SIGRA

Strengthening Investments in Gender-Responsive Climate Adaptation

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A guide for Metropolitan, Municipal , and District Assemblies (MMDAs)

Toolkit for Integrating Climate Change into Mid-Term Development Planning in Ghana

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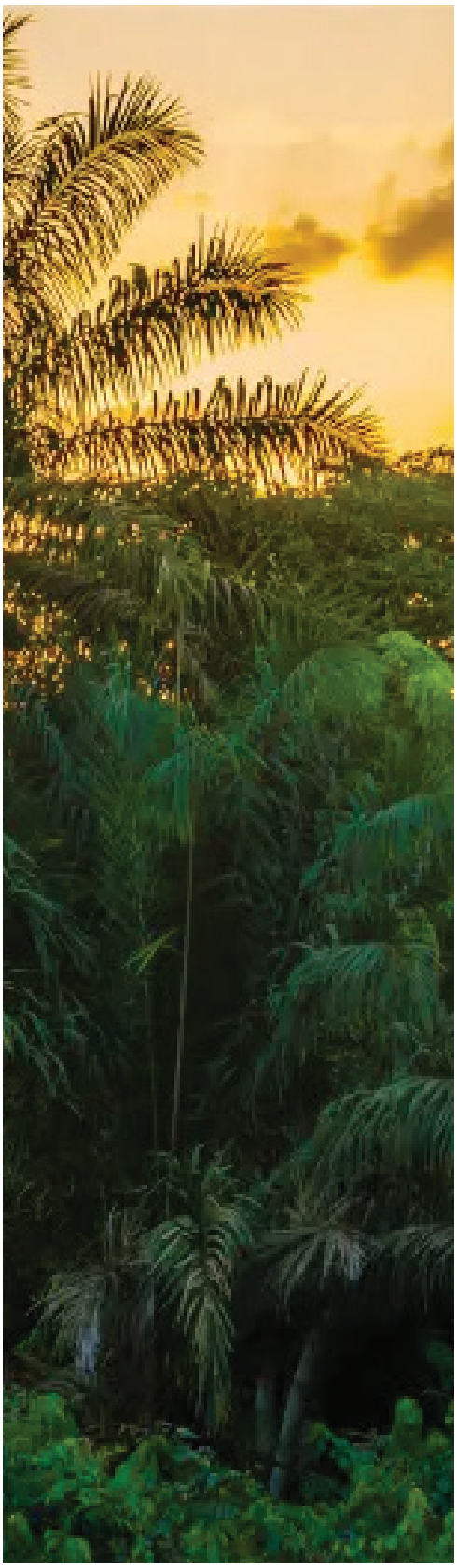
In partnership with Canada

STRENGTHENING CLIMATE ADAPTATION **THROUGH GOVERNANCE AND INCLUSIVE PLANNING**



Ghana's National Adaptation Plan (NAP) provides a strategic framework for enhancing climate resilience, particularly at the district level, where climate adaptation actions have the most direct impact. To support NAP's objectives, the Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project commissioned Climate Change Risk and Vulnerability Assessments in its five partner Districts — Mion, Nanumba South and Kumbungu (all in semi-arid Northern Ghana), Akatsi North and Anloga (in the Volta region) — to generate critical data for evidence-based planning and decision-making.

The SIGRA Project (2023-2028), funded by Global Affairs Canada and implemented by Cowater International, is designed to strengthen climate governance and inclusive adaptation investments in Ghana. At the heart of its mission is the goal of enhancing resilience for Ghanaian citizens—particularly women, girls, and vulnerable groups — by increasing investments in gender-responsive climate adaptation initiatives. SIGRA provides technical assistance to strengthen governance and national systems, working with central Ministries, Departments, and Agencies (MDAs), Regional Coordinating Councils (RCCs) in the Northern and Volta Regions, and targeted Metropolitan, Municipal, and District Assemblies (MMDAs). Through direct grant funding, the project supports local climate adaptation projects that incorporate gender considerations, promote inclusive decision-making, and enhance community resilience.

In recognition of the critical role of MMDAs in implementing climate adaptation at the local level, SIGRA is actively strengthening district level planning, implementation, and reporting capacities. The project also empowers women-led Civil Society Organizations (CSOs) to have a greater voice in climate-related decision-making, ensuring that marginalized and underrepresented groups actively shape adaptation policies and programs.

This Toolkit for Integrating Climate Change Adaptation into MTDPs is a practical resource for MMDAs to operationalize climate adaptation in their planning and budgeting processes. The Climate Change Risk and Vulnerability Assessments conducted under SIGRA provide critical data that will guide MMDAs in identifying key climate risks, prioritizing adaptation actions, and mainstreaming gender-responsive approaches in their Medium-Term Development Plans.

This toolkit aims to equip District Assemblies with structured guidelines, sectoral adaptation strategies, financial planning tools, and monitoring frameworks to ensure that local adaptation efforts are data-driven, well-coordinated, and inclusive.

WELCOME TO

THE TOOLKIT FOR INTEGRATING CLIMATE CHANGE ADAPTATION INTO THE MEDIUM-TERM DEVELOPMENT PLANS (MTDPS) OF DISTRICTS IN GHANA

INTRODUCTION

Climate change is no longer a distant threat it is a present reality that is reshaping economies, livelihoods, and ecosystems across Ghana. Metropolitan, Municipal, and District Assemblies (MMDAs) are at the frontline of responding to these challenges, making climate resilience a fundamental component of local development planning.

This Toolkit for Integrating Climate Change Adaptation into MTDPs has been designed to provide practical guidance, structured frameworks, and actionable strategies for MMDAs to mainstream climate adaptation into their 2026–2029 Medium-Term Development Plans (MTDPs). The integration of climate resilience at the district level ensures that development efforts anticipate climate risks, safeguard vulnerable communities, and foster long-term economic and environmental sustainability.

WHY THIS TOOLKIT?

Many MMDAs recognize the urgency of climate action but often lack structured approaches to effectively integrate adaptation measures into development plans. This toolkit:

- Provides a step-by-step process for embedding climate adaptation in district planning.
- Ensures alignment with national and international climate policies, including Ghana's National Adaptation Plan (NAP, 2018), National Climate Change Policy (NCCP, 2013), Nationally Determined Contributions (NDC, 2021), and National Climate Change Adaptation Strategy (NCCAS, 2012).
- Offers practical tools, templates, and checklists to help MMDAs assess climate risks, integrate sectoral adaptation actions, mobilize financial resources, and track progress.
- Supports data-driven, gender-inclusive, and community-focused adaptation planning.

WHO IS THIS TOOLKIT FOR?

This toolkit is specifically developed for MMDAs and intended to assist:

- District Planners & Development Officers in designing climate-resilient development policies.
- Sectoral Departments (Agriculture, Water, Infrastructure, Disaster Management, etc.) in implementing targeted adaptation strategies.
- MMDA Finance & Budget Officers in identifying funding opportunities and integrating climate finance into local budgets.

Community Leaders & Civil Society Organizations in ensuring inclusive and participatory adaptation efforts.

WHAT YOU WILL FIND IN THIS TOOLKIT

This toolkit is structured into eight key sections, each addressing a critical component of climate adaptation planning within MTDPs:

- Contextual Alignment – Ensures MTDPs align with national and international climate adaptation frameworks.
- Climate Risk & Vulnerability Assessment – Integrates findings from district-specific formal and informal Climate Risk and Vulnerability Assessments.
- Sectoral Integration & Climate-Resilient Actions – Identifies priority sectors and adaptation actions.
- Gender and Social Inclusion – Embeds gender-responsive and socially inclusive strategies into adaptation efforts.
- Monitoring & Evaluation (M&E) Framework – Establishes climate adaptation indicators for tracking progress.
- Capacity Development & Knowledge Sharing – Strengthens technical expertise and institutional capacity for climate adaptation.
- Financial Planning & Resource Mobilization – Identifies funding opportunities from domestic and international climate finance sources.
- Practical Toolkit Template for MTDP Integration – Provides a structured format for embedding climate adaptation into MTDPs.

WHY THIS TOOLKIT IS IMPORTANT

Climate change is no longer a future challenge — it is an immediate reality. Across Ghana, communities are already experiencing floods, droughts, rising temperatures, and unpredictable rainfall patterns that threaten agriculture, water supply, infrastructure, and public health.

MMDAs are key actors in addressing these challenges, yet many local governments struggle to integrate climate adaptation into district planning, budgeting, and decision-making. This toolkit provides practical solutions by:

- Aligning climate adaptation with Ghana's national and international climate policies.
- Offering a step-by-step framework for integrating climate adaptation into MTDPs.
- Providing tools, templates, and checklists to guide MMDAs through the adaptation process.
- Financial Planning & Resource Mobilization – Identifies funding opportunities from domestic and international climate finance sources.
- Practical Toolkit Template for MTDP Integration – Provides a structured format for embedding climate adaptation into MTDPs.

The adoption of this toolkit allows MMDAs to ensure that development projects are climate-smart, resilient, and sustainable.

WHO SHOULD USE THIS TOOLKIT?

This toolkit is intended to serve a wide range of stakeholders involved in the planning, financing, and implementation of climate adaptation at the local level. The table below outlines the primary user groups and describes how each can engage with and benefit from the toolkit's content to enhance climate-resilient development planning in Ghana.

User Group	How They Benefit from This Toolkit
District Planners & Development Officers	Gain structured guidance on embedding climate adaptation into MTDPs.
MMDA Budget & Finance Officers	Learn how to allocate funding for adaptation and mobilize climate finance.
Sectoral Departments (Agriculture, Water, Infrastructure, Disaster Management, etc.)	Access sector-specific adaptation strategies and implementation tools.
Community Leaders & Civil Society Organizations (CSOs)	Ensure participatory planning and social inclusion in climate adaptation efforts.
Private Sector & Development Partners	Identify investment opportunities in climate-resilient development.

Table 1: *How Different Stakeholders Can Use and Benefit from the Toolkit*

HOW THIS TOOLKIT IS STRUCTURED

The toolkit is structured around eight interlinked sections that guide MMDAs through the full adaptation planning cycle—from aligning with national frameworks to financing and implementation. The table below summarizes each section's focus, providing users with a clear roadmap for navigating the toolkit and applying it within their Medium-Term Development Plans (MTDPs).

No	Section	Key Focus
1	Contextual Alignment	Aligns district MTDPs with Ghana's national and international climate adaptation frameworks.
2	Climate Risk & Vulnerability Assessment	Guides MMDAs on how to use Climate Risks and Vulnerability Assessments to inform planning.
3	Sectoral Integration & Climate-Resilient	Actions Provides sector-specific adaptation measures (e.g., agriculture, infrastructure, water).
4	Gender and Social Inclusion	Ensures climate adaptation planning is inclusive of women, youth, and vulnerable groups.
5	Monitoring & Evaluation Framework	Introduces climate adaptation indicators to track progress and impact.
6	Capacity Development & Knowledge Sharing	Strengthens technical skills and institutional capacity for adaptation planning.
7	Financial Planning & Resource Mobilization	Identifies domestic and international funding sources for adaptation initiatives.
8	Practical Toolkit Template for MTDP Integration	Provides structured templates and checklists to help MMDAs integrate adaptation into their development plans.

Table 2: *How the Toolkit Guides MMDAs Through Key Adaptation Planning Steps*

KEY CONCEPTS FOR INTEGRATING CLIMATE CHANGE ADAPTATION INTO PROJECTS

The integration of climate change adaptation into development projects demands a solid understanding of key concepts related to climate risk, resilience, and sustainability. This section offers essential definitions and principles to guide MMDAs in embedding climate adaptation into their Medium-Term Development Plans (MTDPs).
The application of these concepts enables MMDAs to develop climate-smart projects, strengthen resilience, and ensure long-term sustainability in local development planning.

KEY CONCEPTS IN CLIMATE CHANGE ADAPTATION

1. Climate Change Adaptation

Definition: Adaptation refers to adjustments in natural or human systems in response to actual or expected climate impacts, aimed at reducing vulnerability and enhancing resilience.

Why It Matters: MMDAs must anticipate climate risks and implement proactive strategies to safeguard local development projects from climate shocks.

Example:
- Constructing flood-resistant roads to withstand increased rainfall events.
- Promoting drought-tolerant crops to ensure food security.

2. Climate Resilience

Definition: Climate resilience is the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

Why It Matters: Resilient communities can withstand extreme weather events and sustain long-term economic growth.

Example:
- Developing early warning systems for floods and droughts.
- Establishing community-based adaptation programs to strengthen local preparedness.

3. Vulnerability to Climate Change

Definition: Vulnerability refers to the degree to which a system or population is susceptible to and unable to cope with adverse climate impacts.

Why It Matters: Understanding vulnerability helps MMDAs prioritize adaptation investments in high-risk communities.

Example:
- Coastal communities facing sea-level rise and erosion in coastal Ghana require urgent shoreline protection measures.
- Farmers in drought-prone districts in northern Ghana need targeted water management strategies.

4. Climate Risk Assessment

Definition: A systematic process of identifying, analyzing, and evaluating potential climate hazards that may impact people, ecosystems, and infrastructure.

Why It Matters: Climate risk assessments provide scientific data and local knowledge to inform decision-making and project design.

Example:
- Conducting Climate Risk and Vulnerability Assessments to map high-risk areas for floods, extreme heat, and droughts.
- Using GIS mapping to identify vulnerable road networks and settlements.

5. Ecosystem-Based Adaptation (EbA)

Definition: The use of biodiversity and ecosystem services to help people adapt to climate change.

Why It Matters: EbA provides cost-effective, nature-based solutions that also improve biodiversity conservation and livelihood sustainability.

Example:
- Restoring mangroves to protect coastal areas from storm surges.
- Wetland conservation to improve flood regulation and water quality.

6. Disaster Risk Reduction (DRR) and Climate Adaptation

Definition: DRR focuses on minimizing vulnerabilities and disaster risks through proactive measures, often overlapping with climate adaptation strategies.

Why It Matters: The integration of DRR and adaptation minimizes disaster losses and ensures the long-term sustainability of development projects.

Example:
- Constructing climate-resilient infrastructure (e.g., elevated bridges in flood-prone areas).
- Developing community evacuation plans for extreme weather events.

1. *https://www.ipcc.ch/report/ar6/wg2*
2. *IPCC. (2014). **Climate change 2014:** Impacts, adaptation, and vulnerability. **Part A:** Global and sectoral aspects. Contribution of Working Group II to the Fifth Assessment Report of the IPCC (Field, C. B., et al., Eds.). Cambridge University Press.*

7. Climate-Smart Infrastructure

Definition: Any kind of infrastructure that is designed, built, and maintained to withstand climate impacts while reducing greenhouse gas emissions.

Why It Matters: MMDAs must ensure infrastructure investments are climate-proofed to avoid costly repairs and failures due to extreme weather.

Example:
- Roads designed with permeable surfaces to reduce urban flooding.
- Solar-powered water pumps to enhance energy efficiency in irrigation.

8. Gender Equity and Social Inclusion in Climate Adaptation

Definition: Ensuring that climate adaptation strategies are inclusive and address the needs of women, youth, the elderly, differently abled people, migrants, pregnant women and marginalized communities.

Why It Matters: Climate change impacts differently affect social groups, and adaptation strategies must be fair and equitable.

Example:
- Establishing women-led cooperatives for climate-smart agriculture.
- Ensuring early warning systems are accessible for persons with disabilities.
- Provide financial support to youth-led climate-related and sustainability businesses.

9. Climate Finance and Resource Mobilization

Definition: Climate finance refers to funding for climate change mitigation and adaptation from public, private, and international sources.

Why It Matters: MMDAs must identify funding opportunities and mobilize resources to support adaptation projects.

Example:
- Accessing the Green Climate Fund (GCF) for large-scale adaptation projects.
- Partnering with private sector companies for climate-smart infrastructure investments

10. Monitoring, Evaluation, and Learning (MEL) for Climate Adaptation

Definition: A system for tracking adaptation progress, assessing effectiveness, and adjusting strategies based on lessons learned.

Why It Matters: MEL ensures continuous improvement in adaptation planning and project implementation.

Example:
- Using climate adaptation scorecards to track project impact.
- Conducting annual climate risk assessments to refine adaptation measures.

APPLYING THESE CONCEPTS IN MTDPS

MMDAs should apply these key concepts in the following ways:

- ***Risk-Based Planning*** - Use climate risk assessments to prioritize adaptation interventions.
- ***Nature-Based Solutions*** - Integrate ecosystem-based adaptation into district projects.
- ***Inclusive Decision-Making*** - Ensure marginalized groups participate in climate adaptation planning.
- ***Climate-Resilient Investments*** - Allocate budget for climate-proof infrastructure.
- ***Results-Oriented M&E*** - Regularly track adaptation progress using climate indicators.

The embedding of these key climate concepts into their planning processes enables MMDAs to ensure effective, evidence-based, and sustainable climate adaptation strategies.

Locally crafted solar dryer efficiently preserves harvested peppers, showcasing community-driven innovation for food processing. **Photo by: Boafo, YA (2024)**

SECTION 1

Context and Framework Alignment

1.1 INTRODUCTION

Climate change is no longer a distant threat—it is a full-blown crisis that is already reshaping Ghana's development landscape. As a tropical nation whose economy and livelihoods are intricately tied to climate-sensitive sectors such as agriculture, water, fisheries, and natural resources, Ghana faces an acute level of vulnerability. Rising temperatures, unpredictable rainfall, prolonged droughts, devastating floods, coastal erosion, and sea-level rise are no longer future risks—they are present realities, threatening lives, ecosystems, and economic stability.

Recognizing this, the Government of Ghana has taken decisive steps by establishing comprehensive national frameworks and policies to guide climate adaptation and resilience-building across all sectors and levels of governance. Now, more than ever, it is imperative that Metropolitan, Municipal and District Assemblies (MMDAs) align their Medium-Term Development Plans (MTDPs) with national policies and climate objectives—ensuring that Ghana's development gains are not only protected, but are transformed to thrive in a changing climate.

