that the plan serves as an operational district document.

2. Integration into district planning and budgeting systems

Incorporate short-term priorities into the Annual Action Plans and align medium-term priorities with the MTDP process.

3. Preparation of an initial implementation pipeline

Distinguish between priorities that can be financed through district and sector budgets and those that require proposal development, partner support or phased financing.

4. Clarification of institutional responsibilities

Assign clear roles across ANDA and decentralised departments for coordination, procurement inputs, safeguards, supervision, and reporting.

5. Proposal preparation for externally financed priorities

Begin preparing proposals for higher-cost and technically demanding priorities that exceed routine district financing capacity.

6. Establishment of basic implementation support systems

Put in place coordination mechanisms, MEL templates, reporting arrangements, and community feedback structures to support early implementation.

REFERENCES

Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA). (2025, June). Climate change risk and vulnerability assessment for Akatsi North District (Climate Change Risk and Vulnerability Assessment report)

https://sigraghana.org/?sdm_process_download=1&download_id=18312

ANNEXES

Annex 1: Detailed Costing Templates

Practical Costing and Financial Planning Guide for District Climate Adaptation Actions - This session use fictional figures to depict the practicality in designing the CAP.

Purpose of this Guide

This guide provides practical support to MPCU and sector department staff in Akatsi North District for preparing, reviewing, and updating cost estimates for climate adaptation actions under the CAP. It builds on the participatory costing approach applied during the district costed adaptation workshops and is designed to ensure that future costing exercises are:

- Consistent with CAP methodology;
- Aligned with the District Composite Budget and DMTDP cycles;
- Usable for financing and implementation planning with SIGRA, GCF, Adaptation Fund, and GEF.

The guide moves beyond basic cost estimation to support activity-based costing, financial planning, and implementation readiness.

Step 1: Define the Adaptation Action Clearly

Costing must start from a precisely specified intervention.

“Improve water access”

“Construct mechanised boreholes in Nyitawuta, Ave Have with at least 50 per cent female membership”

Checklist:

- What exactly will be implemented?
- Which communities and beneficiary groups are targeted, with gender and disability breakdown?
- What is the implementation timeframe?
- What climate risk identified in the CRVA is being addressed?

Step 2: Break Actions into Implementation Components

Each action should be decomposed into standardised operational components, consistent with the CAP methodology:

Component Type	Description
Preparatory activities	Hydrogeological surveys; community consultations; design; baseline assessments
Capital investments	Infrastructure; equipment (solar pumps, sirens, cold-chain units); inputs (seeds, seedlings)
Operational activities	Training; extension; community mobilisation; outreach delivery
O&M requirements	Maintenance; spare parts; recurrent service delivery
MEL provisions	Monitoring; supervision; community feedback; evaluation

This structure ensures clarity and prevents systematic under-costing, particularly for O&M expenditures that are often omitted.

Step 3: Estimate Quantities and Phasing

Define:

- Quantities (for example, number of boreholes, trainings, nurseries, outreach visits);
- Frequency (annual or quarterly);
- Phasing across Years 1 to 3, aligned with CAP Phase 1 hotspot targeting and subsequent scale-up.

Step 4: Apply Context-Specific Unit Costs

Use:

- Recent Akatsi North District project data, including DACF projects and past NGO interventions;
- CWSA, Works Department, and MoFA unit cost benchmarks;
- SIGRA and EPA-Ghana guidance;
- Comparable Northern Region programme costs.

Where uncertainty exists, apply cost ranges rather than single-point estimates.

Step 5: Develop Cost Ranges and Totals

Avoid false precision. Apply low–high ranges across components:

Item	Low Estimate (GHS)	High Estimate (GHS)
Solar-mechanised borehole (full)	120,000	140,000
CSA training session	10,000	15,000
Community nursery (annual)	60,000	80,000
EWS siren installation (per unit)	150,000	200,000

Aggregate costs across components to produce annual estimates and three-year totals consistent with CAP planning horizons.

Step 6: Integrate Financing Considerations

Each costed action must be linked to realistic financing pathways set out in Chapter Five. For each action:

- Identify primary and secondary funding sources (DACF, DDF, SIGRA, GCF, Adaptation Fund, GEF, and partners);
- Determine whether costs can be phased;
- Assess co-financing opportunities and community contributions (labour, land, tariffs).
- This ensures that costing supports resource mobilisation rather than planning alone.

Step 7: Assign Institutional Responsibilities

Each costed action specifies:

- Lead department (as identified in Chapter Four);
- Supporting institutions;
- Implementation, supervision, and reporting roles.

This reinforces accountability and reduces implementation delays.

Step 8: Incorporate Gender and Inclusion Costs

Explicitly budget for:

- Targeted outreach to women, youth, and persons with disabilities;
- Accessibility features, such as ramps and appropriate pump heights;
- Local-language Information, Education and Communication (IEC) materials;
- Community mobilisation for female-headed households.

These costs must be budgeted explicitly and not assumed as zero-cost contributions.

Step 9: Include Operations and Maintenance

O&M costs are essential for sustainability. Each costed action must include:

- Annual maintenance costs for solar pumps, vehicles, cold-chain equipment, and EWS sirens;
- Institutional responsibility for upkeep, assigned across WASHCOMs, Works, NADMO, and the District Health Directorate;
- Risks of O&M underfunding.

Omitting O&M leads to asset degradation and the loss of investment value, a particularly critical consideration for the solar water systems, Mobile Health Units, and EWS equipment deployed under the AKNA CAP.

Step 10: Conduct a Basic Economic and Feasibility Check

Before finalising each costed action:

- Does the action reduce the climate-related losses identified in the CRVA?
- Are benefits likely to justify the costs?
- Is implementation feasible within current MPCU and sector capacity?
- Can the action be scaled or replicated across other communities?

This aligns costing with value-for-money considerations required for climate finance submissions.

Sample CAP Costing Template

Component	Quantity	Unit Cost (GHS)	Year 1	Year 2	Year 3	Total (GHS)
Infrastructure (boreholes)	5 units	130,000	260,000	260,000	130,000	650,000
WASHCOM training	3 sessions	12,000	36,000	36,000	36,000	108,000
O&M (annual)	Annual	–	20,000	20,000	20,000	60,000
MEL and supervision	Lump sum	–	15,000	10,000	10,000	35,000
Total						853,000

How this Guide Should be Used

This guide should be applied during:

- DMTDP preparation and updates;
- Annual Action Plan and Composite Budget cycles;
- CAP revisions and the Year 3 costing update;
- Climate finance proposal development for GCF, Adaptation Fund, and GEF;
- District budgeting and resource mobilisation processes.

Annex 2: Long List of Adaptation Options

Agriculture and Food Security	Biodiversity	Water Resources
1. Incorporating agroforestry to farming practises	1. Agroforestry and Community tree planting	1. Protecting dam catchments by promoting vegetation cover
2. Training farmers	2. Creating buffer zones	2. Community-led management and maintenance schedules
3. Supporting Farmer-Based Organisations (FBOs), cooperatives, savings groups	3. Community Tree planting and vegetation cover	3. By-laws for Enforcing Local Water Infrastructure Management Measures
4. Vocational and entrepreneurial training as alternative livelihood	4. Tree planting campaigns and training	4. Training communities
5. Establishment of community tree planting campaigns	5. By-laws against illegal logging and charcoal production	5. Dredging and desilting dams
6. Use of improved, climate-resilient and drought/flood-tolerant crop varieties	6. Community-led fire management	6. Expanding existing dams and constructing new dams/dugouts
7. Small-scale irrigation and water management for dry-season farming	7. Efficient cookstoves and alternative energy sources	7. Mechanised boreholes, standpipes and hand-dug wells
8. Agro-processing equipment and factories		8. Rainwater harvesting
9. Soil and water conservation practices		9. Water-efficient irrigation and farming practices

Health and Sanitation	Gender-Targeted Options	Disaster Risk Reduction
1. Protection of streams and water bodies	1. Women-led reforestation initiatives	1. Reforestation, afforestation and woodlots
2. Community health programmes/ Health outreach programmes	2. Gender sensitive governance:	2. Community-led fire management and bushfire control
3. Social safety nets and support networks	3. Gender-sensitive training	3. Early warning systems
4. Upgrading community health facilities and CHPS compounds	4. Developing gender-responsive monitoring	4. Disaster preparedness training, evacuation plans and collaboration
5. Mobile health clinics and outreach services	5. Subsidised irrigation kits	5. Community dialogues and conflict mediation
6. Improved drainage channels	6. Agro-processing equipment and facilities	6. Capacity building
7. Construction of improved community waste management		7. Creating flood barriers and embankments
		8. Improved drainage channels in communities
		9. Upgrading bridges and culverts

Annex 3: Details of Costed Adaptation Options

Agriculture and Food Safety								
General Objective: To strengthen climate-resilient agricultural production, livelihood diversification, water access, value addition and farmers' capacity to manage rainfall variability, drought, flooding and heat stress. Target Beneficiaries: Smallholder farmers, women farmers, youth, farmer-based organisations, agricultural cooperatives, processors and households dependent on rain-fed agriculture.								

