SIGRA

Strengthening Investments in Gender-Responsive Climate Adaptation

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A Guide for Ministries, Departments and Agencies (MDAs)

Toolkit for Integrating Climate Change into Sector Medium-Term Development Plans (SMTDP)

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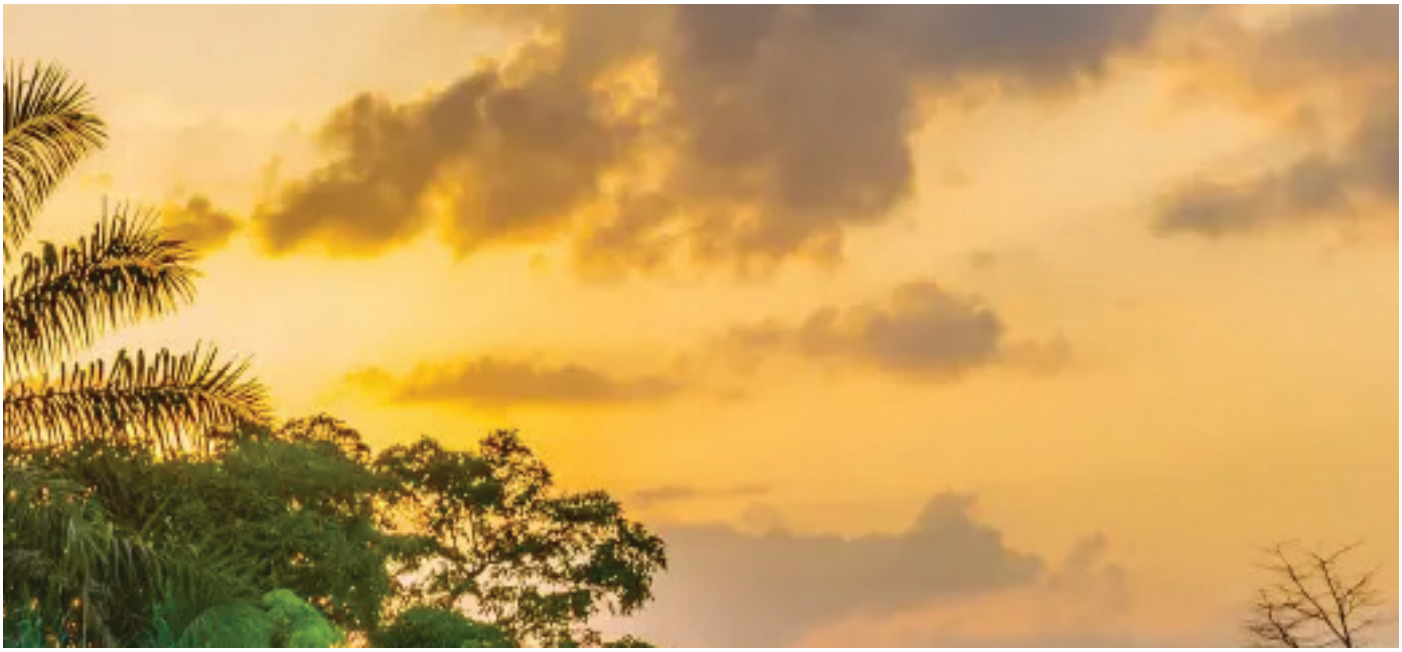
In partnership with Canada

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

Ghana's National Adaptation Plan (NAP) provides a strategic framework for enhancing climate resilience across all levels of governance, with a strong emphasis on sectoral implementation through Ministries, Departments, and Agencies (MDAs). The Strengthening Investments in Gender-Responsive Climate Adaptation (SIGRA) project supports MDAs in operationalizing Ghana's NAP and ensuring that planning, budgeting, and implementation processes are both inclusive and evidence-driven.

The SIGRA Project (2023–2028)—funded by Global Affairs Canada and implemented by Cowater International—is designed to strengthen national climate governance and enable gender-responsive adaptation investments. Central to the project's mandate is the empowerment of Ghanaian institutions to integrate climate adaptation more effectively into national development systems, with a particular focus on improving outcomes for women, girls, and other vulnerable groups.