Moreover, climate adaptation planning at the district level must integrate scientific research, indigenous knowledge, and evidence-based approaches to ensure inclusivity and effectiveness. MMDAs must also leverage available climate finance mechanisms to sustain long-term adaptation efforts.

1.2 RELEVANT NATIONAL POLICIES AND STRATEGIES

1.2.1 Ghana's National Climate Change Policy (NCCP, 2013)

The NCCP provides strategic direction and coordinates Ghana's response to climate change by mainstreaming adaptation and mitigation efforts across all sectors and governance levels. The overarching vision of the NCCP is to establish a climate-resilient and climate-compatible economy, fostering sustainable economic growth while minimizing greenhouse gas emissions and enhancing social development and equity.
Key thematic areas identified for adaptation include:

- Agriculture and Food Security.
- Disaster Preparedness and Response.
- Natural Resource Management.
- Equitable Social Development.
- Energy, Industrial, and Infrastructure Development.
- Coastal Zone Management and Marine Ecosystem Protection.

The NCCP emphasizes building institutional capacity, promoting stakeholder collaboration, gender responsiveness, and innovative financing mechanisms to support adaptation activities. It also recognizes the importance of ecosystem-based adaptation strategies in reducing climate vulnerabilities in both urban and rural settings.

1.2.2 Ghana's National Climate Change Adaptation Strategy (NCCAS, 2012)

The NCCAS complements the NCCP by detailing explicit adaptation strategies aimed at enhancing the adaptive capacity and resilience of vulnerable communities, infrastructure, and ecosystems. It shows the critical need for proactive and targeted measures rather than reactive interventions. Key priorities include:

- Improving awareness and preparedness.
- Strengthening infrastructure resilience.
- Promoting climate-smart agriculture.
- Enhancing health sector resilience.
- Encouraging evidence-based decision-making through improved early warning and data management systems.
- Integrating indigenous knowledge with scientific information to support locally relevant adaptation measures.

The NCCAS outlines priority adaptation actions tailored to address sectoral vulnerabilities, thus providing an essential blueprint for district-level adaptation planning. Additionally, the NCCAS emphasizes the importance of community-driven adaptation initiatives and emphasizes the need for decentralized governance in implementing climate actions at the district level.

Coastal livelihoods in Ghana face increasing challenges as climate change impacts traditional fishing practices. **Photo by: Boafo, YA (2024)**

1.2.3 Ghana's National Adaptation Plan (NAP Framework, 2018)

The NAP Framework provides a coherent and coordinated approach to addressing medium- to long-term climate risks, emphasizing a structured, systematic, and iterative process of adaptation planning at both national and sub-national levels. The framework underscores alignment with broader

national development goals, focusing on priority adaptation actions in key vulnerable sectors, including agriculture, forestry, water, health, gender, energy, and infrastructure.

Critically, the NAP advocates for:

- Vertical and horizontal integration in climate adaptation planning.
- Community-based and ecosystem-based adaptation approaches.
- Strong collaboration and partnership building among government institutions, civil society, the private sector, and development partners.
- The development of a robust monitoring and evaluation (M&E) system with clear indicators for tracking adaptation progress and effectiveness.
- The incorporation of climate risk assessments at the district level to ensure context-specific adaptation measures.

1.2.4 Ghana's Updated Nationally Determined Contributions (NDC, 2021)

The updated NDC highlights Ghana's international commitment under the Paris Agreement and articulates ambitious adaptation and mitigation targets for the decade 2020–2030. It identifies specific measures designed to build resilience in key economic sectors, create jobs, reduce emissions, and significantly enhance the well-being of vulnerable populations.

The NDC update particularly emphasizes:

- Integrating adaptation and mitigation co-benefits into planning at all levels.
- Securing national and international finance for adaptation.
- Leveraging private sector involvement and technological innovation to drive climate resilience and sustainable development.
- Enhancing monitoring, reporting, and transparency of climate adaptation interventions.
- Strengthening climate governance by embedding adaptation responsibilities in all local government structures, ensuring that adaptation planning and financing reach vulnerable communities.

1.3 ALIGNMENT WITH THE MTDP PLANNING PROCESS

Ghana's MMDAs are mandated by the National Development Planning Commission (NDPC) to incorporate climate considerations into their MTDPs. Aligning MTDPs (2026-2029) with the frameworks mentioned above ensures a harmonized, consistent, and systematic approach to adaptation planning. This integration supports not only the fulfillment of national commitments but also facilitates the coherent implementation of district-level adaptation interventions.

Therefore, this toolkit explicitly references and builds on the NAP Framework, NCCP, NCCAS, and NDCs to guide MMDAs in:

- Systematically integrating climate adaptation measures into development plans.
- Clearly identifying priority areas and local vulnerabilities through previously completed CRVAs.
- Ensuring gender-responsive, inclusive, and participatory approaches to climate adaptation.
- Utilizing evidence-based, locally relevant strategies, combining indigenous and scientific knowledge.
- Enhancing resource mobilization by identifying funding sources within national budgets, international climate finance mechanisms, and private sector investment opportunities.

Traditional architecture in Northern Ghana, showcasing local building techniques and materials. **Photo by: Boafo, YA (2024)**

USEFUL RESOURCES

1. ***Ghana National Climate Change Policy (NCCP, 2013)*** *https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Ghana_NCCP.pdf*
2. ***National Climate Change Adaptation Strategy (NCCAS, 2012)*** *https://www.adaptation-undp.org/resources/naps/ghana-nccas-2012*
3. ***National Adaptation Plan (NAP, 2018)*** *https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Ghana-NAP-Framework.pdf*
4. ***Updated Nationally Determined Contributions (NDC, 2021)*** *https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Ghana%20First/GH_NDC_2021_Updated.pdf*

SECTION 2

Climate Risk and Vulnerability Assessment

2.1 OVERVIEW AND PURPOSE

To effectively integrate climate change adaptation into Medium-Term Development Plans it is essential to clearly understand and apply the specific climate vulnerabilities and risks of each district. The SIGRA project's gendered-focused CRVAs in five purposely selected districts — Mion, Nanumba South, Kumbungu, Akatsi, and Anloga serves as important baseline data. These SIGRA CRVAs capture localized climate impacts, pinpoint vulnerable populations, and outline priority actions necessary for resilience-building from a gendered perspective at the local level. Additionally, the EPA Ghana with funding from international agencies have undertaken similar CRVAs across different MMDAs in the country.

It is however important to acknowledge that the majority of MMDAs in Ghana do not have officially conducted CRVAs data. For such MMDAs alternative data sources — including national climate reports, GIS data, indigenous knowledge, and socio-economic vulnerability indices — can serve as a reliable basis for adaptation planning.

The purpose of this section is to guide MMDAs step-by-step on practically integrating CRVA findings into their MTDPs, ensuring alignment with Ghana's national climate adaptation frameworks.

2.2 STEP-BY-STEP INTEGRATION FRAMEWORK

STEP 1: *Summary of Climate Risks and Impacts*

Ghana experiences a wide range of climate hazards, with varying intensity and impacts across its ecological zones—from coastal erosion and tidal surges along the coast, to droughts and bushfires in the north. Thus, understanding these risks is essential for effective district-level adaptation planning.

(a) MMDAs with existing official CRVA report.

Table 3 below provides a comprehensive summary of the major climate risks projected for Ghana, the nature of their expected impacts, and the key sectors and population groups likely to be affected. MMDAs can use this as a reference point to identify and contextualize the most relevant climate hazards in their jurisdictions based on findings from a CRVA report.

Climate Risk	Projected Impact	Affected Sectors/Groups
Flooding	Increased intensity and frequency of flash floods, riverine flooding, and urban inundation (particularly during peak rains)	Infrastructure (roads, bridges), Housing, Health, Water supply systems, Urban sanitation, Disaster management, Livelihoods (especially traders and farmers), Education facilities
Drought	Reduced rainfall (10–20%) and higher temperatures (2–4°C rise by 2050); extended dry seasons in northern, transitional, and savannah zones	Agriculture and food security, Water resources, Livestock, Energy (hydropower), Health (heat stress), Women and smallholder farmers
Sea-Level Rise	Rising ocean levels (up to 1.1m by 2100); saltwater intrusion into coastal aquifers and wetlands; increased coastal erosion	Coastal housing and infrastructure, Fisheries, Water supply, Agriculture (salinized soils), Tourism, Biodiversity (mangroves), Urban slums in low-lying areas
Coastal Erosion	Shoreline retreat, loss of land and property along Ghana's coastlines; more intense tidal waves and storm surges	Settlements in Keta, Ada, Shama, Anloga, Fishing communities, Ports and marine infrastructure, Cultural heritage sites
Extreme heats and Temperature Extremes	Increased frequency of days >35°C; prolonged exposure to heat stress especially in urban and semi-arid areas	Public health (heatstroke, dehydration), Workers in informal and outdoor jobs (e.g., traders, construction workers), Children, Elderly, Urban transport and education systems
Windstorms	Destructive wind events during the rainy season damaging roofs, electricity poles, and weak infrastructure	Rural housing, Schools, Electricity infrastructure, Disaster response agencies
Pest and Disease Outbreaks (Agricultural and Human)	Climate-induced expansion of crop pests (e.g., fall armyworm) and vector-borne diseases (malaria, cholera, meningitis)	Agriculture (crop losses), Public health systems, Water and sanitation services, Livelihoods of farmers and fisherfolk
Bushfires	Dry season fires, especially in savannah and forest transition zones, intensified by drought and land clearing	Forests and biodiversity, Agriculture, Livestock, Settlements, Air quality, Energy (biomass fuel), Cultural and sacred sites
Water Stress and Scarcity	Depletion of boreholes, drying of streams and small dams, especially in Upper East, Upper West, Northern Ghana	Water supply, Domestic use, Agriculture, Health and hygiene, Gender equity (burden on women and girls), Education (school sanitation)
Landslides and Erosion (Inland)	Gully erosion and land slips during intense rainfall events, particularly in hilly or mined landscapes	Agriculture (soil degradation), Roads and transport, Settlements in highland areas, Mining and infrastructure zones

Table 3: *Summary of Climate Risks, Projected Impacts, and Affected Sectors in Ghana.*
Source: CRVA Reports, Literature review

(b). MMDAs with no official CRVA Reports: Alternative Data Sources for Climate Adaptation Planning.

For districts that have not yet conducted Climate Vulnerability Risk Assessments, the following alternative data sources can help identify climate risks and vulnerabilities:

1. National and Regional Climate Data

- Ghana Meteorological Agency (GMet): Provides historical and projected temperature, rainfall, and extreme weather data.
- Environmental Protection Authority (EPA): Offers national climate risk assessments and environmental monitoring reports.
- National Disaster Management Organization (NADMO): Publishes flood and disaster risk maps highlighting high-risk areas.
- Ministry of Food and Agriculture (MoFA): Shares agricultural trends, including crop failures, pest outbreaks, and drought impacts.

How to Use:

- **Identify climate trends at the district level using meteorological data 9based on nearest synoptic stations).**
- **Overlay disaster risk maps with key infrastructure and population data.**

2. Community-Based Knowledge and Indigenous Practices

- Traditional Ecological Knowledge (TEK): Farmers and fisherfolk often have valuable knowledge of shifting climate patterns.
- Participatory Rural Appraisal (PRA): Engage community elders and women's groups to document climate perceptions and coping strategies.
- Seasonal Calendars: Communities track rainfall, extreme heat, and dry spells based on nature-based indicators (e.g., wind patterns, animal behavior).

How to Use:

- **Conduct focus group discussions to document community knowledge.**
- **Map traditional weather prediction methods and integrate them into modern forecasting models.**

3. Spatial and Satellite-Based Assessments

- GIS Mapping and Remote Sensing: Use satellite imagery to track land degradation, deforestation, and flood-prone areas.
- Lands Commission & Forestry Commission Reports: Provide insights into urban expansion, deforestation, and wetland loss.
- Google Earth and OpenStreetMap: Offer freely available mapping tools to visualize vulnerable settlements and infrastructure.

How to Use:

- **Overlay land use change data with flood and drought risk maps.**
- **Identify forest cover reduction trends affecting water retention.**

4. Socio-Economic and Health Data

- Ghana Statistical Service (GSS): Provides census data on population density, poverty levels, and economic activities influencing vulnerability.
- Ghana Health Service: Monitors climate-sensitive diseases such as malaria, cholera, and heat stress-related conditions.
- Ministry of Local Government and Rural Development: Assesses infrastructure development and resource allocation gaps that impact climate adaptation.

How to Use:

- **Identify vulnerable populations (low-income groups, elderly, persons with disabilities).**
- **Map health centers and water access points to assess service gaps.**

Without a bridge, this waterway necessitates the transportation of a motorcycle and its rider by boat, highlighting infrastructural challenges in Daboya. **Photo by: Boafo, YA (2023)**

5. Integration into the MTDP Planning Process

While Climate Vulnerability and Risk Assessments provide an ideal evidence base for adaptation planning, not all districts may have completed or accessed these assessments in time for integration into their MTDPs. Fortunately, several reliable and context-specific data sources exist that MMDAs can use to inform decision-making.

Table 4 outlines key data types, their primary sources, and how they can be applied to identify climate risks and design appropriate adaptation responses. These alternative data sets — ranging from national climate services to indigenous knowledge and GIS tools — offer valuable insights for aligning local actions with national adaptation frameworks.

Data Type	Source	Application in Climate Adaptation Planning
Climate Trends	GMet, EPA	Identify extreme weather risks (extreme heats, floods, droughts)
Disaster Risk Maps	NADMO, Remote Sensing	Highlight flood-prone and erosion-risk areas
Indigenous Knowledge	Community Engagement, PRA	Document traditional climate adaptation techniques
Land Use & GIS Data	Forestry Commission, Google Earth	Assess deforestation, wetland degradation, and urban expansion
Socio-Economic Data	GSS, Local Government	Identify vulnerable communities and resource needs
Health & Disease Data	Ghana Health Service	Track climate-related disease outbreaks and public health risks

Table 4: *Key Data Sources for Evidence-Based Climate Adaptation Planning in the Absence of CRVAs*

STEP 2: ***Identification of Vulnerable Sectors and Populations***

After understanding the climate risks present in your district, the next step is to identify the sectors and population groups that are most vulnerable to these risks. This step helps ensure that climate adaptation planning is inclusive, equitable, and targeted, especially toward those most at risk.

Vulnerability is not only determined by exposure to climate hazards but also by socio-economic status, gender, age, physical ability, and access to services or resources. Using available CRVA findings—or alternative data sources such as community consultations, socio-economic datasets, or PRA tools— MMDAs should assess how climate change disproportionately affects different groups and sectors.

Table 5 below provides a template to help identify and categorize vulnerable sectors and populations. This process will form the basis for setting objectives, selecting adaptation actions, and ensuring that no group is left behind in the adaptation process.

Sector	Vulnerable Populations	Key Vulnerabilities (examples)
Agriculture and Food Security	Smallholder farmers (especially women, youth)	Reduced crop yields, food insecurity, drought-related income loss
Health and Sanitation	Rural communities, women, children, elderly	Increased climate-sensitive diseases (malaria, cholera, meningitis), heat stress
Water Resources	Coastal and rural communities, fisherfolk	Limited access to safe water, contamination from floods and salinity
Disaster Preparedness and Response	Residents in flood-prone and low-lying areas, urban poor	Exposure to floods, displacement, housing loss, disruption of public services
Natural Resource Management	Forest-dependent communities, herders, firewood collectors	Loss of forest cover, land degradation, biodiversity loss, exposure to bushfires
Equitable Social Development	Women-headed households, persons with disabilities, urban informal workers	Livelihood disruption, inadequate access to adaptation services, limited decision-making power
Energy, Industrial & Infrastructure Development	Off-grid rural communities, urban slum dwellers, schoolchildren	Power outages, infrastructure collapse during extreme events, energy poverty
Coastal Zone and Marine Ecosystem Protection	Coastal dwellers, fishing communities, informal settlements	Coastal erosion, sea-level rise, saline intrusion, habitat destruction

Table 5: *Climate-Vulnerable Populations and Sector-Specific Risks Across Ghana's Ecological Zones*

District Example: Kumbungu

In the Kumbungu District of Ghana's Northern Region, the SIGRA commissioned CRVA identified smallholder farmers—especially women and youth—as the most vulnerable group in the agricultural sector. These groups are highly exposed to prolonged droughts, unpredictable rainfall, and soil degradation, which significantly affect crop yields and food security.

Additionally, settlements near the White Volta and its tributaries are prone to seasonal flooding, threatening housing and access to basic services. Informal traders, particularly women, face challenges in recovering from these shocks due to limited access to credit and market infrastructure.

Persons with disabilities and the elderly were also found to be more at-risk during flood events, due to challenges with mobility and access to evacuation support. The health sector noted increased cases of malaria and waterborne diseases during and after flood periods.

These findings should guide the district to prioritize agriculture, water, health, and disaster preparedness as focus sectors for adaptation, while placing gender and social inclusion at the heart of local planning.

STEP 3: ***Translation of CRVA Findings into MTDP Objectives***

Once climate risks and vulnerable populations have been identified, the next step is to ensure these insights are explicitly translated into your district's Medium-Term Development Plan (MTDP). This involves crafting clear, sector-specific, and adaptation-focused objectives that respond directly to the climate vulnerabilities highlighted through the CRVA or other data sources.

These objectives form the foundation for selecting relevant adaptation strategies and investments in the subsequent steps. Each objective should be linked to a specific sector (e.g., agriculture, water, health) and framed in a way that supports resilience building, inclusivity, and alignment with Ghana's national climate frameworks such as the NAP and NDC.

Table 6 below provides a template for articulating these objectives in a structured format. MMDAs are encouraged to be both practical and ambitious, ensuring that objectives are grounded in local realities while contributing to long-term climate resilience.