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Training farmers agroforestry							
			GOODS AND SERVICES					
		Farmer field schools, on-farm agroforestry demonstrations, FBO training, radio sensitization	Fuel and Lubricant	240	12	15	43,200.00	Transport to demonstration plots and farmer field school venues across the district
			Local Travel Cost	120	1	300	36,000.00	Transport costs for extension officers and master farmers to training sites
			Training materials	120	7	50	42,000.00	Training manuals, field guides, flip charts and visual aids for agroforestry modules
			Refreshments	120	10	80	96,000.00	Catering for farmer field schools, FBO training sessions and demonstration day events
			Radio Airtime	4	4	500	8,000.00	FM radio spots on agroforestry benefits, climate-smart practices and market linkages
			SUBTOTAL				225,200.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Agroforestry demonstration inputs	Improved Seeds, Fertilizers, Compost & Field Markers	1	1	4000	4,000.00	Certified improved seeds, compost, fertilizer and plot marking materials for demo plots
			Hermetic Bags, Metal Silos & Moisture Meters	1	1	2000	2,000.00	Hermetic bags for grain storage, metal silos and moisture meters for post-harvest management
			SUBTOTAL				6,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				229,200.00	
2	Use of improved climate-resilient and drought/flood-tolerant crop varieties							
			GOODS AND SERVICES					
		Demonstration plots, seed systems strengthening, farmer training on varietal selection and storage	Fuel and Lubricant	150	12	15	27,000.00	Transport for extension officers and seed system facilitators to demonstration plot sites
			Local Travel Cost	100	1	300	30,000.00	Transport costs for extension officers conducting varietal training and field days
			Training materials	120	7	50	42,000.00	Training manuals, variety comparison charts and crop performance data sheets for farmers

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Refreshments	100	5	80	40,000.00	Catering for seed system training, demonstration field days and variety selection workshops
			SUBTOTAL				139,000.00	
			CAPEX					
		Demonstration and seed system inputs	Demonstration Plot Trial Inputs	10	1	2000	20,000.00	Inputs for 10 demonstration plot trials per recommended variety including fertilizer and markers
			Certified Seed of Recommended Varieties	100	1	300	30,000.00	Certified seed of recommended drought-tolerant, early-maturing and flood-resilient varieties
			Seed Storage Containers, Shelving & Moisture Control	10	1	250	2,500.00	Hermetic seed storage containers, shelving racks and moisture control materials for seed banks
			SUBTOTAL				52,500.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				191,500.00	
3	Vocational and entrepreneurial training							
			GOODS AND SERVICES					
		Skills training workshops, apprenticeship linkages,	Local Travel Cost	100	1	300	30,000.00	Transport for trainees and facilitators to vocational training centres and workshop venues

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		vocational assessment, entrepreneurship coaching	Fuel and Lubricant	240	12	15	43,200.00	Field transport for district officers monitoring apprenticeship placements
			Training Materials	100	16	20	32,000.00	Trade manuals, entrepreneurship workbooks, business plan templates and IEC materials
			Refreshments	100	6	80	48,000.00	Catering for vocational training workshops, business plan clinics and graduation events
			Impact Assessment & Survey	1	1	30,000	30,000.00	Baseline and end-line surveys; impact evaluation of vocational training programme
			SUBTOTAL				183,200.00	
			CAPEX					
		Trade tools and digital finance kits	Trade-Specific Tools, Equipment & Safety Gear	100	1	500	50,000.00	Trade-specific tools, safety gear and equipment for artisans, tailors, welders and food processors
			Smartphones & Mobile Money Kits	100	1	600	60,000.00	Smartphones and mobile money kits to support digital financial inclusion of trained youth
			SUBTOTAL				110,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				293,200.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
4	Soil and water conservation practices							
			GOODS AND SERVICES					
		Conservation agriculture training, gully rehabilitation, cover cropping, soil health demonstrations	Fuel and Lubricant	200	12	15	36,000.00	Transport for extension officers, conservation technicians and community monitoring volunteers
			Local Travel Cost	100	1	300	30,000.00	Transport costs for district officers conducting soil health assessments and field visits
			Training Materials	100	10	25	25,000.00	Training materials on conservation agriculture, cover cropping and contour bunding techniques
			Refreshments	100	3	80	24,000.00	Catering for conservation agriculture field schools and soil health training workshops
			Consultant Services	1	2	20000	40,000.00	Technical consultancy for gully rehabilitation design, contour mapping and SWC planning
			SUBTOTAL				155,000.00	
			CAPEX					
		Soil and water conservation field inputs	Cover Crop Seeds, Compost Materials, Field Markers		1	1000	1,000.00	Cover crop seeds, compost materials and field markers for contour strip trials
			Cover Crop Seeds, Grass Planting Materials, Hand Tools	100	1	500	50,000.00	Cover crop seeds, grass planting materials and hand tools for strip cropping and grassed waterways

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Gabions, Stones & Vegetation for Gully Stabilization	5	1	3000	15,000.00	Gabions, stones and vetiver grass for gully head stabilization and erosion control
			Compost Bins, Shredders & Basic Organic Inputs	1	1	1000	1,000.00	Compost bins, shredders and organic inputs for on-farm composting demonstration units
			SUBTOTAL				67,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				222,000.00	
5	Agro-processing equipment and factories							
			GOODS AND SERVICES					
		Site assessment, community consultation, contractor procurement, construction supervision, equipment installation	Fuel and Lubricant	350	12	15	63,000.00	Transport for technical staff, processing facility committee members and equipment supervisors
			Local Travel Cost	100	1	300	30,000.00	Transport costs for district officers conducting community consultations and site assessments
			Training Materials	100	12	20	24,000.00	Training materials for facility management committees, equipment operation and food safety
			Refreshments	100	4	80	32,000.00	Catering for community consultations, facility launch