At the national level, SIGRA collaborates closely with MDAs to enhance institutional capacity for adaptation planning, budgeting and reporting. To generate localized evidence that can feed into national systems, the project commissioned Climate Risk and Vulnerability Assessments (CRVAs) in five target districts—Mion, Nanumba South, Kumbungu (Northern Ghana), and Akatsi North and Anloga (Volta Region). These assessments provide critical insights into region-specific vulnerabilities and offer transferable lessons to inform national policy and sector strategies.



This Toolkit for Integrating Climate Change Adaptation into Sector Medium-Term Development Plans (SMTDP) is intended to support MDAs in:

- Identifying and prioritizing climate adaptation actions relevant to their sectoral mandates,
- Budgeting and mobilizing resources for adaptation investments,
- Applying gender and social inclusion lenses in project design, and
- Monitoring and evaluating climate outcomes and resilience gains.

In equipping MDAs with structured guidelines, sector-specific action areas, financing strategies, and results frameworks, the Toolkit contributes to a more coherent, collaborative, and inclusive national adaptation system. It reflects the broader goal of ensuring that Ghana's response to climate change is both locally grounded and nationally coordinated — leveraging the strengths of central institutions to drive transformational change.

WELCOME TO

THE TOOLKIT FOR INTEGRATING CLIMATE CHANGE ADAPTATION INTO THE SECTOR MEDIUM-TERM DEVELOPMENT PLANS (SMTDPS) OF MINISTRIES, DEPARTMENTS AND AGENCIES IN GHANA

INTRODUCTION

Climate change is no longer a distant threat—it is a present reality reshaping Ghana's economy, public services, and ecosystems. Ministries, Departments, and Agencies play a central role in addressing these challenges through sector-wide policies, programs, and investments. Integrating climate resilience into national development planning is therefore essential for safeguarding long-term progress and ensuring inclusive, sustainable growth across all sectors.

This Toolkit for Integrating Climate Change Adaptation into SMTDPs has been designed to provide practical guidance, structured frameworks, and actionable strategies for MDAs to mainstream climate adaptation into their 2026–2029 Sector Medium-Term Development Plans. 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 MDAs recognize the urgency of climate action but often lack structured frameworks and tools to systematically integrate climate adaptation into sectoral policies, strategies, and 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 MDAs 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 MDAs and intended to assist:

- Sector Planners and Policy Officers in mainstreaming climate adaptation into national development policies and strategies.
- Technical Departments and Agencies (e.g., Agriculture, Water, Energy, Health, Infrastructure, Disaster Management) in designing and implementing sector-specific climate-resilient interventions.
- Finance and Budget Officers in identifying and mobilizing climate finance and aligning sector budgets with Ghana's NAP, NDCs, and climate tagging systems.
- Stakeholder Engagement and Social Inclusion Units in promoting inclusive, equitable, and participatory approaches to national climate adaptation planning.

WHAT YOU WILL FIND IN THIS TOOLKIT

This toolkit is structured into eight key sections, each addressing a critical component of integrating climate adaptation into national sector development planning:

1. **Contextual Alignment** – Aligns MDA strategies and plans with national and international climate frameworks, including Ghana's NAP, NDCs, NCCP, and the SDGs.
2. **Climate Risk & Vulnerability Assessment** – Guides MDAs in incorporating sector-specific climate risks using national datasets, scientific projections, and vulnerability assessments from sources such as EPA, GMet, and NDPC.
3. **Sectoral Integration & Climate-Resilient Actions** – Provides practical tools and examples to help MDAs identify and implement climate-responsive actions within their sector mandates.
4. **Gender and Social Inclusion** – Embeds gender-equitable and socially inclusive approaches in sectoral planning, ensuring that vulnerable populations benefit from adaptation measures.
5. **Monitoring & Evaluation (M&E) Framework** – Offers indicators and tools for tracking progress on climate integration in sector plans, aligned with the NDC and NAP reporting structures.
6. **Capacity Development & Knowledge Sharing** – Supports institutional strengthening and cross-sector learning to enhance climate adaptation expertise within MDAs.
7. **Financial Planning & Resource Mobilization** – Outlines approaches for integrating climate considerations into MDA budgets and accessing domestic and international climate finance sources.
8. **Templates & Practical Tools** – Includes sample log frames, budget formats, objective reformulation tools, and other resources tailored to MDA planning processes.

HOW TO USE THIS TOOLKIT

Step 1: Understand Sectoral Climate Risks:
Use national and sector-specific climate data and vulnerability assessments (e.g., from EPA, GMet, NDPC) to identify key climate risks affecting your ministry or agency's operations and constituencies.