Sector	MTDP Objective (Adaptation-Focused)
Agriculture and Food Security	Enhance resilience through climate-smart agriculture, including drought-resistant crops and small-scale irrigation systems in savannah and transitional zones.
Infrastructure Development	Improve flood resilience by climate-proofing roads, bridges, and drainage systems in flood-prone urban areas like Accra, Tamale, and Sekondi-Takoradi.
Health and Sanitation	Strengthen public health systems to manage climate-sensitive diseases and extreme heat through early warning, training, and climate-resilient health facilities.
Water Resources	Improve water access and safety through rainwater harvesting, borehole rehabilitation, and protection of watershed ecosystems in vulnerable districts.
Disaster Preparedness and Response	Establish community-based early warning systems and enhance emergency preparedness in high-risk areas (e.g., Keta, Sagnarigu).
Natural Resource Management	Promote ecosystem restoration and fire management through afforestation, agroforestry, and community stewardship in forest and savannah zones.
Equitable Social Development	Integrate gender-responsive adaptation actions, such as upgrading market infrastructure and targeting youth and disabled persons in livelihood programs.
Energy, Industrial & Infrastructure Development	Promote access to renewable energy and improve efficiency in public infrastructure to reduce vulnerability to power outages and energy poverty in underserved areas.
Coastal and Marine Ecosystem Protection	Strengthen coastal defences through mangrove restoration and community-led shoreline management in erosion hotspots like Anloga and Ada.

Table 6: *Adaptation-Focused MTDP Objectives Aligned with Sectoral Climate Risks*

STEP 4: ***Priority Adaptation Actions Based on CRVAs***

With adaptation-focused objectives in place, the next step is to identify and prioritize specific adaptation actions that respond to the vulnerabilities and sectoral needs outlined in the CRVA. These actions should be evidence-based, measurable, and contextually relevant, ensuring they are feasible within the district's resource and capacity constraints.

Prioritization helps MMDAs to make informed decisions on which actions to implement first, especially in the face of limited resources. Actions may be ranked as High, Medium, or Low priority based on their potential impact, urgency, cost-effectiveness, and alignment with national and district development goals.

Table 7 provides a template for mapping out these priority adaptation actions by sector. MMDAs are encouraged to draw from both local CRVA recommendations and national adaptation strategies (e.g., Ghana's NAP, NDC) to ensure coherence and support for implementation.

Sector	Target Sector	Priority Level (High/ Medium/Low)
Agriculture and Food Security	Agriculture and Food Security	High
Infrastructure Development	Health and Sanitation	High
Health and Sanitation	Infrastructure Development	High
Water Resources	Disaster Preparedness and Response	Medium
Disaster Preparedness and Response	Coastal Zone Management and Marine Ecosystems	High
Natural Resource Management	Energy, Industrial and Infrastructure Development	Medium
Equitable Social Development	Equitable Social Development	High
Energy, Industrial & Infrastructure Development	Natural Resource Management	High
Coastal and Marine Ecosystem Protection	Water Resources	High

Table 7: *Prioritized Climate Adaptation Actions by Sector and Urgency Level*

STEP 5: ***Spatial Mapping and Integration (GIS)***

Where available, Geographic Information Systems (GIS) and spatial data provide a powerful tool for visualizing climate risks and planning adaptation responses. This step encourages MMDAs to leverage spatial mapping outputs from CRVAs or other sources to strengthen the geographical targeting of their adaptation interventions.

GIS maps can help identify climate vulnerability hotspots, guide the zoning of flood-prone or drought-sensitive areas, and support evidence-based resource allocation. Spatial mapping also enhances transparency and helps communicate climate risks more effectively to decision-makers and communities.

However, it is acknowledged that not all districts may have access to GIS expertise or datasets. In such cases, this step can be skipped or replaced with participatory mapping tools (e.g., community sketch maps, Google Earth screenshots) or qualitative narratives describing affected zones.

The suggestions below outline how spatial mapping can be used where feasible to support MTDP integration.

- Include spatial maps from CRVAs or national datasets (e.g., flood risk zones, land use change maps, elevation layers). These can be used to highlight areas most vulnerable to specific climate hazards—such as low-lying urban areas prone to flooding or savannah farmlands facing recurrent drought.
- Clearly demarcate adaptation priority zones using simple color-coded overlays—for example:

- If spatial data is unavailable, use community-generated maps, Google Earth imagery, or narrative descriptions to explain where climate impacts are concentrated, and which areas need urgent adaptation interventions.
- Engage planning officers, technical staff, and community representatives in validating the spatial interpretation of climate risks during stakeholder consultations or validation workshops.

STEP 6: ***Gender Equity and Social Inclusion Integration***

Climate change does not impact all people equally. Social groups such as women, girls, youth, persons with disabilities (PWDs), the elderly, and informal workers often face heightened vulnerabilities due to inequitable access to resources, decision-making, and safety nets (**Table 8**).

This step ensures that climate adaptation planning at the district level addresses these disparities and promotes inclusive, equitable, and transformative outcomes. MMDAs should review CRVA findings and stakeholder consultations to identify groups most affected by climate impacts, and design targeted actions that address their unique risks and needs.

Table 8 offers a practical template for mainstreaming gender and social inclusion into adaptation strategies, using concrete examples from across Ghana's ecological and socio-economic contexts.

Vulnerable Group	Key Issues/Risks	Proposed Adaptation Actions
Women and Girls	Higher exposure to livelihood disruption, unpaid care burdens, lower access to land and finance	Promote gender-sensitive livelihood diversification (e.g., shea, beekeeping, processing); support access to climate finance and training through women-led cooperatives
Youth (both sexes)	Unemployment, limited engagement in local climate planning, underrepresentation in formal sectors	Launch climate-smart agribusiness training; support green job creation in waste, energy, and reforestation; include youth in district planning forums
Persons with Disabilities (PWDs)	Mobility constraints, lack of access to disaster response, exclusion from consultations	Design inclusive evacuation shelters, early warning systems with visual/audio options; engage disability groups in planning processes
Elderly	Physical vulnerability during climate events, isolation, reduced income security	Establish community support systems during floods and extreme heats; train youth as climate caretakers for the elderly
Urban Informal Workers	Insecure jobs, high exposure to floods and heat (e.g., traders, kayayei), lack of formal protection	Improve drainage and shade in market areas; formalize social protection schemes linked to climate risk
Smallholder Women Farmers	Limited access to climate-resilient seeds, irrigation, and extension services	Deliver tailored CSA packages through women's farmer groups; improve rural infrastructure and access to land ownership support
Migrant Populations	Insecure housing, lack of basic services, exclusion from information systems	Map and integrate migrant hotspots into DRR planning; ensure inclusive access to water, sanitation, and health services

Table 8: *Gender and Social Inclusion Issues and Proposed Adaptation Actions*

STEP 7: ***Explicit References to CRVA Documents in MTDP***

To strengthen the credibility and technical robustness of climate adaptation measures within the MTDP, MMDAs are encouraged to explicitly reference the evidence base that informed their planning — particularly where Climate Change Vulnerability and Risk Assessments have been conducted.

Citing CRVAs not only provides transparency but also ensures alignment with broader national adaptation frameworks and monitoring systems. In addition, referencing specific sections or data points from the CRVA report (e.g., maps, vulnerability matrices, population-at-risk data) can help justify proposed adaptation actions and attract external funding.

However, for MMDAs that have not yet undertaken a CRVA, it is equally important to acknowledge the alternative data sources used (e.g., community consultations, sector reports, GIS maps, climate projections). Providing this context helps demonstrate a proactive and evidence-informed approach to adaptation planning.

Below is a narrative template that MMDAs can adapt to suit their context, whether referencing a CRVA or alternative datasets:

Sample Narrative

(Where CRVA is Available):

"The adaptation priorities outlined in this MTDP draw directly from the Climate Change Vulnerability and Risk Assessment conducted under the SIGRA Project in 2024. The assessment identified agriculture, water, and infrastructure as the most vulnerable sectors, with specific risk hotspots mapped in [insert community or area]. Proposed actions are therefore aligned with CRVA recommendations and national adaptation priorities."

Sample Narrative

(Where CRVA is Not Available):

"In the absence of a formal CRVA, this MTDP integrates climate risk information from a combination of sources, including rainfall data from GMet, flood risk maps from NADMO, and community-level participatory consultations. These inputs highlighted recurring drought, and extreme heat impacts on agriculture and public health, which informed the prioritization of adaptation interventions".

STEP 8: ***Cross-referencing National Adaptation Frameworks***

Ghana's national climate policies—including the National Climate Change Policy (NCCP, 2013), the National Climate Change Adaptation Strategy (NCCAS, 2012), the National Adaptation Plan (NAP, 2018), and the Updated Nationally Determined Contributions (NDC, 2021)—provide the strategic foundation for climate adaptation planning at all levels.

It is essential for MMDAs to explicitly link their proposed MTDP adaptation actions to these frameworks to demonstrate coherence, legitimacy, and alignment with national goals. This cross-referencing also helps ensure that district-level actions can be tracked, supported, and potentially financed through national and international climate mechanisms.

Table 9 below provides examples of how specific MTDP adaptation measures align with national frameworks across the sectors discussed in this toolkit.

MTDP Adaptation Action	Alignment with National Frameworks
Climate-resilient agriculture promotion	NCCP (2013), NDC (2021), NCCAS (2012), NAP (2018)
Solar-powered irrigation and cold storage systems	NCCP (2013), NDC (2021), NAP (2018)
Flood risk infrastructure upgrade (roads, drains, bridges)	NCCP (2013), NCCAS (2012), NAP (2018)
Early warning system development for floods and droughts	NDC (2021), NCCAS (2012), NAP (2018)
Community-based disaster preparedness training	NCCAS (2012), NAP (2018)
Wetland and mangrove restoration (e.g., Anloga, Keta)	NCCAS (2012), NAP (2018), NDC (2021)
Health infrastructure resilience and climate-health early warning systems	NCCP (2013), NDC (2021), NCCAS (2012), NAP (2018)
Gender-responsive livelihood diversification for market women	NDC (2021), NCCAS (2012), National Gender Policy (2015)
Waste segregation and plastic recycling cooperatives	NCCP (2013), NDC (2021), NAP (2018)
Rainwater harvesting systems in schools and health centers	NCCAS (2012), NCCP (2013), NAP (2018)
Energy efficiency in public buildings (e.g., schools, CHPS compounds)	NCCP (2013), NDC (2021)
Inclusive evacuation plans for PWDs and elderly	NCCAS (2012), NAP (2018)

Table 9: *Cross-referencing MTDP Adaptation Actions with Ghana's National Climate Policy Frameworks*

2.3 HOW TO USE THIS SECTION

This final step provides guidance on how MMDAs can apply the previous eight steps in a systematic and practical manner to strengthen the climate adaptation component of their Medium-Term Development Plans. The goal is to ensure that climate adaptation planning is evidence-informed, participatory, inclusive, and aligned with national policy frameworks.

Whether using CRVA findings or alternative data sources, this section empowers MMDAs to structure their adaptation actions with clarity and coherence. The outputs from each step—risk summaries, vulnerability mappings, sectoral actions, gender considerations, and national policy links—should form the core of the climate adaptation chapter or annex of the MTDP.

- Follow each step sequentially (Steps 1 to 8), using the templates, tables, and district-specific examples provided.
- Document the process by attaching annexes, community consultation notes, maps, or data sources that justify your planning decisions.
- Use cross-sectoral integration to identify synergies across departments (e.g., health, agriculture, water, disaster management).
- Engage diverse stakeholders—including CSOs, women's groups, youth, and traditional leaders—to validate priorities and promote ownership.
- Ensure clear linkage between climate risks, MTDP objectives, and the specific adaptation actions proposed.
- Reference national frameworks (NDC, NAP, NCCP, NCCAS) to position your district within Ghana's broader climate adaptation landscape.
- Use the practical toolkit template in the annex to organize the content into an MTDP-compatible format, ready for submission.

2.4 CLIMATE VARIABLES TO CONSIDER IN LOCAL PLANNING

To develop robust, evidence-based adaptation strategies, MMDAs must first understand how the climate is changing in their districts. This requires identifying and analyzing key climate variables that influence development outcomes across sectors such as agriculture, water, health, and infrastructure.

Integrating climate variables into the MTDP ensures that planning decisions are not just reactive, but forward-looking, risk-informed, and locally grounded. This sub-section outlines the most relevant climate variables for Ghana's districts, and how they can be used to shape climate-resilient development planning.

Climate Variable	What It Measures	Why It Matters for District Planning	Key Affected Sectors	Relevant Data Sources
Rainfall Patterns (total annual, seasonal variability)	Changes in rainfall amounts, timing, and distribution	Guides decisions on water infrastructure, cropping calendars, and flood risk planning	Agriculture, Water, DRR, Sanitation	Ghana Meteorological Agency (GMet), CRVAs
Temperature Trends (average, extreme heat days)	Increase in daily and seasonal temperatures	Informs public health, housing design, extreme heat early warnings, and CSA measures	Health, Infrastructure, Agriculture	GMet, WHO Ghana Heat Guidelines
Drought Frequency and Duration	Number of drought days per year or dry spell trends	Key for water resource planning, dry-season farming, and livestock management	Agriculture, Water, Livelihoods	EPA, CRVAs, MoFA, NDPC
Flood Frequency and Severity	Number and intensity of flood events (urban or riverine)	Guides siting of infrastructure, land use zoning, and emergency response planning	Infrastructure, Housing, Sanitation, DRR	NADMO, Hydrological Services Dept., CRVAs
Sea-Level Rise and Coastal Erosion	Rate of shoreline retreat and tidal height increases	Informs coastal protection investments, resettlement planning, and wetland protection	Coastal Housing, Fisheries, Tourism, Ecosystems	EPA, University of Ghana Oceanography Dept.
Windstorm Events	Wind speeds and frequency of storm surges	Helps design resilient public infrastructure and school safety protocols	Energy, Infrastructure, Housing, Education	GMet, NADMO
Heat Index / Humidity Levels	Combined effect of heat and moisture stress	Crucial for urban planning, health services, and cooling infrastructure	Urban Health, Education, Gender	GMet, Health Service, CRVA
Pest and Disease Outbreaks	Temperature and humidity-driven vector expansion (e.g., malaria, fall armyworm)	Informs early warning systems and agriculture extension messaging	Health, Agriculture, Environment	MoH, MoFA, Research Institutions
Forest Cover and Land Use Change	Deforestation, land degradation, urban sprawl	Supports ecosystem-based adaptation, bushfire control, and green buffer planning	NRM, Water, DRR	Forestry Commission, Land Use Planning Authority, Remote Sensing

Table 10: *Key Climate Variables and Their Relevance to MTDPs*

2.3 CHECKLIST: 8-STEP FRAMEWORK FOR INTEGRATING CLIMATE ADAPTATION INTO MTDPS

The checklist below (**Table 11**) summarizes the key steps outlined in this toolkit to guide MMDAs in integrating climate adaptation into their Medium-Term Development Plans. It provides a practical tool for tracking progress, ensuring consistency, and validating that all core components—ranging from climate risk assessment to financing and policy alignment—have been addressed.

No	Step	Key Action	Tick when completed
1	Identify Climate Risks and Impacts	Summarize key climate hazards affecting the district using CRVA or alternative data	☐
2	Identify Vulnerable Sectors and Populations	Clearly outline the most affected sectors and socially vulnerable groups	☐
3	Set Adaptation-Focused MTDP Objectives	Translate climate vulnerabilities into clear, actionable planning objectives	☐
4	Define and Prioritize Adaptation Actions	Match each objective with specific adaptation actions and rank their priority	☐
5	Map Climate Risk Hotspots (GIS)	Use spatial tools or participatory mapping to identify high-risk areas	☐
6	Mainstream Gender and Social Inclusion	Address the needs of women, youth, PWDs, and other marginalized groups	☐
7	Reference CRVA or Alternative Data	Cite relevant evidence sources to support all planning decisions	☐
8	Align with National Frameworks	Link each adaptation action to NAP, NDC, NCCP, and/or NCCAS	☐

Table 11: *8-Step Framework for Integrating Climate Adaptation into MTDPs*

The planning teams at MMDAs are encouraged to use this checklist during internal reviews, stakeholder consultations, and final documentation processes to ensure that adaptation measures are comprehensive, inclusive, and evidence based.

USEFUL RESOURCES

1. ***Climate Vulnerability Risk Assessment Reports (SIGRA Project)*** *https://sigraghana.org/resources/*
2. ***Ghana Meteorological Agency (GMet)*** *http://www.meteo.gov.gh*
3. ***EPA Environmental Risk Maps*** *http://www.epa.gov.gh*
4. ***NADMO Flood and Disaster Maps*** *https://nadmo.gov.gh*
5. ***Participatory Rural Appraisal (PRA)*** *Toolkits https://www.ndpc.gov.gh/media/PRA_Toolkit.pdf*

SECTION 3

Sectoral Integration & Climate-Resilient Actions

3.1 INTRODUCTION

Climate change does not affect one sector alone — it disrupts agriculture, health, infrastructure, water, energy, and social services in complex and interconnected ways. For MMDAs to build resilient communities, they must ensure that climate-smart strategies are integrated into all key sectors of their Medium-Term Development Plans.

Sectoral integration means going beyond isolated interventions. It requires that all departments—agriculture, health, works, water, environment, and finance—collaborate to ensure that development is both climate-aware and inclusive.

3.1.1 Why Sectoral Integration Matters for MMDAs

- Helps prevent overlaps and duplication in projects and budgets.
- Encourages shared ownership and stronger coordination across decentralized departments.
- Ensures that limited resources are used for multi-benefit interventions (e.g., roads that also serve as flood control corridors).
- Makes it easier to attract funding from donors and national programs that require evidence of cross-sector collaboration.

3.1.2 Key Ministries and Agencies That MMDAs Can Collaborate With

Climate adaptation is most effective when local actions are supported by strong partnerships with relevant ministries, departments, and agencies (MDAs) **(Table 12)**. The institutions listed below play critical roles in shaping, supporting, and resourcing adaptation initiatives across different sectors. MMDAs are encouraged to actively engage with these stakeholders during the planning, implementation, and reporting of climate actions in their MTDPs.