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								events and committee training sessions
			Consultant Services	1	5	20000	100,000.00	Engineering design, environmental assessment and procurement support for processing centre
			SUBTOTAL				249,000.00	
			CAPEX					
		Agro-processing facility construction and equipment	Construction of Agro-Processing Facility	1	1	500000	500,000.00	Construction of climate-resilient agro-processing centre with storage and office facilities
			Processing Equipment Installation	1	1	250000	250,000.00	Cassava, maize, soybean and groundnut processing machines, grinders, dryers and presses
			Solar Power Systems	1	1	300000	300,000.00	Solar PV system to power processing equipment and reduce energy costs for operators
			Packaging & Quality Testing Equipment	1	1	150000	150,000.00	Packaging machines, weighing scales, sealing equipment and food safety testing instruments
			SUBTOTAL				1,200,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				1,449,000.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
6	Supporting Farmer-Based Organisations, cooperatives and savings groups							
			GOODS AND SERVICES					
		FBO registration, cooperative formation, VSLA training, mobile money onboarding, savings group support	Fuel and Lubricant	240	12	15	43,200.00	Transport for FBO coordinators, savings group facilitators and district officers
			Training Materials	100	7	20	14,000.00	Training manuals, record books and cooperative governance guides
			Refreshments	100	5	80	40,000.00	Catering for cooperative formation meetings, VSLA training and financial literacy sessions
			Local Travel Cost	120	1	300	36,000.00	Transport costs for district officers to FBO communities for support visits
			SUBTOTAL				133,200.00	
			CAPEX					
		FBO digitization and VSLA tools	Smartphones & Mobile Money Training Kits	10	1	600	6,000.00	Smartphones and mobile money training kits for FBO group leaders and savings coordinators
			Record Books, Lockboxes & VSLA Materials	10	1	300	3,000.00	Record books, padlocked cash boxes and VSLA kits (passbooks, tally sheets, forms)
			SUBTOTAL				9,000.00	
			COMPENSATION					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				142,200	
7	Small-scale irrigation and water management for dry-season farming							
			GOODS AND SERVICES					
		Irrigation scheme design, farmer water user associations, drip and gravity system installation, training	Fuel and Lubricant	350	12	15	63,000.00	Transport for technical staff, dam committee members and irrigation scheme supervisors
			Training Materials	100	12	20	24,000.00	Training materials for water user associations, pump operation manuals and drip irrigation guides
			Refreshments	100	4	80	32,000.00	Catering for dam committee formation, irrigation scheme training and water user group meetings
			Radio Airtime	4	2	500	4,000.00	FM radio spots on irrigation scheme benefits, water user fees and dry-season farming opportunities
			Consultant Services	1	5	20000	100,000.00	Hydrological and irrigation design consultancy for small dam-fed irrigation schemes
			Radio Airtime	4	2	500	4,000.00	Additional radio airtime for post-installation community awareness and water management
			SUBTOTAL				227,000.00	
			CAPEX					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		Dam rehabilitation and irrigation infrastructure	Desilting, Spillway Reinforcement & Embankment Repairs	1	1	2,000,000	2,000,000.00	Desilting, spillway reinforcement and embankment repair works on priority small dams
			Motorized Pumps, Treadle Pumps, Drip & Gravity Systems	1	1	500000	500,000.00	Motorized pumps, treadle pumps, drip kits and gravity-fed systems for irrigated plots
			Irrigation Distribution Infrastructure	1	1	300000	300,000.00	HDPE distribution pipes, sluice gates, field channels and farm-level irrigation distribution
			Drip Kits, Flow Meters & Demonstration Materials	1	1	100000	100,000.00	Drip irrigation demonstration kits, flow meters and training materials for water user groups
			SUBTOTAL				2,900,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				3,127,000.00	
Overall Total							5,656,100.00	

Biodiversity and Ecosystem

General Objective: To restore degraded ecosystems, increase vegetation cover and reduce biodiversity loss through tree planting, sustainable energy use, catchment protection and strengthened environmental governance.

Target Beneficiaries: Communities in degraded and environmentally sensitive areas, smallholder farmers, women and youth groups, schools, landowners and households dependent on forests and ecosystem services.

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Agroforestry and tree planting							
			GOODS AND SERVICES					
		Community sensitization workshops, participatory mapping, nursery establishment and tree planting	Local Travel Cost	100	1	300	30,000.00	Transport for forestry officers, FBO coordinators and community volunteers to nursery sites
			Fuel and Lubricant	240	12	15	43,200.00	Field transport for monitoring nursery survival rates and community planting progress
			Printed Materials & Stationery	100	9	83	74,700.00	Training manuals, planting guides, biodiversity IEC materials and monitoring registers
			Refreshments	100	6	80	48,000.00	Catering for community sensitization, FBO agroforestry training and nursery launch events
			Starter Toolkit Distribution	100	2	100	20,000.00	Starter toolkits including pruning saws, secateurs, watering cans and planting gloves
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on agroforestry benefits, biodiversity conservation and fire management
			SUBTOTAL				223,900.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Community tree nursery and planting infrastructure	Community Tree Nurseries Infrastructure	1	1	3,000	3,000.00	Shade nets, watering systems, potting tables and shade structures for community nurseries
			Tree Planting Tools & Equipment	1	1	12000	12,000.00	Planting tools including hoes, spades, digging bars and watering equipment
			Tree Seedlings	30,000	2	5	300,000.00	30,000 mixed native timber, fruit and nitrogen-fixing tree seedlings over 5 years
			Beekeeping Infrastructure	1	1	4000	4,000.00	Beehives, frames, protective gear and honey extraction equipment for community apiaries
			SUBTOTAL				319,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				542,900.00	
2	Tree planting campaigns and training							
			GOODS AND SERVICES					
		District tree planting campaign events, school greening, training of community	Local Travel Cost	200	1	300	60,000.00	Transport for campaign coordinators, master trainers and community mobilizers
			Fuel and Lubricant	180	12	15	32,400.00	Field transport for campaign monitoring, survival surveys and community engagement visits

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		trainers, FBO engagement	Printed Materials & Stationery	100	21	20	42,000.00	Campaign materials, training manuals, planting guides and community scorecards
			Refreshments	100	8	80	64,000.00	Catering for campaign launch events, training of trainer workshops and review meetings
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio campaign spots and community mobilization announcements for tree planting drives
			SUBTOTAL				206,400.00	
			CAPEX					
		Campaign nursery and planting infrastructure	Nursery Shade Nets, Watering Systems & Structures	1	1	3000	3,000.00	Shade nets, watering systems and nursery structures for campaign tree nurseries
			Planting Tools, Watering Equipment, Pruning Tools, Uniforms	1	1	5000	5,000.00	Planting tools, watering equipment, pruning tools and protective uniforms for volunteers
			Water Storage Poly Tanks for Aftercare	1	1	20000	20,000.00	Poly water storage tanks for dry-season seedling aftercare and nursery water supply
			Seedlings (native timber, fruit, multipurpose)	50,000	1	5	250,000.00	50,000 native timber, fruit and multipurpose seedlings for district-wide campaign planting
			Beehives, Processing Equipment & Moringa Kits	1	1	120000	120,000.00	Beehives, moringa kits and processing equipment for farmer income diversification
			SUBTOTAL				398,000.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			COMPENSATION					
			Allowances				-	
			TOTAL				604,400.00	
3	Bye-law enforcement against illegal logging and charcoal production							
			GOODS AND SERVICES					
		Community consultations, by-law drafting, legal review, gazettal, community sensitization, enforcement	Local Travel Cost	100	1	300	30,000.00	Transport for legal officers, community leaders and by-law sensitization teams
			Fuel and Lubricant	50	10	15	7,500.00	Field transport for by-law compliance monitoring and enforcement patrol visits
			Printed Materials & Stationery	100	17	20	34,000.00	Draft by-law documents, public consultation notices, IEC materials and community registers
			Refreshments	100	5	80	40,000.00	Catering for public consultations, by-law validation meetings and community education forums
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots publicizing by-law provisions, prohibited activities and reporting channels
			Legal Fees & Gazettal Costs	1	1	40000	40,000.00	Legal drafting fees, notarization costs and official gazette publication charges
			SUBTOTAL				159,500.00	
			CAPEX					
		Community monitor	Identification Cards & Uniforms for	30	1	30	900.00	Photo ID cards and uniforms for community monitors

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		equipment and by-law signage	Community Monitors					enforcing environmental by-laws
			Signage & By-law Communication Boards	3	1	500	1,500.00	Durable boundary and by-law information boards at key access points to protected areas
			SUBTOTAL				2,400.00	
			COMPENSATION					
			Allowances	30	24	100	72,000.00	
			SUBTOTAL				72,000.00	
			TOTAL				233,900.00	
4	Efficient cookstoves and alternative energy sources							
			GOODS AND SERVICES					
		Cookstove promotion, distribution, household training, carbon monitoring, alternative energy demos	Local Travel Cost	100	1	300	30,000.00	Transport for cookstove promotion officers, community demonstrators and monitoring teams
			Fuel and Lubricant	50	10	15	7,500.00	Field transport for household stove installation verification and carbon monitoring visits
			Printed Materials & Stationery	100	19	30	57,000.00	Cookstove promotion materials, household manuals, firewood saving guides and monitoring forms
			Refreshments	100	4	80	32,000.00	Catering for cookstove demonstration events, community training sessions and distribution days
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on cookstove benefits, fuel saving and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								indoor air quality improvements
			Consultancy Fee	1	2	30000	60,000.00	Technical consultancy for carbon quantification, monitoring design and verification services
			SUBTOTAL				194,500.00	
			CAPEX					
		Cookstove and monitoring infrastructure	Improved Cookstoves – (Gyapa-type stoves)	2,000	1	300	600,000.00	150 Gyapa-type improved cookstoves for participating households; 60% fuel savings expected
			Monitoring Devices for Carbon Quantification (150 Stoves)	150	1	1200	180,000.00	Carbon monitoring devices and logbooks for tracking fuel consumption in 150 stove households
			SUBTOTAL				780,000.00	
			COMPENSATION					
			Allowances				-	
			TOTAL				974,500.00	
5	Tree planting and vegetation cover							
			GOODS AND SERVICES					
		Community greening campaigns, school tree planting, riparian restoration,	Local Travel Cost	200	1	300	60,000.00	Transport for forestry officers, community coordinators and school environmental clubs
			Fuel and Lubricant	180	12	15	32,400.00	Field transport for vegetation cover monitoring and community planting progress assessments