Step 2: Identify Sectoral Adaptation Priorities:
Select appropriate adaptation actions aligned with your sector's mandate, drawing from Ghana's NAP, NDCs, and relevant strategic frameworks.

Step 3: Integrate into Sectoral Plans and Budgets:
Embed climate adaptation actions into your Sector Medium-Term Development Plans, policy strategies, and sector budget submissions—ensuring alignment with national targets.

Step 4: Mobilize Resources: Explore and access funding through national budget allocations, climate finance mechanisms (e.g., GCF, GEF, GGF), and public-private partnerships.

Step 5: Monitor, Evaluate, and Adjust: Use the M&E tools provided—such as the climate logframe and adaptation indicator framework—to track progress and revise actions based on performance and emerging risks.

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 MDAs in embedding climate adaptation into their Sector Medium-Term Development Plans.

The application of these concepts enables MDAs 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: MDAs must anticipate sectoral climate risks and implement proactive strategies to safeguard national development outcomes and service delivery from climate shocks. Integrating climate adaptation into sectoral policies and investments enhances resilience, protects public infrastructure, and supports sustainable growth.

Examples:
- Designing climate-resilient energy infrastructure to reduce disruptions from extreme weather events.
- Integrating heat preparedness into national health systems to prevent climate-induced illness.
- Supporting nationwide scale-up of drought-tolerant crops to ensure food security and rural livelihood resilience.

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: Climate-resilient sectors are essential for sustaining long-term economic growth, protecting national infrastructure, and delivering uninterrupted public services. When MDAs integrate climate adaptation into their policies and programs, they build the foundation for inclusive, shock-resistant development.

Examples:
- Developing national early warning systems for floods, droughts, and extreme heat to enhance preparedness across sectors.
- Implementing sector-led adaptation initiatives that empower vulnerable populations and strengthen institutional readiness.

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 sectoral and population-level vulnerabilities enables MDAs to prioritize adaptation investments where the risks are highest. Targeted, data-driven responses ensure that national resources address the most urgent climate impacts across regions and sectors.

Examples:
- Coastal zones threatened by sea-level rise require national investment in shoreline stabilization and resilient infrastructure through the Ministry of Works

and Housing or MESTI.

- Drought-prone agricultural zones in northern Ghana call for climate-smart irrigation and dryland farming solutions led by MoFA and relevant agencies.

4. Climate Risk Assessment

Definition: A climate risk assessment is a systematic, evidence-based process used by Ministries, Departments, and Agencies to identify, analyze, and prioritize climate hazards that could affect sectoral infrastructure, services, populations, or ecosystems under their jurisdiction.

Why It Matters: Climate risk assessments provide essential data—both scientific and locally grounded—to inform policy, planning, infrastructure design, service delivery, and budgeting. These assessments enable MDAs to:

- Align sectoral investments with actual climate exposure and vulnerability
- Target limited resources to high-risk regions and systems
- Strengthen national early warning systems and adaptive service delivery
- Ensure compliance with NAP, NDC, and SMTDP risk-responsive planning mandates

Examples

- The Ministry of Roads and Highways using CVRA and GIS data to prioritize flood-resilient bridge upgrades in northern corridors.
- The Ghana Health Service integrating heat risk maps and CVRA data to plan climate-resilient CHPS compounds and expand surveillance for climate-sensitive diseases.
- The Ministry of Food and Agriculture (MoFA) using rainfall and temperature projections to identify drought-prone zones and deliver targeted CSA support.
- The Ministry of Education mapping schools in flood zones to plan for infrastructure retrofitting and relocation where necessary.

5. Ecosystem-Based Adaptation (EbA)

Definition: Ecosystem-Based Adaptation (EbA) is the strategic use of biodiversity and ecosystem services by MDAs to reduce climate vulnerabilities and enhance resilience in key sectors such as water, health, agriculture, coastal management, and infrastructure.