Agency/Ministry	Role in Climate Adaptation
Ministry of Food and Agriculture (MoFA)	Promotes climate-smart agriculture, farmer training, and irrigation schemes.
Ministry of Works and Housing	Oversees resilient infrastructure and drainage planning.
Ghana Health Service	Monitors and manages climate-sensitive diseases (e.g., malaria, cholera, heat-related illnesses).
National Disaster Management Organization (NADMO)	Leads disaster preparedness, early warning systems, and post-disaster response.
Environmental Protection Authority (EPA)	Provides technical guidance, policy alignment, and environmental impact assessment.
Ministry of Energy	Develops renewable energy solutions and energy-efficient public infrastructure.
Forestry Commission	Leads ecosystem-based adaptation including reforestation, woodlot development, and forest conservation.
Ghana National Fire Service	Plays a key role in bushfire prevention and response, especially in vulnerable northern and forest fringe areas.
Land Use and Spatial Planning Authority (LUSPA	LUSPA provides spatial planning specialties into resilience planning.

Table 12: *Key Ministries and Agencies That MMDAs Can Collaborate With*

3.2 PRIORITY SECTORS FOR ADAPTATION INTEGRATION

Climate impacts are felt across every facet of development—from agriculture to health, water to infrastructure. To respond effectively, MMDAs must prioritize key sectors that are most vulnerable and also most capable of delivering transformational adaptation results.

Drawing on findings from CRVAs, as well as guidance from Ghana's NAP, NDC, and other national frameworks, this toolkit identifies eight priority sectors for district-level adaptation planning. These sectors reflect both the cross-cutting nature of climate risks and the entry points for practical action.

- **Agriculture and Food Security:** Strengthening the resilience of crops, livestock, and food systems against droughts, floods, and pests.
- **Water Resources Management:** Improving water access, quality, and infrastructure resilience in the face of scarcity, contamination, and overuse.
- **Infrastructure Development:** Ensuring that roads, buildings, markets, and drainage systems are climate-resilient and disaster-ready.

- **Health and Sanitation:** Addressing rising public health threats such as heat stress, malaria, cholera, and poor sanitation due to climate hazards.
- **Disaster Risk Reduction:** Reducing vulnerability and building local capacity for early warning, evacuation, and emergency preparedness.
- **Natural Resource Management and Ecosystem-Based Adaptation:** Protecting forests, wetlands, and land resources that buffer climate impacts and sustain rural livelihoods.
- **Energy and Low-Carbon Development:** Promoting renewable energy, energy efficiency, and resilient energy access for critical public and productive services.
- **Waste Management and Pollution Control:** Improving urban and peri-urban sanitation systems to prevent health risks, flooding, and emissions.
- **Gender Equity and Social Inclusion (GESI):** Ensuring that adaptation actions address the unique needs of women, youth, persons with disabilities, and other vulnerable groups—while promoting equitable access to resources, participation, and decision-making.
- Each sector includes detailed templates for specific climate-resilient actions, as included below.

3.3 SECTOR-SPECIFIC ADAPTATION ACTIONS

A. *Agriculture and Food Security*

Rationale: Agriculture is highly sensitive to climate variability, directly influencing local livelihoods, food security, and economic stability—especially in rural, peri-urban, and semi-arid zones. The sector is threatened by erratic rainfall, prolonged droughts, soil degradation, and increasing pest infestations.

Objectives:

- Enhance agricultural productivity and resilience to climate variability.
- Improve farmers' adaptive capacity through training and access to climate-smart technologies.

Adaptation	Activity Details	Reference
Promote climate-smart agriculture (CSA)	Train farmers on drought-resistant and early maturing crop varieties (e.g., Kumbungu, Akatsi North)	NCCP, NDC, NCCAS, NAP
Strengthen agricultural extension services	Provide climate-risk advisory services to farmers; develop local weather forecasting skills	NCCAS, NAP
Implement community-managed irrigation	Develop small-scale irrigation and rainwater harvesting systems (e.g., solar-powered irrigation in Kintampo)	NCCP, NCCAS, NDC
Enhance agricultural value chain resilience	Improve post-harvest storage and market access for climate-resilient produce (e.g., improved market linkages in Akatsi North)	NCCP, NDC, NCCAS
Promote agroecological practices	Introduce mulching, composting, and intercropping to improve soil health in areas like Savelugu and Upper East	NCCAS, NAP
Diversify rural livelihoods	Support alternative income sources (beekeeping, small livestock, processing enterprises) to buffer climate shocks	NDC, NCCAS

Table 13: *Climate-Resilient Agricultural Adaptation Actions and Policy Alignment across Ghana's Ecological Zones*

B. *Water Resources Management*

Rationale: An effective water resource management is crucial for adapting to increased water scarcity, flooding, and declining water quality, all of which are exacerbated by climate change. In Ghana, these issues manifest differently across ecological zones—from salinity intrusion in coastal wetlands to seasonal water stress in northern savannah districts.

Objectives:

- Improve water security through sustainable management of water resources.
- Reduce vulnerability of water infrastructure to climate risks.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Enhance water conservation and harvesting	Construct household and institutional rainwater harvesting systems in drought-prone districts (e.g., Akatsi North)	NCCP, NCCAS, NAP
Improve management of watersheds and wetlands	Restore degraded wetlands (e.g., Keta Lagoon Complex) and reforest upstream catchments (e.g., Kintampo)	NCCAS, NAP, NDC
Upgrade and climate-proof water infrastructure	Retrofit boreholes, piped systems, and reservoirs to withstand extreme weather events (e.g., stormproof tanks in Volta Basin districts)	NCCP, NCCAS, NAP, NDC
Promote community-based water governance	Form and train local water user committees to manage small-scale water systems and monitor quality	NCCAS, NAP
Strengthen climate-water data systems	Install local rain gauges and digital water quality sensors; link with GMet and EPA data hubs	NCCAS, NAP, NCCP

Table 14: *Climate-Resilient Water Management Actions and Local Adaptation Strategies in Ghana*

C. *Health and Sanitation*

Rationale: Climate change intensifies existing health risks in Ghana, including the spread of climate-sensitive diseases, heat-related illnesses, and waterborne infections following floods. Vulnerable populations—particularly children, the elderly, women, and persons with disabilities—face elevated health burdens, especially in rural and densely populated urban areas.

Objectives:

- Strengthen the capacity of health systems to prevent, detect, and respond to climate-induced health threats.
- Improve sanitation infrastructure and hygiene services to reduce climate-related health vulnerabilities.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Establish climate-health early warning systems	Collaborate with GMet and health facilities to develop disease surveillance alerts for malaria, meningitis, cholera	NCCP, NAP, NCCAS, NDC
Upgrade health infrastructure	Climate-proof health posts and CHPS compounds in high-risk areas (e.g., elevated foundations, shaded waiting areas)	NCCP, NAP
Conduct climate-sensitive health education	Train nurses, community health volunteers, and school health clubs on heatstroke, sanitation, and flood-borne diseases	NCCAS, NAP, NDC
Improve sanitation and waste disposal in public spaces	Build climate-resilient toilet and drainage systems in vulnerable market areas)	NCCP, NDC
Strengthen mobile and outreach health services	Equip mobile units to serve hard-to-reach areas during floods and droughts	NDC, NCCAS

Table 15: *Health System and Sanitation Adaptation Actions for Climate-Related Risks in Ghana*

D. *Disaster Preparedness and Response*

Rationale: Climate-induced disasters such as flooding, coastal erosion, extreme heats, and windstorms are increasing in frequency and severity in Ghana. These disasters affect lives, livelihoods, and infrastructure, especially in low-lying coastal towns, informal urban settlements, and flood-prone savannah districts.

Objectives:

- Strengthen institutional and community capacity for early warning, emergency response, and disaster recovery.
- Reduce loss of life and property by integrating climate risk reduction into local planning.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Establish or upgrade early warning systems	Install community-based warning systems for floods and storms (e.g., river alarms in Volta Basin)	NCCP, NAP, NCCAS, NDC
Develop district-level disaster contingency plans	Update and simulate multi-hazard response plans with NADMO and RCCs	NCCAS, NAP
Construct safe shelters and relocation sites	Build flood-resistant public buildings that double as emergency shelters (e.g., schools in Sagnarigu and Keta)	NCCP, NCCAS
Train disaster response teams and volunteers	Empower local taskforces with first-aid, evacuation, and coordination skills	NCCAS, NAP, NDC
Integrate disaster risk zoning into local land use planning	Avoid settlements in wetlands and riverbanks through enforced development controls	NAP, NCCP

Table 16: *Climate-Responsive Disaster Preparedness and Response Actions in Ghanaian Districts*

E. *Natural Resource Management and Ecosystem-Based Adaptation*

Rationale: Climate change places growing pressure on Ghana's already fragile ecosystems, accelerating the degradation of forests, wetlands, watersheds, and farmlands. Unsustainable land use, bushfires, and fuelwood dependency further undermine resilience — especially in savannah and transition zones, where ecological services are key to livelihoods and food systems.

Objectives:

- Promote ecosystem restoration and biodiversity conservation as climate adaptation strategies.
- Strengthen local governance of natural resources to sustain ecosystem services.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Implement afforestation and reforestation programmes	Replant degraded areas with native species (e.g., Atewa forest buffer zones, northern woodlots)	NCCP, NDC, NAP
Promote agroforestry and regenerative farming	Integrate trees into farms (e.g., shea, dawadawa) to reduce erosion and diversify incomes in savannah zones	NCCAS, NAP
Restore and protect wetlands and riparian buffers	Engage communities in mangrove restoration (e.g., Anloga and Ada wetlands)	NCCAS, NAP, NDC
Strengthen enforcement of land use and conservation regulations	Support local bye-laws and EPA-led controls on illegal logging, mining, and farming	NCCP, NCCAS
Enhance fire management systems	Train fire volunteer brigades and use early warning for bushfire prevention (e.g., Bawku West, Sissala)	NAP, NCCP

Table 17: *Nature-Based Adaptation Measures for Ecosystem and Resource Resilience in Ghana*

F. *Energy and Low-Carbon Development*

Rationale: The energy sector underpins climate resilience across all systems—agriculture, health, education, industry, and governance. Climate extremes (e.g., extreme heats, flooding) disrupt Ghana's energy infrastructure, while reliance on fossil fuels for irrigation, cooking, and electricity increases emissions and costs. A just energy transition is key to sustaining inclusive development in both urban and off-grid areas.

Objectives:

- Expand access to reliable, renewable energy for underserved districts and key services (health, education, agriculture).
- Enhance climate-resilient energy infrastructure to reduce disruptions during climate events.
- Improve energy efficiency and support transitions toward clean cooking fuels.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Promote decentralized renewable energy systems	Deploy solar mini-grids and off-grid solutions in Oti, North East, and Western North Regions	NDC, NCCP
Climate-proof urban energy infrastructure	Elevate transformers, insulate substations, and improve drainage near electrical sites	NAP, NCCP
Expand solar-powered systems for public institutions	Prioritize CHPS compounds, schools, and irrigation stations in non-electrified zones	NCCAS, NDC
Promote energy-efficient public infrastructure	Retrofit buildings with energy-saving lighting, ventilation, and solar water heating	NCCP
Support clean cooking transitions (non-waste focused)	Promote LPG and ethanol fuel adoption, especially for women's groups in peri-urban areas	NCCP, NDC

Table 18: *Energy Resilience and Low-Carbon Development Adaptation Actions in Ghana*

G. *Coastal Zone Management and Marine Ecosystem Protection*

Rationale: Ghana's 550 km coastline is home to over one-third of the population, with livelihoods tied to fishing, salt production, port activities, and tourism. Climate change is accelerating coastal erosion, tidal flooding, and salinity intrusion, threatening ecosystems and infrastructure[3]. Coastal communities, especially fishing-dependent and informal settlements, face displacement and livelihood collapse[4].

Objectives:

- Strengthen physical and ecosystem-based coastal defenses against climate-induced hazards.
- Promote sustainable management of marine resources and the restoration of coastal ecosystems.
- Protect coastal livelihoods through integrated zoning, planning, and risk-informed development.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Restore and protect mangroves and coastal wetlands	Replant mangroves in Keta, Anloga, and Ada; engage fishers and youth in community stewardship	NCCAS, NAP, NDC
Construct climate-resilient coastal infrastructure	Build/upgrade sea defense structures, breakwaters, and raised footbridges in erosion-prone settlements	NCCP, NAP
Implement integrated coastal zone management (ICZM)	Enforce coastal development zoning and relocation protocols for at-risk households	NDC, NCCAS
Enhance marine ecosystem monitoring and enforcement	Strengthen district capacity to prevent illegal sand mining, overfishing, and pollution	NCCP, NAP
Promote alternative coastal livelihoods	Support eco-tourism, aquaculture, and mangrove beekeeping as adaptive livelihoods	NAP, NCCAS

Table 19: *Coastal and Marine Adaptation Strategies to Enhance Resilience of Ghana's Coastal Belt*

[3] ***Ankrah, J. (2024). Shoreline change and coastal erosion: an analysis of long-term change and adaptation strategies in coastal Ghana.*** *Geo-Marine Letters,* ***44(3), 12.***
[4] ***Koomson, D. (2021). Vulnerability and adaptive capacity of rural coastal fishing communities in Ghana to climatic and socio-economic stressors.*** *University of Derby* ***(United Kingdom).***

H. *Waste Management and Pollution Control*

Rationale: Climate change intensifies waste-related vulnerabilities—flooding worsens sanitation breakdowns, while unregulated waste burning contributes to emissions. Poor waste management amplifies climate health risks in urban centers, informal settlements, and flood-prone communities. Addressing waste is both a mitigation and adaptation priority in Ghana's urban transition.

Objectives:

- Strengthen climate-resilient waste management systems to reduce pollution, emissions, and health risks.
- Promote circular economy and adaptive waste reuse strategies that also support livelihoods.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Develop integrated solid waste systems	Establish community-based waste sorting and recycling hubs in high-density urban zones	NDC, NCCP
Promote circular economy and waste-to-energy options	Convert organic waste into compost and biogas; explore public-private partnerships for energy recovery	NCCP, NAP
Climate-proof sanitation infrastructure	Upgrade refuse sites and waste drains to withstand floods and reduce environmental leaching	NCCAS, NDC
Ban open burning and control plastic waste	Enforce anti-burning by-laws; support plastic buy-back and collection programs	NCCP, NCCAS
Engage women and youth in green job creation	Support plastic recycling cooperatives and composting enterprises (e.g., Anloga, Ashaiman)	NDC, NCCAS

Table 20: *Adaptation Actions for Waste Management and Pollution Control*

3.4 ENSURING COHERENCE WITH NATIONAL ADAPTATION FRAMEWORKS

Ghana has developed a comprehensive suite of national climate policies and strategies that provide the vision, targets, and guiding principles for climate-resilient development across all levels of governance. These include:

- National Climate Change Policy (NCCP, 2013)
- National Climate Change Adaptation Strategy (NCCAS, 2012)
- National Adaptation Plan Framework (NAP, 2018)
- Updated Nationally Determined Contributions (NDC, 2021)

To be credible, fundable, and technically sound, all district-level adaptation actions should align with one or more of these frameworks. This alignment ensures that the MTDP:

- Contributes to national climate goals and reporting obligations.
- Builds on approved national priorities and financing pathways.
- Increases the likelihood of attracting support from national and international sources.

What Does Alignment Look Like in Practice?

- Each MTDP action or intervention should be linked to the relevant national framework(s).
- MMDAs can use the cross-referencing table in Step 8 to determine where alignment is strongest or needs to be strengthened.
- Actions that reflect priorities in multiple frameworks (e.g., NAP + NDC + NCCP) are more likely to gain support from national stakeholders and development partners.

How to Use this Section:

- **Review each sectoral template one at a time (e.g., agriculture, health, infrastructure) and identify which sectors are most relevant to your district based on CRVA findings or other evidence.**
- **Fill in the templates using your own district-specific data and experiences. Refer to local vulnerability reports, stakeholder consultations, and service delivery records to inform the adaptation actions.**
- **Align every proposed action with the corresponding national policy frameworks (NAP, NDC, NCCP, NCCAS). Use Step 8's cross-referencing table to justify and strengthen your linkages.**
- **Ensure all actions are measurable and time-bound, with realistic objectives that reflect your district's capacity and resources.**
- **Look for synergies between sectors — for example, a green infrastructure project might support water, health, and disaster risk reduction simultaneously.**
- **Engage your sector heads and planning team collaboratively. Climate adaptation is not the job of one unit alone — it requires coordinated input across departments.**
- **Use the completed sectoral tables as the foundation for your MTDP adaptation chapter or annex. This will ensure your climate priorities are integrated seamlessly into your overall development strategy.**

USEFUL RESOURCES

1. ***NAP Sector Strategies and Guidelines*** *Available through the EPA and Ministry of Environment, Science, Technology and Innovation (MESTI)*
2. ***Sample District Development Plans*** *https://www.ndpc.gov.gh/publications*
3. ***Climate-Smart Agriculture Sourcebook (FAO)*** *https://www.fao.org/climate-smart-agriculture-sourcebook*

SECTION 4

Gender and Social Inclusion in Climate Adaptation Planning

4.1 INTRODUCTION

Climate change disproportionately affects vulnerable populations, including women, children, the elderly, persons with disabilities, and economically marginalized groups. These groups often have lower adaptive capacity due to social, economic, and institutional barriers. Integrating gender and social inclusion into Medium-Term Development Plans ensures that adaptation efforts are equitable, inclusive, and responsive to the needs of all community members.

This section provides a practical framework for MMDAs to mainstream gender and social inclusion into their climate adaptation planning and implementation processes. The recommended approach aligns with Ghana's National Adaptation Plan (NAP, 2018), National Climate Change Adaptation Strategy (NCCAS, 2012), and National Climate Change Policy (NCCP, 2013).

4.2 WHY GENDER EQUITY AND SOCIAL INCLUSION MATTER IN CLIMATE ADAPTATION

Climate change disproportionately affects vulnerable populations, including women, children, the elderly, persons with disabilities, and economically marginalized groups. These groups often have lower adaptive capacity due to social, economic, and institutional barriers. Integrating gender and social inclusion into Medium-Term Development.