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		vegetation monitoring	Printed Materials & Stationery	100	18	20	36,000.00	Planting guides, vegetation monitoring sheets, biodiversity registers and school greening kits
			Refreshments	100	8	80	64,000.00	Catering for community greening events, school launch days and monitoring review meetings
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on community tree planting campaigns and vegetation restoration progress
			SUBTOTAL				200,400.00	
			CAPEX					
		Tree planting and aftercare infrastructure	Nursery Shade Nets, Watering Systems & Structures	1	1	3,000.00	3,000.00	Shade nets, watering systems and shelter structures for community tree nurseries
			Planting Tools, Watering Equipment, Pruning Tools, Uniforms	1	1	5,000.00	5,000.00	Planting tools, watering equipment, pruning implements and protective uniforms for teams
			Water Storage Poly Tanks for Aftercare	1	1	20,000.00	20,000.00	Poly water storage tanks for post-planting irrigation and dry-season tree aftercare
			Seedlings (native timber, fruit, multipurpose)	50,000	1	5	250,000.00	50,000 native timber, fruit and multipurpose tree seedlings for community planting
			Beehives, Processing Equipment & Moringa Kits	1	1	2,000.00	2,000.00	Beehives, moringa production kits and honey processing equipment for livelihood support
			SUBTOTAL				280,000.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				480,400.00	
6	Creating buffer zones							
			GOODS AND SERVICES					
		Buffer zone demarcation, riparian planting, by-law enforcement, alternative livelihoods support	Local Travel Cost	120	1	300	36,000.00	Transport for technical officers, community rangers and buffer zone monitoring committees
			Fuel and Lubricant	180	12	15	32,400.00	Field transport for joint boundary patrol and buffer zone vegetation monitoring visits
			Printed Materials & Stationery	100	13	50	65,000.00	Buffer zone maps, boundary signage, planting guides and monitoring checklists
			Refreshments	100	6	80	48,000.00	Catering for buffer zone demarcation workshops, community boundary meetings and training
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on buffer zone regulations, ecological benefits and community livelihoods
			SUBTOTAL				189,400.00	
			CAPEX					
		Buffer zone nursery and	Community Tree Nurseries – Buffer Zone Species	1	2	3000	6,000.00	Nursery shade nets, watering systems and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		livelihood infrastructure						planting structures for buffer zone species
			Tree Seedlings – Buffer Zone	20,000	1	10	200,000.00	20,000 riparian and buffer zone tree seedlings including bamboo, vetiver and native species
			Beehives, Fish Pond Materials & Processing Equipment – 10 communities	1	1	50000	50,000.00	Beehives, fish pond materials and processing equipment to support buffer zone livelihoods
			SUBTOTAL				256,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				445,400.00	
Overall Total							3,281,500.00	

Water Resources

General Objective: To improve reliable and sustainable access to domestic and productive water through climate-resilient infrastructure, catchment protection, community management and efficient water-use systems.

Target Beneficiaries: Water-stressed communities, households, women and girls responsible for water collection, farmers, livestock keepers, schools, health facilities and community water-user groups.

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Mechanised boreholes, standpipes and hand-dug wells							
			GOODS AND SERVICES					
		Hydrogeological surveys, community mapping, CWSC formation, borehole drilling, solar pump installation	Local Travel Cost	100	1	300	30,000.00	Transport for hydrogeological teams, CWSC trainers and Works Department field officers
			Fuel and Lubricant	60	12	15	10,800.00	Field transport for borehole drilling supervision, pump installation and post-drilling checks
			Printed Materials & Stationery	100	9	30	27,000.00	Hydrogeological reports, CWSC training manuals, water safety plans and O&M registers
			Refreshments	100	4	80	32,000.00	Catering for community consultations, CWSC formation meetings and O&M training sessions
			Technical Consultant Services	1	3	30000	90,000.00	Geophysical survey consultancy using ERI and EM methods to identify optimal drilling sites
			Radio Airtime	4	4	500	8,000.00	FM radio spots on borehole construction progress, CWSC

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								management and water safety
			SUBTOTAL				197,800.00	
			CAPEX					
		Borehole construction and solar pump systems	Construction of Boreholes with solar	1	1	200000	200,000.00	Construction of mechanized boreholes with solar-powered submersible pumps and storage tanks
			Rehabilitation of existing borehole	1	1	30000	30,000.00	Rehabilitation of non-functional boreholes including pump replacement and apron repair
			SUBTOTAL				230,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				427,800.00	
2	Training communities on safe water use and storage							
			GOODS AND SERVICES					
		Community water management training, DCMC skills development, water quality awareness	Local Travel Cost	100	1	300	30,000.00	Transport for training facilitators, CWSA officers and community training coordinators
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for post-training follow-up visits and community monitoring assessments

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Printed Materials & Stationery	100	9	30	27,000.00	Water management training manuals, hygiene guides, dam safety booklets and monitoring sheets
			Refreshments	100	3	80	24,000.00	Catering for community water management training, refresher sessions and review meetings
			Starter Toolkit Distribution	100	2	100	20,000.00	Community training toolkits including field guides, reference cards and visual aids
			SUBTOTAL				122,600.00	
			CAPEX					
		Community trainer toolkits	Training Toolkits for Community Trainers (Visual aids, reference materials)	30	1	300	9,000.00	Toolkits for community trainers including visual aids, reference cards and facilitation guides
			SUBTOTAL				9,000.00	
			COMPENSATION					
			SUBTOTAL				131,600.00	
			TOTAL				131,600.00	
3	Bye-laws for enforcing local water-infrastructure management measures							
			GOODS AND SERVICES					
		Water by-law drafting, community	Local Travel Cost	100	1	300	30,000.00	Transport for legal officers, community leaders and by-law sensitization teams

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		consultations, legal review, gazettal, enforcement training	Fuel and Lubricant	120	12	15	21,600.00	Field transport for boundary inspections, encroachment monitoring and enforcement patrols
			Printed Materials & Stationery	100	9	30	27,000.00	Draft by-law documents, public consultation materials, IEC posters and boundary registers
			Refreshments	100	3	80	24,000.00	Catering for public consultations, by-law validation meetings and legal review sessions
			Starter Toolkit Distribution	100	2	100	20,000.00	Toolkit including GPS units, marking materials, flags and orientation tools for boundary work
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots publicizing water by-law provisions, penalties and reporting procedures
			Drone Service Provider Costs	2	4	10000	80,000.00	Aerial boundary demarcation, encroachment documentation and GPS mapping by drone
			Legal & Administrative Fees	1	1	30000	30,000.00	Legal drafting fees, notarization, gazette publication and regulatory compliance costs
			SUBTOTAL				240,600.00	
			CAPEX					
		By-law enforcement equipment	Enforcement Equipment (GPS units, cameras for	10	1	20000	200,000.00	GPS units, cameras, boundary signs and monitors' equipment for

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			community monitors, boundary signs along water bodies)					community water by-law enforcement
			SUBTOTAL				200,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				440600	
4	Community-led management and maintenance schedules							
			GOODS AND SERVICES					
			Local Travel Cost	100	1	300	30,000.00	Transport for community engineers, DCMC members and Works Department oversight staff
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for routine dam inspection, sluice operation and vegetation maintenance visits
			Printed Materials & Stationery	100	9	30	27,000.00	Dam operation manuals, DCMC training guides, inspection checklists and maintenance registers
			Refreshments	100	3	80	24,000.00	Catering for DCMC formation meetings, dam operation training and quarterly review sessions
			Starter Toolkit Distribution	100	2	100	20,000.00	Dam maintenance toolkits including shovels, rakes,