Key Challenges & Considerations

1. ***Differentiated Climate Vulnerabilities***
   - Women and girls often bear the burden of climate-related stresses (e.g., walking longer distances for water, reduced food security affecting maternal health).
   - Persons with disabilities may face mobility challenges during climate-induced disasters.
   - Poor households have limited access to financial resources for adaptive measures (e.g., flood-resistant housing).
2. ***Barriers to Inclusion in Decision-Making***
   - Women and marginalized groups are often excluded from policy formulation and adaptation decision-making processes.
   - Local leadership structures may not prioritize the perspectives of vulnerable populations in climate action.
3. ***Gender-Differentiated Economic Impacts***
   - Women and youth dominate the informal economy (smallholder farming, trading), which is highly sensitive to climate shocks.
   - Limited access to climate-resilient livelihood opportunities increases vulnerability among marginalized groups.

Policy Justification:

The integration of gender and social inclusion is backed by national and international commitments

1. ***Ghana's National Gender Policy (2015)***
   - *Advocates for gender-responsive planning across all sectors.*
2. ***United Nations Sustainable Development Goals (SDG 5 & SDG 13)***
   - *Promote gender equality and climate resilience.*
3. ***Ghana's Updated Nationally Determined Contributions (NDC, 2021)***
   - *Emphasizes gender-responsive adaptation strategies.*

4.3 FRAMEWORK FOR INTEGRATING GENDER & SOCIAL INCLUSION INTO CLIMATE ADAPTATION

For climate adaptation to be inclusive, MMDAs must apply a gender-sensitive, participatory approach that identifies and addresses the specific needs of vulnerable and marginalized populations. This means going beyond general climate interventions to design programs that recognize how social norms, economic disparities, age, ability, occupation, and location shape people's climate vulnerabilities and adaptation capacities.

STEP 1: ***Conduct Gender and Social Vulnerability Assessment***

MMDAs should begin with a ***Gender and Social Vulnerability Assessment***—either as part of the CRVA process or as a standalone community consultation and data-gathering exercise. This framework provides a template for mapping out which groups are most at risk, the barriers they face, and the types of responses that can enable inclusion and resilience.

Vulnerable Group	Climate Risk Exposure	Key Barriers to Adaptation	Recommended Adaptation Response
Women (rural farmers)	Drought, erratic rainfall	Limited access to land, climate information, CSA training, and credit	Gender-responsive extension services, subsidized CSA inputs, access to irrigation
Female traders in markets	Flooding, extreme heat	Market closures, poor drainage, lack of shade	Climate-proofed marketplaces, shaded stalls, micro-insurance for goods
Elderly populations	Extreme heat, floods	Physical vulnerability, social isolation	Establish community cooling centers, targeted emergency support systems
Persons with disabilities (PWDs)	Flooding, disasters	Poor accessibility to evacuation centers and early warning systems	Inclusive shelter design, accessible EWS, disability-inclusive planning forums
Urban informal workers (e.g., kayayei, head porters)	Flash floods, poor sanitation	Exposure to unregulated environments, lack of basic services	Improve drainage and sanitation in informal areas, social safety nets
Youth (unemployed or underemployed)	Drought, livelihood loss	Limited access to green skills training, land, and credit	Green job training programs, support for youth-led climate enterprises
Pregnant and lactating women	Food insecurity, water scarcity	Nutritional risks, caregiving stress, limited healthcare access	Nutritional assistance programs, maternal health outreach during climate shocks
Migrants and displaced persons	Flooding, loss of shelter and income	Legal insecurity, lack of voice in planning	Integrate migrants into disaster planning, equitable access to services

Table 21: *Gender and Social Vulnerability Assessment*

How MMDAs Can Use This Template

- **Conduct focused group discussions or interviews with different community groups.**
- **Collaborate with gender desks, social welfare officers, and CSOs working with vulnerable populations.**
- **Use the findings to shape targeted adaptation interventions within your MTDP—especially in health, infrastructure, livelihoods, and DRR.**

STEP 2: ***Gender-Responsive Climate Adaptation Planning***

Climate adaptation must be designed to actively reduce existing inequalities and empower vulnerable groups. This requires going beyond "gender awareness" and taking deliberate action to address specific risks, access gaps, and socio-economic barriers faced by women, youth, persons with disabilities, informal workers, and the elderly.

MMDAs should ensure that adaptation strategies are not only technically sound but also socially inclusive, gender-responsive, and participatory. The table below outlines examples of how to embed gender equity and social inclusion into adaptation actions across key sectors.

Sector	Gender-Responsive Adaptation Action
Agriculture and Food Security	Provide drought-tolerant seed packs, irrigation tools, and CSA training specifically targeted at women farmers, youth cooperatives, and persons with disabilities.
Water Resources Management	Construct community boreholes and rainwater harvesting systems near homes and schools to reduce time spent by women and girls collecting water. Ensure access for PWDs.
Health and Sanitation	Integrate maternal and reproductive health into climate-health outreach; ensure sanitation facilities are safe, gender-segregated, and accessible to all.
Infrastructure Development	Design market sheds, roads, and public buildings with safety features for women and accessibility for the elderly and disabled. Include shaded waiting areas and lighting.
Disaster Preparedness and Risk Reduction	Establish gender-inclusive evacuation plans and shelters with separate spaces for women, children, and vulnerable groups. Ensure PWD-friendly access and early warning signals.
Natural Resource Management	Train women and youth in agroforestry, shea processing, and community woodlot management to build climate-resilient livelihoods. Involve local women in forest monitoring.
Energy and Low-Carbon Development	Support women and youth-led enterprises in solar installation, clean cooking, and biofuel production. Provide training and microfinance.
Waste Management and Pollution Control	Empower women and youth groups in waste segregation, recycling, and composting businesses. Ensure participation in green job creation programs.
Livelihoods and Economic Empowerment	Provide seed funding and business training for women traders, youth innovators, and marginalized groups affected by climate shocks. Prioritize access to financial services.
Planning and Governance	Include gender desks, social welfare officers, and representatives of vulnerable groups in all climate planning consultations and adaptation committees

Table 22: *Gender-Responsive Adaptation Actions by Sector*

Key Guidance for MMDAs

- **Design adaptation interventions using disaggregated data to understand who benefits and who might be left behind.**
- **Prioritize actions that promote equity of access to climate services, finance, land, and technology.**
- **Use participatory tools (e.g., stakeholder mapping, community scorecards, gender audits) to strengthen inclusion in design and budgeting.**

STEP 3: ***Promoting Inclusive Participation in Climate Decision-Making***

Climate adaptation efforts are most effective when they reflect the voices, knowledge, and priorities of all community members — especially those who are most vulnerable. Yet, in many districts, women, youth, persons with disabilities, and other marginalized groups are often excluded from decision-making processes.

MMDAs must actively create spaces and mechanisms that allow diverse stakeholders to meaningfully engage in climate planning, budgeting, implementation, and monitoring. Participation must go beyond tokenism—it should be structured, empowering, and sustained over time.

✔	Action Point
✔	Ensure 30–50% representation of women and youth in climate-related committees, planning teams, and implementation taskforces.
✔	Conduct climate resilience and leadership training for women, youth, and persons with disabilities to enhance their ability to participate meaningfully.
✔	Establish accessible and safe platforms for public engagement—such as participatory town hall meetings, community durbars, or women's adaptation dialogues.
✔	Use community radio, infographics, and local languages to communicate climate information to all groups, including those with low literacy.
✔	Integrate climate education into schools and youth clubs, with emphasis on gender roles in adaptation and environmental stewardship.
✔	Facilitate feedback and accountability sessions where community members—including informal workers, migrants, and the elderly—can share experiences and recommendations.
✔	Collaborate with CSOs, faith-based organizations, and traditional leaders to identify and include hard-to-reach groups in adaptation consultations.

Table 23: *Promoting inclusive participation in climate decision-making*

STEP 4: ***Strengthening Climate-Resilient Livelihoods for Vulnerable Groups***

Livelihood security is central to climate resilience. For many vulnerable groups—such as women, youth, persons with disabilities, and the urban poor—climate change directly threatens their income, food security, and long-term well-being. Strengthening climate-resilient and inclusive livelihood options is therefore not just about recovery — it's about transformation. MMDAs have a critical role in supporting adaptive livelihoods through skills training, access to finance, and the enabling infrastructure needed to thrive under changing climate conditions.

Key Considerations for MMDAs

- Prioritize livelihood options with co-benefits for both adaptation and income generation.
- Partner with local cooperatives, youth groups, CSOs, and vocational institutions.
- Ensure activities are gender-responsive, accessible to PWDs, and scalable over time.
- Integrate climate-resilient livelihoods into the MTDP Economic Development sub-component.

Livelihood Option	Target Group	Climate Adaptation Benefit
Agroforestry and Permaculture	Women farmers, youth in savannah and transition zones	Enhances soil fertility, provides shade, stabilizes yields, and reduces drought vulnerability
Solar Energy Enterprises	Youth and women entrepreneurs in off-grid communities	Offers clean energy access, reduces biomass dependence, and opens green job pathways
Eco-Tourism and Nature Guiding	Coastal and forest fringe communities	Promotes ecosystem conservation and generates income from biodiversity preservation
Waste Recycling and Upcycling	Urban poor, women's cooperatives, persons with disabilities	Lowers pollution, provides income, and builds circular economy practices in cities
Shea Butter and Non-Timber Forest Product (NTFP) Processing	Rural women in Northern and Upper regions	Adds value to natural resources, diversifies livelihoods, and empowers women economically
Climate-Smart Aquaculture	Youth and fisherfolk in coastal and riparian zones	Reduces overfishing pressure, improves food security, and supports income recovery
Beekeeping and Pollinator-Friendly Enterprises	Youth and elderly farmers across ecological zones	Boosts biodiversity, supports tree crops, and requires minimal land or water use
Mobile Green Services (e.g., tree nursery, compost delivery)	Informal youth workers, migrants	Provides urban greening services and promotes community adaptation

Table 24: *Recommended Gender-Inclusive Climate-Resilient Livelihood Options*

STEP 5: ***Gender-Responsive Monitoring and Evaluation (M&E)***

Monitoring, evaluation and learning is essential for understanding whether climate adaptation actions are equitable, inclusive, and effective. Traditional MEL frameworks often overlook how adaptation interventions affect women, youth, persons with disabilities and other marginalized groups.

MMDAs must therefore integrate gender-responsive and socially inclusive indicators into their MTDP MEL systems to track not only what gets done, but who benefits—and who might be left out.

Guidance for MMDAs:

- Collect sex-, age-, and disability-disaggregated data during project implementation.
- Use qualitative tools (e.g., focus group discussions, community scorecards) to understand social impact beyond numbers.
- Ensure community-led monitoring by including women, youth, and CSO representatives in local review processes.
- Embed gender-responsive MEL indicators within existing district MEL frameworks and sector reports.

Indicator	Measurement Criteria
% of women and youth in climate decision-making committees	At least 30–50% representation, with active participation
Number of gender-responsive adaptation projects implemented	Track annual increase; projects must include gender-targeted components or beneficiaries
% of climate funds allocated to gender-inclusive initiatives	Document budget lines for projects targeting women, youth, PWDs, and informal workers
Number of accessible disaster preparedness facilities	At least one inclusive shelter per high-risk community (PWD access, separate spaces for women/children)
Number of trainings conducted on gender and climate resilience	At least one training session per year targeting MMDA staff, local groups, and CSOs
Number of livelihood programs designed for marginalized groups	Include targets for women, youth, and PWD beneficiaries in adaptation livelihood portfolios
Use of participatory feedback tools in climate planning	Document use of scorecards, consultations, or other tools in at least 2 planning processes annually

Table 25: *Key M&E Indicators for Gender-Responsive Climate Adaptation*

Reporting Tip for MMDAs:

Integrate these indicators into your District Monitoring and Evaluation Plan and report on them during:

- Annual Progress Reviews.
- Composite Budget Hearings.
- Mid-term and End-of-Plan MTDP Evaluations.

4.4 ENSURING ALIGNMENT WITH NATIONAL AND INTERNATIONAL POLICIES

To ensure consistency, coherence, and strategic relevance, all gender-responsive adaptation strategies must align with Ghana's existing national development priorities and its commitments to global frameworks. This alignment is critical not only for policy credibility, but also for mobilizing climate finance, building partnerships, and ensuring that local efforts contribute meaningfully to national and global goals.

MMDAs should ensure that each gender and social inclusion-related action in their MTDPs references the appropriate national and/or international policy.

MTDP Gender-Inclusive Action	Relevant Policy Alignment
Climate-smart agriculture training and tools for women	Ghana's National Gender Policy (2015), National Adaptation Plan (NAP, 2018), Updated NDC (2021)
Establishing safe, nearby water access points in vulnerable communities	NCCP (2013), NAP (2018), Updated NDC (2021), SDG 6 (Clean Water and Sanitation)
Gender-sensitive disaster risk reduction and evacuation strategies	NCCAS (2012), NAP (2018), Ghana National Disaster Management Policy
Supporting alternative livelihoods for youth, women, and persons with disabilities	Updated NDC (2021), Ghana's Long-Term National Development Plan, SDG 8 (Decent Work and Economic Growth)
Providing inclusive, accessible sanitation in public infrastructure	NCCP (2013), Ghana WASH Sector Strategic Plan (2021), SDG 6
Mainstreaming GESI into MTDP planning and budgeting processes	Ghana's National Gender Policy (2015), National Development Planning Guidelines (NDPC), SDG 5 (Gender Equality)
Enhancing women's participation in climate planning committees	NAP (2018), National Gender Policy (2015), SDG 13 (Climate Action), SDG 16 (Inclusive Institutions)

Table 26: *Alignment Matrix – Gender & Social Inclusion in Climate Adaptation Policies*

How to Use This Section:

This section provides MMDAs with a practical framework for integrating gender equity and social inclusion (GESI) into every stage of climate adaptation planning—from assessment to implementation and monitoring. It is designed to help ensure that adaptation actions are inclusive, equitable, and aligned with national priorities.

Follow the steps below to apply this section meaningfully within your district's planning and implementation processes:

1. ***Assess Gender-Differentiated Climate Vulnerabilities in Your District:*** Begin by identifying how different groups—such as women, youth, PWDs, elderly, and informal workers—experience climate risks differently. Use data from CRVAs, social welfare departments, community consultations, or GESI-focused vulnerability assessments.
2. ***Apply the Structured Approach to Develop Inclusive Adaptation Strategies:*** Use the templates provided (e.g., vulnerability matrix, gender-responsive action table, livelihood options) to design adaptation responses that meet the specific needs of marginalized groups. Tailor actions to local realities and sector-specific challenges.
3. ***Ensure Participation of Marginalized Groups in Decision-Making Processes:*** Institutionalize inclusive participation by involving women, youth, persons with disabilities, and traditional leaders in all planning meetings, budgeting sessions, and community validation exercises. Track who is at the table—and whose voice is being heard.
4. ***Monitor and Evaluate Gender-Responsiveness in Climate Adaptation Initiatives:*** Use the M&E indicators provided to measure inclusion and equity outcomes. Regularly collect sex- and age-disaggregated data, assess progress in closing adaptation gaps, and adapt strategies based on feedback from community members.

USEFUL RESOURCES

1. ***Ghana National Gender Policy (2015)*** *https://moge.gov.gh/national-gender-policy*
2. ***SIGRA Gender Integration Guidelines*** *Available via SIGRA or Cowater International*
3. ***NDPC Gender Mainstreaming Toolkit*** *https://www.ndpc.gov.gh/media/Gender_Toolkit_for_Planning.pdf*
4. ***SDG Tracker (Ghana) – SDG 5 & SDG 13*** *https://sdgs.ghana.gov.gh*

SECTION 5

Monitoring, Evaluation, Learning and Climate Indicators

5.1 INTRODUCTION

Monitoring, Evaluation and Learning (MEL) is not just about reporting activities — it is about ensuring that climate adaptation efforts are working, reaching the right people, and evolving based on evidence. A robust M&E framework helps MMDAs to:

- Track the effectiveness of climate adaptation interventions.
- Improve decision-making and learning.
- Build accountability to citizens, national stakeholders, and development partners.
- Unlock and sustain climate finance by demonstrating results.

This section presents a structured approach for integrating climate-specific indicators into district-level M&E systems, aligned with Ghana's:

- National Adaptation Plan (NAP, 2018)
- National Climate Change Adaptation Strategy (NCCAS, 2012)
- Updated Nationally Determined Contributions (NDC, 2021)

These national frameworks emphasize the need for results-based, inclusive, and transparent climate action, with district-level implementation as a cornerstone.

5.2 KEY PRINCIPLES FOR EFFECTIVE CLIMATE MEL

For MMDAs to successfully monitor climate adaptation initiatives, their MEL systems must embrace the following principles:

- ***Data-Driven:*** Use quantitative and qualitative data — from meteorological stations, CRVAs, community monitoring, and GIS mapping — to measure change and risk reduction over time.
- ***Outcome-Oriented:*** Focus on tracking real-world impact (e.g., increased water access, reduced disaster losses, improved resilience) rather than only counting activities.
- ***Gender-Responsive:*** Disaggregate all relevant indicators by sex, age, and vulnerability group, and assess whether adaptation actions benefit or exclude women, youth, and marginalized groups.
- ***Participatory:*** Involve communities, traditional authorities, CSOs, private sector actors, and sector departments in identifying, tracking, and interpreting climate results. Participatory M&E builds trust and accountability.
- ***Policy-Aligned:*** Ensure that indicators and targets align with national frameworks such as the NAP, NDC, and NCCAS, as well as the MTDP Results Framework and NDPC guidelines.

5.3 TYPES OF CLIMATE INDICATORS

Monitoring the success of climate adaptation actions requires clear and measurable indicators. These indicators should be integrated into the MTDP Results Framework and tracked across the implementation period.

MMDAs should apply a mix of input, output, outcome, and impact indicators to capture the full picture of their climate efforts—from planning to real-world change (**Table 27**).

Indicator Type	Definition	Examples
Input Indicators	Track the resources invested into climate adaptation	% of MTDP budget allocated to climate actions
		Number of staff trained in climate planning
		Volume of climate finance mobilized
Output Indicators	Measure what was delivered or produced	Number of boreholes constructed in drought-prone communities
		Number of trees planted through reforestation programs
		Number of early warning systems installed
Outcome Indicators	Measure the short-to-medium term effects of the outputs	-Percentage of households with improved access to clean water
		Reduction in flood-related damage or displacement
		Percentage increase in adoption of CSA practices among farmers
Impact Indicators	Measure the long-term resilience or system-level change	Decline in climate-related illness rates (e.g., cholera, heat stress)
		Improved food security in vulnerable districts
		Increased ecosystem recovery in degraded lands

Table 27: *Type of Overview of Indicator Types*

5.4 DESIGNING A CLIMATE-RESPONSIVE M&E FRAMEWORK FOR MMDAS

Every MMDA must have a clear MEL framework for tracking climate adaptation efforts. This framework should define indicators, data sources, timelines, responsible units, and review mechanisms, and be integrated into the MTDP Results Framework.

A climate-responsive MEL system ensures that planning is not only implementation-focused, but also tracks the resilience outcomes, community benefits, and learning loops essential for long-term sustainability.

STEP 1: *Setting Measurable Climate Indicators*

MMDAs should adopt SMART indicators (Specific, Measurable, Achievable, Relevant, and Time-bound)(**Table 28)** that enable tracking of:

- Climate change exposure and vulnerability trends.
- Effectiveness of adaptation interventions.
- Improvements in community and sectoral resilience.

Category	Key Indicators	Measurement Approach
Climate Risks & Exposure	- Frequency of extreme events (e.g., floods, droughts, extreme heats). - Number of households or individuals affected by climate hazards	GMet reports, NADMO disaster databases, CRVA updates
Infrastructure Resilience	- Number of climate-proofed infrastructure projects completed - % of critical roads upgraded to withstand flooding or erosion	District Works Department reports, physical inspections, photo evidence
Water Security	- Percentage of households with access to drought-resistant or flood-resilient water sources - Number of rainwater harvesting or borehole systems installed	Water Services monitoring, community surveys, WRC reports
Agriculture & Food Security	- Percentage of farmers adopting CSA practices - Crop yield trends during adverse weather conditions	MoFA extension data, farmer field schools, satellite yield tracking
Disaster Preparedness	- Percentage of communities with functioning early warning systems - Emergency response time during disasters	NADMO incident records, community-based disaster committees
Ecosystem Protection	- Hectares of forest, wetland, or riparian land restored or protected - Number of community-led conservation or green space initiatives	Forestry Commission reports, drone or satellite imagery, field checks
Social & Gender Inclusion	- Percentage of women, youth, and PWDs involved in climate planning processes - Number of gender-responsive adaptation initiatives or budgets	District Social Welfare, Gender Desk reports, participatory focus groups

Table 28: *Climate M&E Indicator Categories and Approache*

STEP 2: *Establishing Data Collection & Reporting Mechanisms*

Once indicators have been defined, MMDAs must ensure they have the right data, inclusive participation, and a clear reporting schedule to track progress. Effective M&E depends not only on what is measured but also on how, by whom, and when the information is collected and reported.

A. Data Sources for Climate Adaptation Monitoring

MMDAs should use a combination of primary and secondary data to monitor the implementation and impact of adaptation actions (**Table 29**).

Data Source Type	Examples	Use in M&E
Primary Data	- Field surveys - Key informant interviews - Focus group discussions (FGDs) - Monitoring visits and site inspections - Community scorecards	Provides first-hand, localized insights on adaptation progress, community satisfaction, and implementation quality
Secondary Data	- Meteorological reports from GMet - Disaster and incident reports from NADMO - Agricultural records (e.g., extension reports) - Satellite imagery, GIS mapping - EPA, Forestry Commission, and health service data	Offers broader trends and baseline data to validate primary sources and monitor long-term changes

Table 29: *Sources of data for climate adaptation monitoring*

B. Stakeholder Roles in Climate MEL

An inclusive MEL promotes accountability, local ownership, and better learning. MMDAs should engage a variety of actors in both data collection and review (**Table 30**).

Stakeholder	Role in the M&E Process
Community Members & Local Leaders	Validate local results, highlight emerging risks, and co-produce knowledge
CSOs and Faith-Based Organizations	Facilitate participatory tracking, offer capacity building, and ensure inclusion of marginalized voices
Academic & Research Institutions	Support data analysis, impact evaluation, and tool development
Private Sector	Share service data (e.g., energy access, water usage) and co-develop innovative tracking methods
MMDA Departments	Coordinate data collection, store records, lead analysis, and compile periodic reports

Table 30: *Variety of actors in both data collection and review*

C. Reporting Frequency for Climate M&E

A tiered approach to reporting allows MMDAs to track short-term outputs and long-term outcomes with appropriate timelines (**Table 31**).

Level	Frequency	Purpose
Monthly	Project-level tracking	Monitor implementation of infrastructure, training sessions, outreach, etc.
Quarterly	Sectoral review	Assess progress across agriculture, DRR, water, health, etc. to address bottlenecks
Annually	Comprehensive climate adaptation review	Compile district-wide performance, financial tracking, and community-level outcomes for MTDP review and national reporting

Table 31: *Reporting frequency for climate M&E*

Key Actions for MMDAs

- Assign data collection responsibilities across departments (e.g., Works, Agriculture, NADMO, Gender).
- Standardize formats for reporting using NDPC-aligned templates.
- Document how data from stakeholders (e.g., CSOs, communities) informs adaptive decisions.

STEP 3: ***Developing a Climate Adaptation Performance Scorecard***

A Climate Adaptation Performance Scorecard helps MMDAs systematically track progress toward key adaptation goals over time. It provides a snapshot of baseline conditions, annual updates, and end-of-plan targets, allowing for timely adjustments and learning.

The scorecard is especially useful during Annual Progress Reviews (APRs), Mid-Term Evaluations, and District Assembly planning meetings (**Table 32**). It promotes transparency, accountability, and performance-based adaptation management.

How to Use:

1. **Select 4–6 key performance areas aligned with the district's MTDP and CRVA findings.**
2. **Define clear indicators for each performance area, using SMART principles.**
3. **Record the baseline value (e.g., 2025), set an ambitious but realistic target (e.g., 2029), and update progress annually.**
4. **Use the scorecard to assess gaps and inform budget and implementation priorities.**

Performance Area	Indicator	Baseline (2025)	Target (2029)	Current Status (2027)
Climate-Smart Agriculture	% of farmers using drought-resistant crops	15%	50%	30%
Water Security	% of communities with improved water systems	40%	80%	55%
Flood Resilience	Km of roads upgraded for flood resistance	10 km	50 km	25 km
Disaster Preparedness	% of communities covered by early warning systems	30%	90%	65%
Ecosystem Restoration	Hectares of forest/wetland restored	500 ha	2000 ha	1250 ha

Table 32: *Climate Adaptation Performance Scorecard (Sample)*

Tips for MMDAs:

- Disaggregate data (e.g., % of women/youth farmers using CSA) where possible.
- Include indicators from priority sectors such as health, sanitation, livelihoods, and energy if relevant.
- Review and update scorecards during planning, budgeting, and APR processes.
- Use color codes (green = on track, yellow = moderate risk, red = off-track) for a quick visual assessment.

STEP 4: ***Conducting Climate Impact Assessments***

Monitoring activities and outputs is important—but to truly measure success, MMDAs must assess whether climate adaptation actions are reducing vulnerability, building resilience, and enhancing community well-being.

Climate Impact Assessments go beyond implementation tracking. They help districts understand what has changed, who benefited, what still needs improvement, and how to adapt plans moving forward (**Table 33**).

What Is a Climate Impact Assessment?

A Climate Impact Assessment is a structured evaluation of how well adaptation interventions are working—across infrastructure, agriculture, water, disaster response, livelihoods, and social inclusion.

Assessment Type	Purpose	How to Conduct It
1. Climate Resilience Impact Studies	Assess the effectiveness of implemented projects in reducing climate risks and improving resilience	Conduct surveys, field visits, and before-after comparisons for key interventions (e.g., flood control, CSA, early warning systems)
2. Community Feedback Mechanisms	Capture local perceptions and experiences of climate change impacts and responses	Organize participatory reflection sessions, focus group discussions, and community scorecards
3. Policy & Plan Reviews	Ensure that district adaptation strategies remain aligned with the latest scientific knowledge and national policy priorities	Review and revise MTDP actions annually or mid-term, based on NAP/NDC updates, GMet projections, and NDPC guidelines

Table 33: *Key Components of a Climate Impact Assessment for MMDAs*

Implementation Guidance for MMDAs:

- Conduct impact reviews at mid-point (Year 2 or 3) and at the end of the MTDP cycle.
- Involve CSOs, local institutions, traditional authorities, and vulnerable groups in all assessments.
- Use the findings to adjust targets, reallocate resources, or introduce new priority actions.
- Document impact stories that show how lives, landscapes, or livelihoods have changed as a result of your interventions.

5.5 STRENGTHENING INSTITUTIONAL CAPACITY FOR CLIMATE MEL

Even the most well-designed MEL frameworks can fail if the institutions responsible for them lack the capacity to implement, analyze, and act on data. For climate adaptation efforts to be sustained and scaled, MMDAs must invest in human resources, digital tools, and cross-sectoral coordination (**Table 34**).

This section outlines practical capacity-building steps to help MMDAs institutionalize climate-responsive MEL within existing systems.

Area	Capacity Strengthening Action
Human Resource Development	• Train Planning Officers, M&E Units, and Sector Heads on collecting, analyzing, and reporting climate indicators. • Offer refresher workshops on data disaggregation (e.g., gender, youth, PWDs).
Digital Tools & Technology	• Develop simple digital dashboards or data management systems for real-time climate reporting. • Use mobile data collection tools (e.g., KoboToolbox, ODK) for field-level monitoring.
GIS and Remote Sensing	• Train selected staff in basic GIS for mapping vulnerabilities, project locations, and impacts. • Partner with RCCs, EPA, or universities to access satellite data and spatial analysis support.
Institutional Coordination	• Establish a Climate MEL Working Group within the Assembly that includes Planning, NADMO, Agriculture, Water, Gender, and Environment departments. • Develop shared reporting templates and assign joint responsibilities for climate indicator updates.
Learning & Knowledge Management	• Document lessons learned from implementation and share results during inter-district learning events or RCC briefings. • Build a central archive of climate reports, maps, and scorecards at the MMDA level.

Table 34: *Key Capacity Building Priorities for MMDAs*

Key Actions for Institutionalizing MEL:

- Include climate M&E capacity building in your District Capacity Development Plan.
- Allocate funding in the MTDP budget for training, tools, and interdepartmental coordination.
- Partner with NDPC, RCCs, EPA, CSIR, SIGRA, and development partners for technical assistance and peer learning.

5.6 LEARNING LOOPS AND ADAPTIVE MANAGEMENT

5.6.1 Why Learning Loops Matter

Monitoring, evaluation and learning in climate adaptation isn't just about tracking outputs. It must also support ongoing learning and allow MMDAs to adjust actions based on what is or isn't working. This process is referred to as adaptive management, a core principle of resilience building.

"Learning loops" ensure that insights from the ground inform future plans, budgets, and partnerships.

Component	What It Means for MMDAs
Observation	Collect real-time and seasonal data on climate events, impacts, and program delivery (e.g., rain patterns, flooding frequency, CSA adoption rates)
Reflection	Convene regular review meetings with planners, sector heads, CSOs, and communities to discuss what the data and feedback mean
Adaptation	Adjust plans, priorities, or budgets in response to what's learned (e.g., scaling up successful pilots, halting ineffective programs)
Documentation	Capture lessons learned, innovations, and challenges in progress reports, planning documents, and knowledge products
Sharing	Disseminate insights through peer learning events, RCC platforms, NDPC reviews, or community meetings

Table 35: *Sources of data for climate adaptation monitoring*

5.6.2 How MMDAs Can Embed Learning Loops

1. **Schedule Learning Reviews**
   - Integrate mid-year and annual "Climate Learning Sessions" into your district's M&E calendar.
2. **Use Feedback from Communities**
   - Combine scorecards, focus groups, and community forums to understand lived experiences of climate projects.
3. **Update MTDPs Mid-Cycle**
   - Don't wait 4 years to change direction—adjust annually or biannually based on emerging trends or shocks.
4. **Build a Knowledge Management System**
   - Assign someone to track adaptation progress, lessons learned, innovations, and risks in a shared MMDA database or file.
5. **Promote Cross-District Learning**
   - Participate in peer learning events and share what's working through RCC forums or climate dialogue platforms.

How to Use This Section:

This section provides MMDAs with a step-by-step guide to establishing and managing climate-responsive M&E systems that are embedded in district development planning. To make the most of the tools and templates shared, MMDAs should follow this structured approach:

1. ***Select Relevant Climate Indicators for District-Specific Adaptation Efforts:*** Use CRVA results, stakeholder consultations, and MTDP objectives to identify which indicators best reflect your district's vulnerabilities and priority sectors (e.g., agriculture, water, disaster preparedness). Choose indicators that are SMART and locally measurable.
2. ***Implement Structured Data Collection and Reporting Mechanisms:*** Build systems for gathering both primary and secondary data, and define clear reporting timelines (monthly, quarterly, annually). Assign responsibilities to sector departments, and ensure tools and formats are standardized across the Assembly.
3. ***Use Scorecards and Performance Assessments to Track Progress Annually:*** Apply the Climate Adaptation Performance Scorecard and other M&E templates provided in this toolkit to monitor change over time. Hold review sessions to reflect on what's working, what's off-track, and what adjustments are needed.
4. ***Ensure Alignment with Ghana's National Adaptation and Development Policies:*** Cross-reference local M&E indicators with national frameworks like the NAP, NDC, NCCP, and NDPC planning guidelines. This improves policy coherence, enhances eligibility for external funding, and ensures upward accountability.

USEFUL RESOURCES

1. ***NAP and NDC M&E Frameworks (Ghana)*** *Access via EPA Ghana or NDPC*
2. ***Climate Scorecard Examples*** *https://www.climatewatchdata.org*
3. ***UNDP Results-Based Management Guide*** *https://www.undp.org/publications/results-based-management-handbook*

SECTION 6

Capacity Development and Knowledge Sharing for Climate Adaptation

6.1 INTRODUCTION

An effective climate adaptation strategy begins with the building of institutional and technical capacity. For MMDAs, this is not just beneficial—it is essential. Strengthened capacity equips local governments, technical personnel, and community stakeholders with the knowledge and tools needed to design, implement, monitor, and evaluate climate-resilient development initiatives. Without this foundation, efforts to integrate climate adaptation into MTDPs are likely to fall short in both scope and sustainability.

This section provides a structured approach for strengthening the capacity of MMDAs, stakeholders, and communities in climate adaptation. It also outlines knowledge-sharing mechanisms that facilitate learning, innovation, and best practices at the local, regional, and national levels.

6.2 KEY OBJECTIVES OF CAPACITY DEVELOPMENT FOR CLIMATE ADAPTATION

A robust and climate-resilient development agenda at the local level begins with empowered and well-equipped MMDAs. Capacity development plays a pivotal role in enabling Assemblies to effectively mainstream climate adaptation into their MTDPs, sectoral programmes, and community-led initiatives.

This section highlights the core objectives that should guide capacity development efforts across MMDAs. These range from strengthening institutional knowledge and technical capabilities to fostering cross-sectoral collaboration and community ownership. **Table 36** outlines these objectives, detailing what each entails and the tangible outcomes they aim to deliver—ensuring that climate adaptation is not only well understood but also practically implemented at the district level.

Objective	What It Involves	Expected Outcome
1. Enhance Institutional Knowledge	Train MMDA officials on climate risk analysis, adaptation entry points in MTDPs, and national adaptation frameworks (NAP, NDC)	Improved planning, budgeting, and integration of adaptation into local development
2. Improve Technical Expertise	Build staff capacity in data collection, CRVA interpretation, GIS mapping, climate scenario analysis, and participatory assessments	Evidence-based decision-making and better targeting of vulnerable areas/groups
3. Foster Multi-Stakeholder Collaboration	Facilitate partnerships between local government, private sector, academia, traditional leaders, and civil society	Increased co-investment, shared responsibilities, and local innovation in adaptation
4. Encourage Knowledge Exchange	Create platforms for peer learning, cross-district dialogue, and inter-sectoral workshops	Faster diffusion of best practices, innovations, and locally driven solutions
5. Empower Communities	Conduct grassroots climate education, sensitization campaigns, and skills development in adaptation (e.g., CSA, water management)	Improved community ownership, resilience, and inclusion in adaptation planning

Table 36: *Key Objectives of Capacity Development for Climate Adaptation*

Recommended Approaches for MMDAs:

- Conduct District Climate Training Needs Assessments to identify capacity gaps across departments and stakeholders.
- Include climate capacity-building components in the MTDP and composite budget, aligned with NDPC's capacity development strategy.
- Partner with regional training institutions, universities, and development partners for specialized courses and tools.
- Document and share lessons from successful adaptation projects via RCC platforms, planning forums, or local learning fairs.
- Use radio, community information centers, and schools for climate literacy and behavior change at the grassroots level.

6.3 IDENTIFYING CAPACITY GAPS

Before MMDAs can build strong climate adaptation systems, they must understand where their current capacities fall short. Identifying gaps in skills, systems, staffing, and community engagement is a critical first step toward designing effective training programs, allocating resources, and partnering strategically (**Table 37**).