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								crowbars and measuring equipment
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on dam safety, water allocation rules and community maintenance obligations
			SUBTOTAL				130,600.00	
			CAPEX					
		Dam monitoring infrastructure	Simple monitoring gauges & logbooks	10	1	2000	20,000.00	Simple staff gauges, water level markers, logbooks and monitoring boards at dam sites
			SUBTOTAL				20,000.00	
			COMPENSATION					
			Allowances				-	
			TOTAL				150,600.00	
			GOODS AND SERVICES					
5	Protecting dam catchments by promoting vegetation cover		Local Travel Cost	100	4	200	80,000.00	
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for DCMC patrols, vegetation monitoring and drone survey operations
			Printed Materials & Stationery	100	9	30	27,000.00	CRVA reports, catchment management plans, training manuals and community monitoring registers
			Refreshments	100	3	80	24,000.00	Catering for catchment management workshops, DCMC meetings and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								community sensitization days
			Starter Toolkit Distribution	100	2	100	20,000.00	Seedling kits, tree guards, watering cans and planting tools for community restoration groups
			Radio Airtime (FM Stations)	4	6	500	12,000.00	FM radio spots on catchment protection, fire risks and dam water security
			Drone Service Provider Costs	2	4	10000	80,000.00	Drone aerial surveys for vegetation monitoring, boundary demarcation and encroachment detection
			SUBTOTAL				264,600.00	
			CAPEX					
		Nursery and Environmental Restoration Infrastructure	Community Nursery Sheds & Equipment	1	1	10000	10,000.00	
			Seedlings - 50,000 trees	50,000	1	5	250,000.00	50,000 native riparian and catchment tree species; fruit, timber and N-fixing varieties
			Planting Tools & Equipment	3	1	1000	3,000.00	Hoes, spades, digging bars and planting tools for youth restoration teams
			Watering Equipment for Youth Teams	1	1	5000	5,000.00	Watering cans and carrying equipment for youth teams maintaining newly planted seedlings
			SUBTOTAL				268,000.00	
			COMPENSATION					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			SUBTOTAL				532,600.00	
			TOTAL				532,600.00	
6	Dredging and desilting dams							
			GOODS AND SERVICES					
		Dam assessment, ESIA, contractor procurement, dredging works supervision, DCMC training	Local Travel Cost	100	1	300	30,000.00	Transport for technical supervisors, DCMC members and environmental monitors during works
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for pre-dredging surveys, progress monitoring and post-works inspections
			Printed Materials & Stationery	100	9	30	27,000.00	Technical survey reports, ESIA documents, works supervision checklists and DCMC registers
			Refreshments	100	3	80	24,000.00	Catering for technical consultations, community engagement meetings and DCMC training sessions
			Starter Toolkit Distribution	100	2	100	20,000.00	Community sensitization toolkits for pre-works consultations and safety awareness
			Environmental & Social Impact Assessment	5	1	20000	100,000.00	Environmental and social impact screening for dredging and desilting works at all dam sites
			SUBTOTAL				222,600.00	
			CAPEX					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		Dredging and dam rehabilitation works	Dredging & Desilting Works including bankment & Spillway Rehabilitation Works	5	1	1000000	5,000,000.00	Dredging, desilting, embankment reinforcement and spillway rehabilitation at priority dams
			Operation & Maintenance Equipment (Basic O&M toolkits per dam)	5	1	200000	1,000,000.00	Basic O&M toolkits including desilting shovels, wheelbarrows, measuring poles for DCMCs
			SUBTOTAL				6,000,000	
			COMPENSATION					
			TOTAL				6,222,600	
7	Expanding existing dams and constructing new dams/dugouts							
			GOODS AND SERVICES					
		Hydrological studies, dam design, ESIA, contractor procurement, construction supervision	Local Travel Cost	100	1	300	30,000.00	Transport for technical supervisors, community liaison officers and EPA monitoring staff
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for dam site surveys, geotechnical investigations and construction monitoring
			Printed Materials & Stationery	100	9	30	27,000.00	Engineering drawings, ESIA reports, supervision checklists and community consultation records
			Refreshments	100	3	80	24,000.00	Catering for community consultations, pre-

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								construction meetings and technical review sessions
			Starter Toolkit Distribution	100	2	100	20,000.00	Community engagement toolkits for pre-construction sensitization and safety awareness
			Environmental & Social Impact Assessment	5	1	20000	100,000.00	Environmental and social impact assessment for all new and expanded dam construction sites
			Engineering Consultant Fees	5	1	30,000	150,000.00	Hydrological surveys, structural designs, bills of quantities and supervision services
			SUBTOTAL				372,600	
			CAPEX					
		Dam construction and expansion works	New Dam/Dugout Construction Works (5 new dams - earthworks, structures, spillways)	5	1	1200000	6,000,000.00	Earthworks, compaction, core wall, spillway and outlet structures for 5 new dam sites
			Expansion Works on Existing Dams (5 expansions - deepening & embankment reinforcement)	5	1	800000	4,000,000.00	Deepening, embankment raising and spillway reinforcement for 5 existing dams
			Embankment Vegetation & Erosion Control (Vetiver grass & tree planting)	5	1	5000	25,000.00	Vetiver grass strips, riparian tree planting and erosion control works on dam embankments
			SUBTOTAL				10,025,000	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			COMPENSATION					
			Allowances				-	
			TOTAL				10,397,600	
8	Rainwater harvesting							
			GOODS AND SERVICES					
		RWH site assessment, household and institutional system design, installation, training, monitoring	Local Travel Cost	100	1	300	30,000.00	Transport for RWH technical officers, installation teams and community coordinators
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for site assessments, installation supervision and post-installation monitoring
			Printed Materials & Stationery	100	9	30	27,000.00	RWH technical manuals, household guides, maintenance schedules and water safety plans
			Refreshments	100	3	80	24,000.00	Catering for community consultations, installation training and O&M capacity-building sessions
			Technical Consultant Fees	1	1	30000	30,000.00	Technical design and bill of quantities preparation for institutional and community RWH systems
			Radio Airtime	4	4	500	8,000.00	FM radio spots on rainwater harvesting benefits, water safety and household maintenance
			SUBTOTAL				140,600.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Rainwater harvesting systems	Household Rooftop RWH Systems	5	1	300,000	1,500,000.00	Household rooftop RWH systems with gutters, first-flush diverters and storage tanks
			Institutional RWH Systems	10	1	300,000	3,000,000.00	Institutional RWH systems for schools and health facilities with large-volume storage tanks
			Community Surface Runoff Systems (Check dams/dugouts with catchment protection)	5	1	150000	750,000.00	Community check dams and dugouts with catchment protection and sediment management
			SUBTOTAL				5,250,000.00	
			COMPENSATION					
			Allowances				-	
			TOTAL				5,390,600	
Overall Total							23,694,000	

Health and Sanitation

General Objective: To reduce climate-related health and sanitation risks by strengthening healthcare facilities, outreach services, social protection, drainage, water-body protection and community waste-management systems.

Target Beneficiaries: Climate-vulnerable households, pregnant women, nursing mothers, children, older persons, persons with disabilities, remote communities, health workers and residents of poorly serviced settlements.