✔	Assessment Area	Key Questions
☐	**Technical Knowledge in Risk Assessment**	Do MMDA officers (Planners, NADMO, Works) have the capacity to conduct or interpret Climate Vulnerability and Risk Assessments?
☐	**Climate-Resilient Planning**	Are local planners trained in climate-resilient infrastructure design, land-use planning, and zoning?
☐	**Sector-Specific Adaptation Skills**	Do agricultural extension officers understand and promote climate-smart farming practices? Are engineers equipped to design flood-resistant systems?
☐	**Emergency Response Readiness**	Do disaster management officers have updated training and resources to manage climate-induced emergencies such as floods, droughts, and extreme heats?
☐	**Monitoring & Evaluation Systems**	Is there a climate-sensitive M&E framework in place that includes indicators, data sources, and responsibilities?
☐	**Community Access to Climate Information**	Are local communities—especially vulnerable groups—connected to early warning systems and equipped with basic climate literacy?
☐	**ICT and Data Systems**	Does the MMDA have tools (e.g., GIS, mobile data collection apps) and digital platforms for adaptation planning and reporting?
☐	**Internal Coordination**	Is there regular collaboration between departments (e.g., Works, Health, Water, Agriculture, Planning) on climate-related issues?

Table 37: *Checklist: Assessing Climate Adaptation Capacity Gaps in MMDAs*

How MMDAs Can Use This Checklist:

- **Integrate into training needs assessments, capacity development plans, or performance reviews.**
- **Use it as a baseline to guide partnerships with universities, NGOs, and RCCs for technical support.**
- **Revisit the checklist annually to monitor progress in closing identified gaps.**

6.4 STRUCTURED CAPACITY DEVELOPMENT APPROACH

MMDAs should adopt a structured, step-by-step approach to capacity development.

STEP 1

Institutional Capacity Strengthening

- Conduct training for MMDA staff on climate risk assessments, policy integration, and adaptation financing.
- Develop climate-focused leadership programs for local decision-makers.
- Establish dedicated Climate Change Desks in each MMDA for continuous learning

STEP 2

Technical Skills Development

- Train planners and engineers on climate-proof infrastructure design (flood-resistant roads, drought-proof water systems).
- Provide GIS and remote sensing training for spatial mapping of climate risks.
- Develop climate-smart agriculture extension programs to support local farmers

STEP 3

Community-Based Climate Adaptation Training

- Conduct climate education programs for vulnerable populations (farmers, traders, fisherfolk, and women's groups).
- Train local disaster response teams to improve resilience to floods, droughts, and extreme weather events.
- Promote traditional knowledge-sharing for ecosystem-based adaptation (e.g., indigenous water conservation methods).

STEP 4

Knowledge Sharing and Best Practices Exchange

- Facilitate peer-to-peer learning programs between MMDAs on successful climate adaptation interventions.
- Establish online portals and databases for storing and sharing adaptation research and best practices.
- Organize annual Climate Resilience Learning Forums for districts to showcase adaptation successes.

6.5 TRAINING AND KNOWLEDGE SHARING PLATFORMS

An effective climate adaptation requires more than technical tools — it demands continuous learning, collaboration, and knowledge exchange. MMDAs should establish and utilize diverse training modalities and platforms to build staff capacity, empower communities, and share experiences across districts.

This section outlines practical training approaches and knowledge-sharing platforms that can help mainstream climate adaptation across all levels of local governance (**Tables 38 and 39**).

Training Method	Target Group	Expected Outcome
Workshops & Seminars	MMDA staff, planners, heads of departments	Enhanced technical knowledge of adaptation planning, policy alignment, and budgeting
Technical Field Training	Engineers, agricultural officers, water and works departments	Improved capacity to implement and supervise climate-resilient infrastructure and CSA interventions
Community Awareness Programs	Farmers, fisherfolk, traders, youth, PWDs, and women's groups	Increased awareness of local climate risks, available adaptation practices, and early warning response
Webinars & E-Learning Modules	MMDA technical officers, civil society, RCC officers	Expanded access to national and global climate learning, policy updates, and toolkits
Study Tours & Inter-District Exchange Visits	MMDA teams, RCC focal points	Strengthened peer-to-peer learning, innovation uptake, and sharing of best practices and local solutions

Table 38: *Training Modalities for Climate Adaptation*

Platform	Purpose
Local Climate Adaptation Hubs	Establish district or zonal information centers where community members can access climate education, CSA demonstrations, and disaster preparedness resources
Online Climate Portals (e.g., EPA, NDPC, GCNet, SIGRA platforms)	Serve as centralized repositories for climate policy documents, vulnerability reports, training manuals, and MTDP templates
Annual Stakeholder Dialogues	Bring together MMDAs, RCCs, NGOs, traditional leaders, academia, and private sector to reflect on progress, share lessons, and co-develop district solutions
Traditional Knowledge Documentation	Collect and preserve indigenous adaptation strategies (e.g., sacred groves, early warning through animal behavior, rain rituals) for future climate learning and integration into local policy

Table 39: *Knowledge Sharing Networks and Platforms*

6.6 PUBLIC AWARENESS AND STAKEHOLDER ENGAGEMENT

Again, effective climate adaptation doesn't happen in planning offices alone, it requires informed, empowered, and engaged communities. When citizens understand climate risks and participate in adaptation planning and implementation, interventions are more locally grounded, sustainable, and widely supported.

This section provides practical strategies MMDAs can use to build public awareness and foster inclusive stakeholder engagement—ensuring that climate action is not just top-down, but co-created with the people it is meant to serve.

6.6.1 Why Public Engagement Matters

An inclusive and participatory approach to climate adaptation is essential for long-term success—especially at the local level where climate impacts are felt most directly. For MMDAs, public engagement is not just a checkbox in the planning process; it is a cornerstone for fostering trust, accountability, and co-ownership of climate actions.

Meaningful engagement ensures that citizens are not only informed about climate risks but also actively contribute to identifying solutions, shaping interventions, and monitoring implementation. It helps bridge the gap between scientific knowledge and community realities, while also surfacing valuable indigenous practices and local innovations that are often excluded from formal decision-making.

Moreover, when women, youth, persons with disabilities, and other marginalized groups are empowered to participate, adaptation strategies become more equitable, effective, and sustainable. **Table 40** provides practical strategies that MMDAs can adopt to deepen public participation in climate resilience planning and implementation.

✔	Engagement Activity	Purpose
✔	Develop radio and TV programs on climate resilience	Reach broad audiences with climate tips, disaster preparedness, CSA messages, and expert interviews in local languages
✔	Use social media campaigns	Engage youth and urban populations on adaptation topics (e.g., water conservation, clean cooking, afforestation) through infographics, videos, and storytelling
✔	Organize town hall and community durbars	Facilitate participatory discussions on climate impacts, community solutions, and budget priorities
✔	Translate adaptation messages into local languages	Increase accessibility and cultural relevance of climate communication (e.g., Dagbani, Ewe, Twi, Frafra)
✔	Engage schools and youth groups	Promote climate literacy and action through tree planting, school clubs, and environmental competitions
✔	Partner with religious and traditional leaders	Leverage trusted messengers to shape public attitudes and support climate-friendly practices
✔	Use street drama, mobile vans, and market pop-ups	Take climate awareness to public spaces in creative, engaging, and informal formats

Table 40: *Recommended Public Engagement Strategies for MMDAs*

6.6.2. Key Recommendations for MMDAs:

- Include public awareness campaigns in MTDP budgets under communication, environment, or DRR activities.
- Designate a climate communications focal person or partner with CSOs/media houses.
- Monitor and evaluate the reach and impact of awareness initiatives through community feedback.
- Ensure gender and social inclusion in all engagement processes by proactively inviting underrepresented groups.

6.7 PARTNERSHIPS FOR CLIMATE CAPACITY DEVELOPMENT

A robust and resilient climate adaptation system cannot be built by MMDAs in isolation. Strengthening local-level capacity demands strategic and sustained partnerships with a broad network of stakeholders—including national ministries and agencies, research and academic institutions, civil society organizations, private sector innovators, and international development partners.

From co-developing solutions to mobilizing resources and sharing knowledge, these actors bring complementary strengths that enhance the ability of MMDAs to respond effectively to climate risks. Forging such partnerships ensures that adaptation efforts are not only locally grounded, but also technically sound, scalable, and aligned with national and global goals.

These partnerships bring together technical expertise, policy alignment, funding, innovation, and community reach — helping MMDAs deliver more robust, inclusive, and scalable climate solutions.

Why Partnerships Matter

An effective and sustainable climate adaptation response at the local level is only possible when MMDAs work in collaboration with a broader ecosystem of actors. No single institution can address the multi-dimensional nature of climate change alone (**Table 41**).

- Enable access to training, tools, and data not available within the MMDA.
- Facilitate peer learning and replication of successful models.
- Increase eligibility for climate finance and donor support.
- Foster shared ownership and sustainability of adaptation actions.

Partner	Role in Capacity Development
National Development Planning Commission (NDPC)	Provides policy guidance, planning templates, and results frameworks for integrating climate change into MTDPs and M&E systems
Environmental Protection Authority (EPA)	Offers technical assistance on CRVA development, GIS-based risk mapping, NAP and NDC alignment, and climate reporting protocols
Universities and Research Institutions (e.g., University of Ghana, CSIR)	Conduct vulnerability research, support scenario modeling, and host training programs in climate science, GIS, and community resilience
Private Sector (e.g., renewable energy firms, agribusinesses, infrastructure companies)	Supports climate innovation (e.g., clean cooking, irrigation tech), provides financing models, and partners on green job creation
Development Partners (e.g., UNDP, GIZ, CIDA, Global Affairs Canada, DANIDA)	Fund climate-resilient projects, provide global knowledge resources, and build capacity through long-term technical assistance
Civil Society Organizations (CSOs) and **NGOs**	Facilitate community mobilization, gender-responsive programming, youth engagement, and public awareness campaigns
Regional Coordinating Councils (RCCs)	Act as intermediaries, coordinate multi-district efforts, and provide peer learning platforms for MMDAs

Table 41: *Potential Climate Adaptation Partners and Their Roles*

Tips for MMDAs on Building Strategic Partnerships:

- Map existing and potential partners based on your district's priority adaptation areas (e.g., water, energy, agriculture, gender).
- Include partner contributions and roles in MTDP climate action plans and composite budgets.
- Develop simple MoUs or collaboration frameworks to clarify roles, expectations, and joint reporting mechanisms.
- Attend or co-host multi-stakeholder dialogues and RCC climate platforms to stay updated and network regularly.

6.8 MEASURING THE IMPACT OF CAPACITY DEVELOPMENT

An effective capacity development initiative must go beyond activity counts—it must drive real, measurable change. For MMDAs, building the skills and knowledge needed to integrate climate adaptation into planning and service delivery must translate into improved decision-making, enhanced performance, and more resilient communities (**Table 42**).

To ensure this transformation is happening, MMDAs need to define and track clear, practical indicators that measure both the reach and effectiveness of training, awareness campaigns, and knowledge-sharing activities.

This section offers a user-friendly set of indicators designed to help MMDAs monitor how well capacity development efforts are improving institutional readiness, empowering stakeholders, and strengthening grassroots resilience.

Indicator	Measurement Criteria
Number of MMDA officials trained on climate adaptation	At least 80% of planning, environment, and sectoral officers receive training over the MTDP cycle
Number of community-based adaptation trainings conducted	A minimum of 5 community sensitization or skill-building sessions held annually in vulnerable zones
Percentage of local farmers adopting climate-smart agriculture (CSA)	Increase by at least 40% from baseline levels, measured through extension service records or surveys
Number of knowledge-sharing forums hosted	At least one inter-district or multi-stakeholder learning event held per year
Stakeholder engagement in climate discussions	30–50% representation of women, youth, and marginalized groups in planning meetings, validation forums, and public dialogues
Civil Society Organizations (CSOs) and **NGOs**	Facilitate community mobilization, gender-responsive programming, youth engagement, and public awareness campaigns

Table 42: *Key Indicators for Climate Capacity Development*

Tips for Tracking and Reporting:

- Integrate these indicators into your district M&E framework and report progress in Annual Progress Reviews (APRs).
- Use training evaluation forms, attendance registers, post-training surveys, and FGDs to gather evidence.
- Disaggregate data by gender, age, and vulnerability status for greater insights.
- Conduct mid-term and end-of-cycle evaluations to assess long-term behavior change and institutional improvements.

How to Use This Section:

1. ***Assess Capacity Gaps in MMDA Climate Adaptation Planning:*** Start with a self-assessment using the capacity gap checklist (Section 6.3). Identify weaknesses in technical skills, coordination, public engagement, and access to climate information.
2. ***Develop Targeted Training Programs for Officers, Communities, and Stakeholders:*** Based on the gap analysis, design a district training plan that includes staff (planning, agriculture, works, gender), frontline workers (extension agents), and communities (farmers, traders, women's groups). Use participatory and locally relevant approaches.
3. ***Utilize Multiple Learning Platforms: Combine different modalities:*** in-person workshops, field demonstrations, e-learning modules, study tours, and community dialogues. Tailor delivery methods to different audiences and literacy levels.
4. ***Engage Development Partners and the Private Sector:*** Build strategic partnerships with universities, RCCs, CSOs, private sector innovators, and development agencies. These actors can provide technical expertise, funding, tools, and co-host training events.
5. ***Track Progress Using Structured M&E Indicators:*** Use the capacity development indicators (Section 6.8) and monitoring template to document training reach, community uptake, and institutional improvements. Disaggregate data to capture impacts on women, youth, and vulnerable groups.

USEFUL RESOURCES

1. ***NDPC Local Government Training Modules*** *https://ndpc.gov.gh/media/Training_Guide.pdf*
2. ***UN CC: Learn – Climate Online Academy*** *https://www.uncclearn.org*
3. ***CSIR & University of Ghana Climate Research Outputs*** *Access through academic libraries and departmental requests*
4. ***Peer Learning and Stakeholder Dialogue Reports (SIGRA, RCC Platforms)*** *Available via RCCs or SIGRA project*

SECTION 7

Financial Planning and Resource Mobilization for Climate Adaptation

7.1 INTRODUCTION

A strong climate adaptation strategy is only as effective as the resources available to bring it to life. For MMDAs, mobilizing sustainable finance is essential to translate adaptation priorities in their MTDPs into tangible action on the ground.

Securing and strategically managing funds allows MMDAs to reduce climate risks, protect vulnerable populations, and strengthen long-term resilience across sectors. This section offers a practical guide for budgeting, identifying diverse funding sources, and forging strategic partnerships to access climate finance. It reflects Ghana's key policy frameworks, including the National Adaptation Plan (**NAP, 2018**), Updated Nationally Determined Contributions (**NDC, 2021**), and other emerging national financing instruments.

7.2 KEY OBJECTIVES OF CLIMATE FINANCE PLANNING

- Establish clear budget allocations for climate adaptation in MMDA development plans.
- Diversify funding sources through partnerships with government agencies, private sector actors, and international donors.
- Improve financial management capacity to track and efficiently use climate funds.
- Align with national and global climate financing frameworks for resource mobilization.

7.3 BUDGETING AND ACCESSING FUNDS FOR CLIMATE ADAPTATION

Each MMDA must allocate a dedicated budget for climate adaptation in its MTDPs. This ensures that funding is systematically integrated into local governance and development priorities. MMDAs can access the following climate financing sources (**Table 43**).

Funding Source	Description
District Assembly Common Fund (DACF)	Provides annual allocations that can be channeled into climate adaptation and resilience-building at the local level.
Ghana Green Fund (GGF)	A national financing facility for supporting district-level sustainable and low-carbon development projects.
Global Climate Fund (GCF)	Offers large-scale adaptation and mitigation funding to national entities and accredited sub-national projects. MMDAs can partner with national institutions to access GCF pipelines.
Adaptation Fund (AF)	Finances locally led resilience projects through accredited national bodies. MMDAs can submit proposals via EPA or implement as sub-partners.
Public-Private Partnerships (PPPs)	Mobilize private sector investment into infrastructure, clean energy, and nature-based solutions (e.g., solar irrigation, waste-to-energy).
NGO and Donor Grants	Some international development partners and CSOs fund local adaptation work (e.g., UNDP, GIZ, Global Affairs Canada, ECOWAS RCCs).

Table 43: *Sources of climate financing for MMDAs*

STEP 1: *Categorizing Climate Adaptation Budget Needs*

For climate finance planning it starts with understanding what types of expenditures are required for adaptation. MMDAs should categorize their budget needs into capital, operational, and research-related components (**Table 44**). This approach helps identify funding gaps, align expenditures with climate priorities, and engage relevant partners or co-financiers.

Budget Category	Examples of Expenditure Items
Capital Investments	- Construction of flood-resistant roads and bridges - Solar-powered water systems for drought-prone areas - Rehabilitation of degraded wetlands or mangrove buffers
Operational Costs	- Stakeholder training in climate-smart practices - Climate awareness campaigns and community durbars - Local disaster simulation exercises and evacuation drills
Research & Monitoring	- Conducting Climate Vulnerability and Risk Assessments - Installing community-based early warning systems - GIS mapping and data tracking for ecosystem degradation or urban heat zones

Table 44: *Categorizing Climate Adaptation Budget Needs*

STEP 2: ***Estimating the Cost of Adaptation Interventions***

Once budget needs are categorized, MMDAs must estimate the costs of priority adaptation actions. This ensures that projects are both financially realistic and fundable. Cost estimates also help with resource mobilization, stakeholder negotiations, and setting priorities when resources are limited (**Table 45**).

Adaptation Action	Estimated Cost (GHS/USD)	Potential Funding Source(s)
Construction of flood-resistant roads in low-lying areas	GHS 2 million	District Budget, National Adaptation Fund
Installation of rainwater harvesting systems in 10 schools	GHS 500,000	Private Sector CSR, Green Climate Fund
Community-based disaster preparedness and simulation drills	GHS 250,000	Development Partner Grants, DACF
Establishment of local tree nurseries for agroforestry	GHS 150,000	Ministry of Environment, Ghana Green Fund
Procurement of mobile GIS tools for climate mapping	GHS 100,000	RCC Support, Academic/Research Grants
Farmer training on climate-smart agriculture	GHS 80,000	MoFA Extension Budget, GIZ, UNDP

Table 45: *Template: Budget Estimation for Climate Adaptation in MTDPs*

7.4 DEVELOPING CLIMATE FINANCE PROPOSALS

To attract funding, MMDAs must develop bankable project proposals that align with donor priorities, are technically sound, and clearly communicate expected results. The following checklist provides essential elements.

Checklist for Preparing Climate Finance Proposals:

- ✔ Clearly define the adaptation challenge and proposed solution.
- ✔ Provide cost estimates and financial sustainability plans.
- ✔ Demonstrate alignment with Ghana's NAP, NDC, and SDG goals.
- ✔ Highlight co-benefits (e.g., job creation, ecosystem restoration).
- ✔ Include robust Monitoring & Evaluation mechanisms.

7.5 STRENGTHENING MMDA FINANCIAL MANAGEMENT FOR CLIMATE FUNDS

To ensure the efficient, transparent, and accountable use of climate adaptation funds, MMDAs must strengthen their internal financial management systems. This involves not only budgeting and tracking but also capacity building and adopting digital tools that improve accuracy and reporting.

Key Financial Management Best Practices:

- ✔ Establish dedicated budget lines for climate adaptation.
- ✔ Implement transparent accounting mechanisms to track climate-related expenditures.
- ✔ Conduct annual financial audits of climate adaptation programs.
- ✔ Build capacity of finance officers on climate finance management.
- ✔ Develop digital financial tracking tools for adaptation projects.

7.6 MONITORING & REPORTING CLIMATE FINANCE FLOWS

MMDAs must regularly report on climate finance mobilization and expenditure to ensure transparency and accountability (**Table 46**).

Indicator	Measurement Criteria
% of MMDA budget allocated to climate adaptation	At least 10-15% of development funds
Number of climate finance proposals submitted	Minimum of 2 per year
Total funding secured for adaptation projects	Increase annually
Private sector investments in climate resilience	Track private sector contributions

Table 46: *Key Climate Finance Indicators*

7.7 ENGAGING THE PRIVATE SECTOR IN CLIMATE ADAPTATION FINANCING AND IMPLEMENTATION

7.7.1 Why Engage the Private Sector?

The private sector — ranging from small local enterprises to multinational companies—has a vital role in building climate resilience (Table 47). Their contribution includes:

- Investment in climate-resilient infrastructure and services.
- Innovation in climate-smart technologies.

- Job creation and sustainable livelihoods.
- Support for green supply chains and circular economies.
- Corporate Social Responsibility (CSR) projects focused on resilience.

When effectively engaged, the private sector can complement public financing, provide long-term sustainability, and foster local ownership.

Area of Engagement	Private Sector Role	MMDA Entry Point
Green Infrastructure	Construction firms build climate-proof roads, culverts, solar lighting	Include in procurement and PPP frameworks
Clean Energy Access	Solar companies install off-grid systems for health centers or schools	Partner through CSR or co-financing
Sustainable Agriculture	Agribusinesses support CSA input access, storage & logistics	Create incentives in MTDP for CSA hubs
Waste Management	Recycling firms co-develop plastic collection or composting plants	Provide access to landfill zones or co-manage waste facilities
Insurance and Risk Financing	Insurance companies offer climate risk insurance (e.g., crop, property)	Collaborate on awareness and registration drives
Eco-tourism & Conservation	Tourism companies invest in mangrove restoration, green trails	Integrate into coastal resilience projects or green jobs programming

Table 47: *Opportunities for MMDA–Private Sector Partnerships*

7.7.2 How to Engage the Private Sector Effectively

01

Map Climate-Relevant Private Actors in Your District

- Identify companies working in energy, water, sanitation, agriculture, transport, construction, and environment.
- Include both formal and informal SMEs.

02

Develop Clear Engagement Frameworks

- Use PPP models, CSR policy guidelines, or co-financing MOUs.
- Highlight incentives: visibility, land access, recognition, joint branding.

03

Create Climate Business Cases

- Package project ideas that offer return on investment, cost recovery, or brand equity.
- E.g., "Green Schools Program: Solar installations in 15 basic schools with CSR co-branding."

04

FORUM

Host District Climate Investment Forums

- Invite businesses to climate-focused roundtables to explore opportunities.
- Co-host with RCCs or Business Resource Centers (BRCs).

7.8 GREEN PROCUREMENT FOR CLIMATE-RESPONSIVE DEVELOPMENT

7.8.1 What is Green Procurement?

Green procurement means integrating environmental, climate, and sustainability considerations into the process of purchasing goods, services, or works. For climate adaptation, this means selecting products and vendors that enhance resilience, reduce emissions, and minimize ecological damage.

"Procurement decisions are climate decisions." Every MMDA purchase—from culverts to furniture—can either support or threaten long-term sustainability.

7.8.2 Why Green Procurement Matters for MMDAs

A Metropolitan, Municipal, or District Assembly's procurement choices have far-reaching implications for climate resilience, sustainability, and economic development. Every product purchased, service contracted, or infrastructure developed through public funds is an opportunity to drive local climate-smart transformation. Green procurement empowers MMDAs to make intentional purchasing decisions that promote environmental responsibility, economic efficiency, and community wellbeing (**Tables 48 and 49**).

Integrating green procurement principles into public spending helps MMDAs:

- Ensure climate-resilient infrastructure that can withstand extreme weather, reduce heat impacts, and last longer under changing climate conditions.
- Lower lifecycle costs by prioritizing durable, low-maintenance materials and technologies.
- Support local innovation and enterprise by sourcing from climate-smart businesses and cooperatives.
- Fulfill Ghana's climate and sustainability commitments, including the Nationally Determined Contributions (NDCs), Sustainable Development Goals (SDGs), and the circular economy transition.
- Build trust with development partners by demonstrating leadership in sustainable local governance and responsible public spending.

To realize these benefits, MMDAs must move beyond cost-driven procurement to include environmental and social impact criteria in their evaluation processes.

Principle	What It Looks Like in Practice
Resilience	Procure materials that withstand climate extremes (e.g., reinforced concrete for flood-prone bridges)
Sustainability	Use low-impact or recycled materials (e.g., eco-bricks, local timber from certified forests)
Efficiency	Choose energy- and water-efficient technologies (e.g., LED streetlights, drip irrigation kits)
Local Livelihoods	Prioritize local climate enterprises and cooperatives (e.g., briquette producers, green contractors)
Lifecycle Value	Assess total cost of ownership, not just cheapest upfront cost

Table 48: *Green Procurement Principles for MMDAs*

Item / Service	Traditional Option	Climate-Aligned Alternative
Culverts	Basic unreinforced concrete	High-capacity, flood-resistant culverts
Street lighting	Grid-powered bulbs	Solar-powered LED lighting
Cooking energy (school feeding programs)	Firewood	Biomass briquettes or LPG
Water systems	Single-use tanks	Rainwater harvesting + filtration systems
Building materials	Cement blocks	Compressed Earth Blocks or fly-ash cement
Landscaping	Non-native trees	Indigenous drought-resistant species

Table 49: *Sample Items and Climate-Aligned Alternatives*

7.8.3 MMDA Actions to Operationalize Green Procurement

1. **Review MMDA Procurement Policy**
   - Insert climate-smart and environmental sustainability clauses in the procurement manual.
2. **Train Procurement and Planning Teams**
   - Ensure they understand how to evaluate green standards, lifecycle costs, and supplier certifications.
3. **Prequalify Green Vendors**
   - Create a database of suppliers that offer certified sustainable goods and services.
4. **Use Scoring Criteria that Reward Green Innovation**
   - Add environmental/climate impact scoring to tender evaluations.
5. **Monitor Compliance Post-Procurement**
   - Include green KPIs in contract performance assessments (e.g., % local content, material source, energy use).

USEFUL RESOURCES

1. ***Ghana Green Fund (GGF) Guidelines*** *Contact Ministry of Finance or EPA Ghana*
2. ***Green Climate Fund (GCF) Proposal Toolkit*** *https://www.greenclimate.fund/document/project-preparation-manual*
3. ***Adaptation Fund Project Tools*** *https://www.adaptation-fund.org/projects-programmes/project-formulation/*
4. ***Climate Finance Budget Tracking Templates*** *https://www.climatefinance-developmenteffectiveness.org*
5. ***Proposal Development & Theory of Change Templates*** *Download Toolkit Templates Here (Includes Word-based ToC and Proposal Checklist)*

RECOMMENDED MATERIALS AND RESOURCES

A. Climate Adaptation Planning and Governance

1. Ghana's National Adaptation Plan (NAP) Framework

- A guiding framework for integrating climate adaptation into national and sub-national development planning.
- Where to find:https://napglobalnetwork.org/wp-content/uploads/2020/04/napgn-en-2018-ghana-nap-framework.pdf.

2. Ghana's Nationally Determined Contributions (NDCs)

- Useful to align district actions with national climate commitments under the Paris Agreement.
- Resource: https://mesti.gov.gh/documents/ghanas-updated-nationally-determined-contribution-unfccc_2021

3. NAP Guidelines for Subnational Adaptation Planning (UNDP/NAP-GSP)

- Practical toolkit tailored for local government planners and technical officers.
- Link (PDF)

B. Sector-Specific Guidance

1. Climate-Smart Agriculture Sourcebook (FAO)

- Excellent guide for extension officers and NGOs supporting smallholder resilience.
- Download (https://www.fao.org/climate-smart-agriculture-sourcebook/en/)

2. Nature-Based Solutions for Urban Resilience (IUCN, UNEP)

- Especially relevant for biodiversity, green infrastructure, and flood management.
- Guide

3. Blue Guide for Coastal Protection and Planning (UN-Habitat, IOC-UNESCO)

- Best practices for integrating coastal protection into urban development.
- Access

C. Tools and Technologies for Monitoring and Learning (MEL)

1. Community-Based Monitoring Toolkit (CARE International)

- Simple MEL tools adaptable for local communities and CSOs.
- Toolkit PDF

2. Sendai Framework Disaster Risk Reduction Monitoring Tools (UNDRR)

- Useful for integrating disaster preparedness and early warning metrics.
- Dashboard and Resources

D. Financial and Investment Mobilization

1. GCF Handbook for Readiness and Project Preparation

- Essential for teams preparing climate finance proposals.
- Download

2. Guidebook: Mobilizing Finance for Local Climate Action (ICLEI & GIZ)

- Practical strategies for public-private partnerships and community co-financing.
- Link

E. Knowledge Platforms and Learning Resources

1. Climate Change Knowledge Portal – World Bank

- Offers data, projections, and interactive visualizations for Ghana.
- Portal

2. Africa Adaptation Knowledge Network (AAKNet)

- Regional platform with tools, case studies, and policy briefs from across Africa.
- Visit AAKNet

3. NAP Central – UNFCCC

- Central repository for adaptation plans, technical documents, and country submissions.
- Explore

APPENDICES

APPENDIX A: Step-By-Step Guide for Preparing Fundable Climate Proposals

Accessing climate finance requires more than identifying a good project idea—it demands a well-structured, technically sound, and policy-aligned proposal. This guide provides MMDAs with a simple, practical roadmap for developing fundable climate adaptation proposals that appeal to donors, national ministries, and private investors.

Step 1: Define the Climate Problem Clearly

- Describe the specific climate risk facing the district (e.g., increased flooding, prolonged drought, extreme heats).
- Use data and evidence from CRVAs, GIS maps, disaster reports, or local consultations.
- Emphasize how the risk affects vulnerable populations and key sectors (e.g., agriculture, health, infrastructure).

Example: "The district has experienced a 30% increase in seasonal flooding since 2015, disrupting roads and displacing over 3,000 people annually."

Step 2: Align with National and District Priorities

- Show how the project fits into:
  - Your district's MTDP and budget framework.
  - Ghana's NAP, NDCs, or NCCP priority sectors.
  - SDGs or relevant national climate policies.

Example: "This project supports Priority Action 3.2 in Ghana's NAP—enhancing flood-resilient infrastructure in low-lying areas."

Step 3: Clearly Articulate the Proposed Solution

- Explain what the project will do, where, and how.
- Highlight climate-smart design, nature-based solutions, or innovative technologies.
- Include activities such as:
  - Tree planting or wetland restoration.
  - Flood-resilient road upgrades.
  - Solar irrigation or rainwater harvesting.
  - Gender-responsive climate training or early warning systems.

Step 4: Identify Beneficiaries and Co-Benefits

- Clearly state who will benefit—including women, youth, farmers, PWDs, or informal workers.
- Outline economic, social, and environmental benefits (e.g., jobs created, diseases reduced, yields increased).

Tip: Use sex-disaggregated data and case examples where possible.

Step 5: Develop a Budget and Resource Plan

- Provide a realistic cost breakdown (personnel, infrastructure, equipment, training).
- Show any existing contributions from the MMDA or partners (land, staff time, co-funding).
- Link costs to project outputs and expected impact.

Example Table:

Budget Item	Cost (GHS)	Justification
Training for 100 women farmers	50,000	Two 3-day CSA workshops in 5 sub-districts
Construction of climate-resilient culverts	200,000	To reduce flooding in feeder roads affecting 3,000 residents

Step 6: Define a Results Framework and Indicators

- Outline a simple M&E plan with key indicators for inputs, outputs, outcomes, and impact.
- Include a timeline for tracking results and who will be responsible.

Example:

- **Output:** "5 rainwater harvesting systems installed"
- **Outcome:** "20% increase in year-round water access for 500 households"

Step 7: Include a Sustainability and Exit Strategy

- Explain how the project will be sustained after funding ends.
- Mention local ownership, maintenance plans, partnerships, or by-laws that support continuity.

Tip: Reference community management committees, youth cooperatives, or by-laws on forest protection.

Step 8: Package the Proposal Professionally

- Use a standard format (most donors provide templates).
- Keep the language clear, persuasive, and policy-aligned.

Include:

- Executive summary
- Problem statement
- Objectives and activities
- Budget and timeline
- M&E framework
- Appendices (maps, letters of support, CRVAs, photos)

APPENDIX B: Theory of Change (ToC) Template for MMDA Climate Adaptation Proposals

This Theory of Change (ToC) template is designed to help Metropolitan, Municipal, and District Assemblies (MMDAs) develop a clear and fundable logic for their climate adaptation proposals. Use this structure to describe how project activities will lead to long-term resilience outcomes, including the key assumptions and enabling factors.

1. **Problem Statement / Context**
   Briefly describe the climate-related vulnerability or risk the proposal seeks to address (e.g., drought, flooding, extreme heats). Include affected populations and sectors.
2. **Goal / Long-Term Impact**
   State the desired long-term change the project aims to achieve (e.g., enhanced climate resilience of vulnerable communities).
3. **Inputs / Resources**
   List the main resources and capacities that will be invested (e.g., funding, training, equipment, staff time).
4. **Activities**
   Describe the key actions that will be implemented (e.g., farmer training, infrastructure construction, awareness campaigns).
5. **Outputs**
   List the direct, tangible results of the activities (e.g., number of households reached, systems installed, policies developed).
6. **Outcomes (Short-to-Medium Term)**
   Explain the expected changes in behavior, capacity, or systems (e.g., increased adoption of CSA, improved early warning response).
7. **Impact (Long-Term)**
   Describe the overall result on resilience and vulnerability reduction (e.g., fewer climate-related displacements, improved food security).
8. **Assumptions & Enabling Conditions**
   Identify external factors and conditions that must be in place for the ToC to hold (e.g., political support, community participation, continued funding).

APPENDIX C: Private Sector Mapping Tool for Climate Adaptation (MMDA Use)

This tool is designed to help MMDAs identify and engage relevant private sector actors who can support climate adaptation financing, implementation, and innovation. The mapping process should be participatory and updated annually as part of climate planning and stakeholder engagement.

Private Sector Mapping Template

Business Name	Sector (e.g., Energy, Agriculture, Waste)	Climate Relevance (e.g., CSA, solar, infrastructure)	Current or Potential Role	Engagement Mechanism (e.g., MoU, CSR, PPP)	Notes / Priority Actions

APPENDIX D: Implementation Roadmap: Integrating Climate Adaptation into MTDPS (2025–2029)

Private Sector Mapping Template

This roadmap guides MMDAs through the phased integration of climate adaptation into the MTDP cycle. It aligns with planning, budgeting, stakeholder engagement, project implementation, and reporting timelines typically observed in Ghana's decentralized development process.

Four Implementation Phases (2025–2029)

Phase	Timeline	Key Actions	Responsible Units
1. Foundation & Readiness	Year 1 (2025)	- Conduct CRVAs or use existing data - Identify vulnerable populations and priority sectors - Train planning & finance teams on toolkit use - Align district priorities with NAP/NDC	DPCU, EPA focal persons, Planning Unit, RCC
2. Planning & Budgeting	Year 1–2 (2025–2026)	- Develop climate-responsive MTDP chapters - Integrate budget lines for adaptation - Apply climate indicators in M&E plan - Map private sector & partners for co-financing	Budget Unit, Finance, Gender Desk, Procurement
3. Implementation & Partnerships	Year 2–4 (2026–2028)	- Roll out priority adaptation projects (CSA, resilient infra, clean energy) - Initiate community awareness and green procurement - Establish climate learning platforms and scorecards	Sector Departments, CSOs, Private Sector
4. Monitoring, Learning & Scaling	Year 3–5 (2027–2029)	- Conduct annual adaptation reviews - Update project pipeline based on lessons - Submit reports to NDPC, RCC, SIGRA - Share success stories at stakeholder forums	M&E Unit, RCC, NDPC, Local Media/ Comms

Suggested Annual Actions Overview

Year	Action Focus
2025	Assess risks, build internal capacity, revise MTDPs with climate content
2026	Mobilize resources, set up systems, pilot interventions
2027	Scale up projects, monitor progress, gather community feedback
2028	Host learning exchanges, refine indicators, adjust targets
2029	Document results, finalize evaluations, prepare for next MTDP cycle

Use This Roadmap To:

- Guide annual work planning across MMDA departments.
- Structure engagement with partners, RCCs, and donors.
- Align your MTDP and Composite Budget with climate priorities.
- Track progress toward SDGs, NDCs, and NAP targets.