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Social safety nets and support networks							
			GOODS AND SERVICES					
		LEAP registration, VSLA formation, GPSNP2 linkage, CLIC establishment, digital finance training	Local Travel Cost	100	2	300	60,000	Transport for social protection officers, VSLA facilitators and safety net coordinators
			Fuel and Lubricant	120	12	15	21,600	Field transport for VSLA group monitoring, LEAP verification and CLIC support visits
			Printed Materials & Stationery	100	12	30	36,000	VSLA training manuals, LEAP registration forms, digital finance guides and social registers
			Refreshments	100	7	80	56,000	Catering for VSLA formation, LEAP community validation meetings and CLIC training sessions
			SUBTOTAL				173,600	
			CAPEX					
			Record Books, Lockboxes,	10	1	500	5,000	Record books, padlocked cash boxes, calculators

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		VSLA and CLIC management tools	Calculator & VSLA Materials					and VSLA management kits for groups
			Digital Devices for VSLA & CLIC Leaders	10	1	1000	10,000	Digital devices for VSLA group leaders and CLIC coordinators to manage financial records
			SUBTOTAL				15,000	
			COMPENSATION					
			Allowances				-	
			TOTAL				188,600	
2	Upgrading community health facilities and CHPS compounds							
			GOODS AND SERVICES					
		Facility assessment, climate-resilient construction, RWH installation, solar systems, CHPS upgrading	Local Travel Cost	100	2	300	60,000	Transport for health infrastructure team, facility committee members and technical supervisors
			Fuel and Lubricant	120	12	15	21,600	Field transport for facility condition assessments, construction monitoring and handover visits
			Printed Materials & Stationery	100	12	30	36,000	Technical drawings, construction supervision reports, facility committee training materials
			Refreshments	100	5	80	40,000	Catering for community consultations, facility committee meetings and construction reviews
			SUBTOTAL				157,600	
			CAPEX					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		Health facility construction and energy systems	Climate-Resilient Facility Upgrades with Toilets, Handwashing Stations & Wastewater	5	1	300000	1,500,000	Climate-resilient CHPS upgrades with improved toilets, handwashing stations and wastewater management
			Rainwater Harvesting Systems	5	1	300000	1,500,000	Institutional rooftop rainwater harvesting systems with storage tanks for 5 health facilities
			Solar PV & Battery Backup Systems (5 Facilities)	5	1	200000	1,000,000	Solar PV systems with battery backup for reliable power at 5 priority health facilities
			SUBTOTAL				4,000,000	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				4,157,600	
3	Community health programmes/ Health outreach programmes							
			GOODS AND SERVICES					
		CHAT formation, HeMAB model training, malaria/WASH outreach, nutrition screening,	Local Travel Cost	100	4	200	80,000.00	Transport for CHATs, health promotion officers and outreach team members to communities
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for health outreach visits, CHPS support visits and nutrition screening days

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		CHPS integration	Printed Materials & Stationery	100	24	30	72,000.00	Health promotion materials, CHATS training guides, WASH IEC materials and nutrition registers
			Refreshments	100	8	80	64,000.00	Catering for CHAT formation meetings, health outreach events and community health screenings
			Radio Airtime (FM Stations)	4	6	500	12,000.00	FM radio spots on malaria prevention, maternal health, WASH behaviors and nutrition
			SUBTOTAL				249,600.00	
			CAPEX					
		Community health information and screening equipment	Community Health Information Boards & Register Kits	12	1	2500	30,000.00	Community health information boards, mother and child health registers for CHPS integration
			MUAC & Nutrition Screening Equipment	12	1	1000	12,000.00	MUAC tapes, weighing scales and nutrition screening equipment for community health teams
			Heat Adaptation Kits for Maternal Health	200	1	2000	400,000.00	Heat stress relief kits, cooling materials and maternal health support for vulnerable women
			SUBTOTAL				442,000.00	
			COMPENSATION					
			Allowances				-	
			TOTAL				691,600	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
4	Mobile health clinics and outreach services							
			GOODS AND SERVICES					
		Mobile clinic vehicles, cold chain systems, outreach team deployment, telemedicine integration	Local Travel Cost	100	2	300	60,000.00	Transport for mobile health team coordination, vehicle maintenance and outreach scheduling
			Fuel and Lubricant	120	12	15	21,600.00	Fuel and operating costs for mobile clinic vehicles during community outreach visits
			Printed Materials & Stationery	100	12	30	36,000.00	Outreach schedules, patient registers, referral forms and mobile health IEC materials
			Refreshments	100	4	80	32,000.00	Catering for outreach team deployment, community health days and mobile clinic launch events
			Radio Airtime	4	2	500	4,000.00	FM radio spots on mobile clinic schedules, services offered and contact information
			SUBTOTAL				153,600.00	
			CAPEX					
		Mobile health clinic equipment	Medical Equipment & Diagnostic Kits (2 Teams)	2	1	30000	60,000.00	Diagnostic kits, stethoscopes, BP monitors and basic medical equipment for 2 mobile teams
			Solar Vaccine Cold Chain at Mobile Hubs	1	1	10000	10,000.00	Solar vaccine cold chain units for mobile hubs to

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								maintain vaccine potency during outreach
			Telemedicine Devices & Connectivity Equipment	10	1	30000	300,000.00	Telemedicine tablets, connectivity devices and remote consultation equipment for mobile teams
			SUBTOTAL				370,000.00	
			COMPENSATION					
			Allowances				-	
			TOTAL				523600	
5	Construction of improved community waste management	CWMC formation, waste bin installation, public toilet construction, composting, ODF promotion						
			GOODS AND SERVICES					
			Local Travel Cost	100	1	300	30,000.00	Transport for environmental health officers, CWMC facilitators and sanitation coordinators
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for waste site inspections, sanitation monitoring and CWMC support visits
			Printed Materials & Stationery	100	9	30	27,000.00	CWMC training guides, sanitation by-laws, composting manuals and ODF verification materials
			Refreshments	100	3	80	24,000.00	Catering for CWMC formation, waste management training and ODF community events
			Radio Airtime	4	2	500	4,000.00	FM radio spots on waste management obligations,

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								ODF campaign and composting benefits
			SUBTOTAL				106,600.00	
			CAPEX					
		Waste management and sanitation infrastructure	Durable Covered Waste Bins, Platforms & Drainage	1	1	20000	20,000.00	Durable covered communal waste bins with concrete platforms and drainage at 20 communities
			Public Toilets with Water Supply & Handwashing	1	1	300000	300,000.00	Public toilet and handwashing facilities with water supply connection at priority communities
			Composting Infrastructure	1	1	200000	200,000.00	Community composting bays, shredders and organic waste processing infrastructure
			Waste Collection Tools & PPE for CWMCs (20 Communities)	1	1	20000	20,000.00	PPE, shovels, rakes, wheelbarrows and collection tools for 20 community waste management committees
			SUBTOTAL				540,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				646,600	
Overall Total							6,208,000	

Gender-Targeted Adaptation

General Objective: To strengthen women's adaptive capacity, economic empowerment, access to productive resources and meaningful participation in climate planning, implementation, governance and monitoring.

Target Beneficiaries: Women farmers, women entrepreneurs and processors, female-headed households, young women, women with disabilities, women's cooperatives and economically vulnerable women.

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Women-led reforestation initiatives							
			GOODS AND SERVICES					
		Women's group nursery establishment, tree planting, beekeeping, fire management, income diversification	Local Travel Cost	100	2	300	60,000.00	Transport for gender officers, women's group coordinators and forestry extension officers
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for nursery monitoring, women's planting progress and survival rate surveys
			Printed Materials & Stationery	100	13	30	39,000.00	Training manuals, planting guides, income diversification booklets and gender monitoring sheets
			Refreshments	100	7	80	56,000.00	Catering for women's group formation, nursery training and community greening day events
			Radio Airtime (FM Stations)	4	3	500	6,000.00	FM radio spots on women-led reforestation, beekeeping benefits and climate resilience
			SUBTOTAL				182,600.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Women's group nursery and livelihood infrastructure	Community Tree Nurseries Infrastructure	1	1	10000	10,000.00	Shade nets, watering systems and nursery structures for women's tree nurseries
			Planting Tools & Equipment for Women's Groups	1	1	3000	3,000.00	Planting tools, watering equipment and protective gear specifically for women's planting groups
			Tree Seedlings	50,000	1	5	250,000.00	Climate-resilient tree seedlings for women's reforestation and agroforestry plots
			Community Apiaries – Beekeeping Infrastructure	2	1	5000	10,000.00	Community apiaries, beehives and honey processing equipment for women's income groups
			Fire Belt Materials & Equipment	2	1	1000	2,000.00	Fire belt clearing tools, protective gear and safety equipment for women's fire brigades
			SUBTOTAL				275,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				457,600.00	
2	Gender-sensitive training							
			GOODS AND SERVICES					
		Gender-transformative	Local Travel Cost	100	2	200	40,000.00	Transport for gender trainers, women leaders and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		skills training, women's leadership development, economic empowerment						economic empowerment facilitators
			Fuel and Lubricant	100	5	15	7,500.00	Field transport for post-training monitoring and women's group follow-up support visits
			Printed Materials & Stationery	100	11	25	27,500.00	Gender training manuals, women's leadership guides and economic empowerment workbooks
			Refreshments	100	11	80	88,000.00	Catering for gender-transformative training workshops, leadership courses and review sessions
			Radio Airtime (FM Stations)	4	4	500.00	8,000.00	FM radio spots on gender-responsive skills, women's economic rights and leadership
			SUBTOTAL				171,000.00	
			CAPEX					
			SUBTOTAL					
			Allowances					
			Subtotal					
			TOTAL				171,000.00	
3	Subsidised irrigation kits							
			GOODS AND SERVICES					
		Women farmer irrigation needs assessment, kit	Local Travel Cost	100	4	200	80,000.00	Transport for irrigation officers, women's group coordinators and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		procurement, training, demonstration, monitoring						demonstration plot managers
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for irrigation kit delivery, installation support and monitoring visits
			Printed Materials & Stationery	100	11	30	33,000.00	Irrigation training manuals, water management guides and demonstration plot records for women
			Refreshments	100	7	80	56,000.00	Catering for irrigation kit distribution, drip system training and water user group meetings
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on subsidized irrigation kits, application procedures and dry-season farming
			SUBTOTAL				198,600.00	
			CAPEX					
		Irrigation kits and dam infrastructure	Irrigation Kits	100	1	3500	350,000.00	Subsidized drip irrigation kits, treadle pumps and gravity systems for women farmers
			Minor Dam/Dugout Repairs & Pump Installation	5	1	50000	250,000.00	Minor repairs, desilting and pump installation at dugouts serving women's irrigation schemes
			SUBTOTAL				600,000.00	
			COMPENSATION					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				798,600.00	
4	Gender sensitive governance:							
			GOODS AND SERVICES					
		Gender-responsive planning workshops, women's participation in assemblies, by-law review	Local Travel Cost	100	2	300	60,000.00	Transport for gender officers, women representatives and district planning officers
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for community governance monitoring, women's assembly participation tracking
			Printed Materials & Stationery	100	20	30	60,000.00	Gender-responsive planning guides, women's rights IEC materials and governance checklists
			Refreshments	100	7	80	56,000.00	Catering for gender-responsive planning workshops, women's assembly training and by-law review
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on women's rights in governance, land tenure and climate decision-making
			SUBTOTAL				205,600.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Gender governance management systems	Gender Information Management System	1	1	15000	15,000.00	Gender information management system for tracking women's participation in governance
			Signage & Information Boards	1	1	1000	1,000.00	Information boards displaying gender targets, women's representation data and by-law notices
			SUBTOTAL				16,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				221,600.00	
5	Agro-processing equipment and facilities							
			GOODS AND SERVICES					
		Women-focused agro-processing centre construction, equipment installation, training, management	Local Travel Cost	100	4	200	80,000.00	Transport for technical staff, women's processing cooperative members and equipment installers
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for facility construction monitoring, equipment commissioning and handover visits
			Printed Materials & Stationery	100	17	30	51,000.00	Technical drawings, equipment manuals, food safety guides and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								cooperative management training
			Refreshments	100	6	80	48,000.00	Catering for community consultations, women's processing cooperative formation and training
			SUBTOTAL				200,600.00	
			CAPEX					
		Women's agro-processing facility and equipment	Construction/Rehabilitation of 1 Agro-Processing Centers	1	1	500000	500,000.00	Construction/ rehabilitation of 1 women-focused agro-processing centre with storage and sanitation
			Processing Equipment	1	1	100000	100,000.00	Processing machines including cassava graters, palm nut crackers, groundnut shellers and dryers
			Packaging Equipment	1	1	80000	80,000.00	Packaging machines, weighing scales and sealing equipment for processed food products
			Solar Power Systems – 10 Centers	1	1	200000	200,000.00	Solar power systems for 10 community-based processing centres for women cooperatives
			Food Safety & Quality Testing Equipment	1	1	5000	5,000.00	Food safety testing equipment, quality control kits and certification support for cooperatives
			SUBTOTAL				885,000.00	
			COMPENSATION					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				1,085,600	
6	Developing gender-responsive monitoring							
			GOODS AND SERVICES					
		Gender-disaggregated data collection, M&E framework development, reporting, documentation	Local Travel Cost	100	4	200	80,000.00	Transport for M&E officers, gender data collectors and district reporting teams
			Fuel and Lubricant	120	12	15	21,600.00	Field transport for gender data collection visits and community-level verification surveys
			Printed Materials & Stationery	100	11	30	33,000.00	M&E frameworks, gender data forms, reporting templates and documentation guides
			Refreshments	100	7	80	56,000.00	Catering for M&E workshops, gender data review meetings and reporting validation sessions
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots sharing gender M&E findings with communities and stakeholders
			Consultancy & Documentation Costs	1	1	30000	30,000.00	Consultancy for gender-responsive M&E framework design and data management system setup
			SUBTOTAL				228,600.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Gender M&E digital systems	Digital Data Collection Devices - Tablets/ Smartphones	10	1	1000	10,000.00	Tablets and smartphones for gender-disaggregated data collection in the field
			Community Data Repository Boards	1	1	1000	1,000.00	Community data repository boards displaying gender-disaggregated project outcomes
			District Gender Data Management Software	1	1	15000	15,000.00	District-level software for managing, analysing and reporting gender-disaggregated data
			SUBTOTAL				26,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				254,600	
Overall Total							2,989,000	

Disaster Risk Reduction

General Objective: To reduce exposure and vulnerability to floods, bushfires and other climate-related hazards through preparedness, early warning, resilient infrastructure, institutional capacity and community-based risk management.

Target Beneficiaries: Hazard-prone communities, households in flood- and bushfire-risk areas, farmers, traders, emergency responders, women, children, older persons, persons with disabilities and users of vulnerable infrastructure.

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
1	Community-led fire management and bushfire control							
			GOODS AND SERVICES					
		Fire brigade formation, fire belt establishment, early burning, inter-community fire coordination	Local Travel Cost	100	2	300	60,000.00	Transport for fire management officers, community brigade leaders and drill coordinators
			Fuel and Lubricant	50	12	15	9,000.00	Field transport for firebreak inspection, early burning verification and post-fire assessment
			Printed Materials & Stationery	100	18	30	54,000.00	Fire management manuals, early burning calendars, drill SOPs and brigade patrol registers
			Refreshments	100	2	80	16,000.00	Catering for fire brigade formation, community fire management training and annual drills
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on fire prevention, early burning dates and emergency contact numbers
			SUBTOTAL				147,000.00	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Fire management equipment	Firefighting Equipment	1	1	5000	5,000.00	Fire beaters, knapsack sprayers, machetes, protective gear and first aid kits for fire brigades
			Community Alert Systems (Drums/Bells, Megaphones)	1	1	1500	1,500.00	Community drums, bells and megaphones for early fire warning and inter-village communication
			SUBTOTAL				6,500.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				153,500.00	
2	Capacity building to assess risks, plan, coordinate and sustain DRR actions							
			GOODS AND SERVICES					
		NADMO staff training, district DRR capacity development, training centre establishment, partnerships	Local Travel Cost	100	12	200	240,000.00	Transport for training coordinators, NADMO staff and district DRR capacity building officers
			Fuel and Lubricant	100	10	15	15,000.00	Field transport for training delivery visits, participant monitoring and post-training assessment
			Printed Materials & Stationery	100	20	30	60,000.00	DRR training materials, NADMO module guides, capacity assessment tools and training registers

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			Refreshments	100	11	80	88,000.00	Catering for DRR training workshops, capacity building seminars and review sessions
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots sharing DRR training outcomes, community achievements and opportunities
			SUBTOTAL				411,000.00	
			CAPEX					
		District DRR training infrastructure	District DRR Training Resource Center	1	1	250,000	250,000.00	
			SUBTOTAL				250,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				661,000.00	
3	Early warning systems							
			GOODS AND SERVICES					
		Community EWS installation, volunteer training, flood drills, rainfall	Local Travel Cost	100	2	300	60,000.00	Transport for EWS technical officers, community volunteers and NADMO liaison staff
			Fuel and Lubricant	50	12	15	9,000.00	Field transport for EWS equipment installation,

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		monitoring, alert protocols						volunteer training and system testing visits
			Printed Materials & Stationery	100	17	30	51,000.00	EWS training manuals, alert protocol guides, community drill SOPs and monitoring logbooks
			Refreshments	100	3	80	24,000.00	Catering for EWS volunteer training, community flood drill events and quarterly review meetings
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on flood warning signs, EWS protocols and community evacuation procedures
			SUBTOTAL				152,000.00	
			CAPEX					
		Early warning system equipment	Community-Based Warning Equipment	1	1	5000	5,000.00	Community-based warning equipment including sirens, drums, bells and megaphones
			Rain Gauges & River Level Markers	1	1	3000	3,000.00	Rain gauges, staff gauges and river level markers at flood monitoring stations
			Notice Boards & Community Information Center	1	1	3000	3,000.00	Community information and notice boards displaying flood risk maps and evacuation routes
			SUBTOTAL				11,000.00	
			COMPENSATION					
			Allowances				-	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			SUBTOTAL				-	
			TOTAL				163,000	
4	Community dialogues and conflict mediation							
			GOODS AND SERVICES					
		Community peace dialogues, conflict mapping, mediation training, grievance mechanisms, reconciliation	Local Travel Cost	100	2	200	40,000.00	Transport for NADMO officers, traditional authorities and community dialogue facilitators
			Fuel and Lubricant	50	5	15	3,750.00	Field transport for conflict mediation visits, community dialogue monitoring and follow-up
			Printed Materials & Stationery	100	12	30	36,000.00	Conflict mediation guides, dialogue facilitation tools, grievance forms and community registers
			Refreshments	100	4	80	32,000.00	Catering for community peace dialogues, mediation training workshops and reconciliation events
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on community conflict prevention, dialogue outcomes and peace building
			SUBTOTAL				119,750	
			CAPEX					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		Conflict resolution documentation systems	Grievance Recording Systems, Boxes & Community Boards	1	1	500	500.00	Grievance recording boxes, community dialogue boards and conflict tracking registers
			SUBTOTAL				500.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				120,250	
5	Upgrading bridges and culverts							
			GOODS AND SERVICES					
		Bridge/culvert assessment, community mapping, engineering surveys, contractor procurement, construction	Local Travel Cost	100	3	200	60,000.00	Transport for Works Department officers, CIMCs, Feeder Roads and GHA technical staff
			Fuel and Lubricant	50	12	15	9,000.00	Fuel for supervision vehicles during Phase 1 and Phase 2 construction works
			Printed Materials & Stationery	100	20	30	60,000.00	Engineering drawings, ESIA reports, supervision checklists and CIMC training materials
			Refreshments	100	3	80	24,000.00	Catering for stakeholder consultations, community mapping exercises and CIMC training
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on bridge/culvert construction progress and

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								community access improvements
			Consultancy Services	1	1	30000	30,000.00	Engineering survey and design consultancy for priority bridges, culverts and erosion protection
			SUBTOTAL				191,000	
			CAPEX					
		Bridge and culvert construction works	Reinforced Concrete / Steel Bridge Construction	1	1	500,000	500,000.00	Reinforced concrete and steel bridge superstructures, abutments, piers and approach roads
			Box Culverts / Multi-Cell Culverts	1	1	250,000	250,000.00	Box culverts and multi-cell culverts sized for climate-scenario flood flows with scour protection
			Gabions, Rip-Rap & Concrete Aprons	1	1	200000	200,000.00	Gabions, rip-rap and concrete aprons at inlets, outlets and scour-critical bridge abutments
			Scour Repair, Crack Repair & Approach Road Maintenance Materials	1	1	100,000	100,000.00	Post-flood scour repair, crack repair and approach road maintenance materials
			Shovels, Rakes, Wheelbarrows, Torches & Protective Gear	1	1	5000	5,000.00	Shovels, rakes, wheelbarrows, torches and protective gear for 10 CIMC maintenance teams
			SUBTOTAL				1,055,000	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				1,246,000	
6	Disaster preparedness training, evacuation plans and collaboration							
			GOODS AND SERVICES					
		NADMO training, community disaster preparedness plans, evacuation drills, first aid, search and rescue	Local Travel Cost	100	4	300	120,000.00	Transport for NADMO officers, community disaster volunteers and drill facilitators
			Fuel and Lubricant	50	5	15	3,750.00	Field transport for preparedness training visits, drill monitoring and post-drill assessment
			Printed Materials & Stationery	100	15	30	45,000.00	Disaster preparedness guides, community risk maps, evacuation plans and first aid manuals
			Refreshments	100	4	80	32,000.00	Catering for NADMO training workshops, community disaster preparedness days and drills
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on disaster preparedness, evacuation procedures and emergency contacts
			SUBTOTAL				208,750	
			CAPEX					

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
		Disaster preparedness and rescue equipment	First Aid Kits, Search & Rescue Equipment (Ropes, Stretchers, Cutting Tools)	1	1	25000	25,000.00	
			SUBTOTAL				25,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				233,750	
7	Creating flood barriers and embankments							
			GOODS AND SERVICES					
		Flood barrier site assessment, community consultations, contractor procurement, construction supervision	Local Travel Cost	100	5	200	100,000.00	Transport for engineers, community liaison officers and construction monitoring teams
			Fuel and Lubricant	50	12	15	9,000.00	Field transport for site surveys, construction progress monitoring and post-flood inspections
			Printed Materials & Stationery	100	20	30	60,000.00	Engineering drawings, construction supervision checklists and CDMC training materials
			Refreshments	100	5	80	40,000.00	Catering for community consultations, CDMC formation and pre-construction engagement meetings
			SUBTOTAL				209,000	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			CAPEX					
		Flood barrier and embankment construction	Flood Barrier Construction	1	1	300000	300,000.00	Earthworks, gabion barriers, concrete embankment walls and flood diversion structures
			Community Maintenance Tools	1	1	3000	3,000.00	Shovels, rakes, wheelbarrows and maintenance tools for community embankment maintenance teams
			SUBTOTAL				303,000.00	
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				512,000	
8	Improved drainage channels in communities							
			GOODS AND SERVICES					
		Drainage mapping, community consultations, channel design, contractor procurement, supervision	Local Travel Cost	60	5	200	60,000.00	Transport for drainage engineers, CDMCs and environmental health officers
			Fuel and Lubricant	50	12	15	9,000.00	Field transport for drainage surveys, construction monitoring and post-works assessments
			Printed Materials & Stationery	100	20	30	60,000.00	Drainage design reports, community consultation records and CDMC

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
								maintenance training guides
			Refreshments	80	5	80	32,000.00	Catering for drainage design consultations, CDMC training sessions and community engagement
			Radio Airtime (FM Stations)	4	4	500	8,000.00	FM radio spots on drainage channel benefits, maintenance obligations and flood prevention
			Consultancy Services	1	1	30000	30,000.00	Engineering design services for drainage channel network and storm water management systems
			SUBTOTAL				199,000	
			CAPEX					
			Drainage Channel Construction	1	1	500,000	500,000.00	Open and closed drainage channels with concrete lining at priority flood-prone communities
			Community Maintenance Tools	1	1	5000	5,000.00	Shovels, rakes, desilting tools and wheelbarrows for community drainage maintenance teams
			Communal Waste Bins for Drainage Protection	1	1	10,000	10,000.00	Communal waste bins at drainage inlets to prevent blockage and reduce solid waste overflow
			SUBTOTAL				515,000	

SN	Adaptation Action	Action Description/ Activity	ITEM DESCRIPTION	QTY	FREQUENCY	RATE (¢)	AMOUNT (GH¢)	REMARKS
			COMPENSATION					
			Allowances				-	
			SUBTOTAL				-	
			TOTAL				714,000	
Overall Total							3,803,500	