Why It Matters: EbA offers cost-effective, low-regret, and multipurpose solutions that not only reduce climate risks but also deliver co-benefits for biodiversity conservation, livelihood protection, and sustainable resource management. Integrating EbA into sector strategies:

- Enhances natural buffers against climate hazards (e.g., floods, erosion, drought)
- Supports sustainable service delivery in vulnerable ecosystems (e.g., forests, wetlands, river basins)
- Contributes to achieving Ghana's NDCs, NAP, and SDG 13, 14, and 15
- Strengthens eligibility for climate finance targeting nature-based solutions (NbS)

Examples:

- The Ministry of Environment, Science, Technology and Innovation (MESTI) coordinating mangrove restoration in coastal areas to protect human settlements and fisheries.
- The Water Resources Commission (WRC) promoting wetland conservation to improve urban flood regulation and safeguard water supplies.
- The Forestry Commission and MoFA supporting agroforestry and native tree planting in savannah and transition zones to enhance soil moisture and reduce bushfires.
- The Ministry of Tourism working with partners to develop eco-tourism corridors that conserve biodiversity while supporting climate-resilient livelihoods.

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: Integrating DRR and climate adaptation into sectoral planning reduces long-term losses and enhances the sustainability of national development investments. MDAs that embed risk-informed strategies are better positioned to protect infrastructure, ensure service continuity, and safeguard lives and livelihoods.

Examples:

- Designing and implementing climate-resilient infrastructure such as elevated roads, culverts, and health facilities in flood-prone zones.
- Collaborating with NADMO and relevant agencies to develop national early warning and evacuation protocols for extreme weather events.

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: MDAs must ensure that infrastructure investments are climate-resilient to prevent costly damage, service disruptions, and future retrofitting. Integrating climate considerations at the design stage enhances the durability, efficiency, and value-for-money of national development projects.

Examples:

- Constructing roads with permeable surfaces and improved drainage systems to reduce urban flooding in metropolitan areas.
- Installing solar-powered water and irrigation systems to promote energy-efficient, low-carbon service delivery in agriculture and rural development programs.

8. Gender Equity and Social Inclusion in Climate Adaptation

Definition: Inclusive climate adaptation ensures that strategies developed by MDAs intentionally address the differentiated needs and vulnerabilities of diverse social groups—such as women, youth, the elderly, persons with disabilities, migrants, and other marginalized populations.

Why It Matters: Climate change does not affect all people equally. Inclusive adaptation ensures that sectoral responses are fair, equitable, and do not unintentionally exacerbate existing inequalities. MDAs have a responsibility to embed equity into national programs and

policies, ensuring no one is left behind in the transition to climate resilience.

Example:
- Supporting women-led cooperatives in scaling up climate-smart agricultural practices through MoFA and MoGCSP initiatives.
- Designing early warning and communication systems that are accessible to persons with disabilities (e.g., visual, hearing, mobility impairments).
- Providing seed funding or grants for youth led enterprises advancing sustainability, green technologies, or circular economy innovations under programs supported by Minister of Youth Development and Empowerment and the GCIC.

9. Climate Finance and Resource Mobilization

Definition: Climate finance refers to financial resources—public, private, bilateral, multilateral, and philanthropic—mobilized to support climate change mitigation and adaptation efforts. For MDAs, this includes integrating climate-responsive budgeting and leveraging external funding aligned with national priorities.

Why It Matters: MDAs must proactively identify and mobilize climate finance to implement sectoral adaptation strategies at scale. Embedding climate considerations into budget processes, investment plans, and partnerships is essential for sustaining national development in a changing climate.

Example:
- Accessing international climate finance (e.g., Green Climate Fund, Adaptation Fund) through national implementing entities for sector-led adaptation programs.
- Integrating climate budget tagging into MDA annual submissions to the Ministry of Finance for transparency and resource prioritization.
- Partnering with private sector actors (e.g., solar firms, agro-tech companies) to co-invest in climate-smart infrastructure and innovation.

APPLYING THESE CONCEPTS IN SMTDPS

MDAs 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 MDAs to ensure effective, evidence-based, and sustainable climate adaptation strategies.

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

Definition: Monitoring, Evaluation, and Learning (MEL) for climate adaptation is a structured approach used by MDAs to track progress on adaptation initiatives, evaluate their effectiveness, and adjust sectoral strategies based on emerging evidence, feedback, and lessons learned.

Why It Matters: MEL enables MDAs to deliver results-driven, adaptive, and accountable climate actions. It supports continuous improvement in policy implementation, ensures alignment with national targets (e.g., NDCs, NAP), and strengthens the evidence base for decision-making and resource mobilization.

Example:
- Applying climate adaptation scorecards to assess progress on sector-level objectives and identify performance gaps.
- Conducting regular climate risk reviews within sector programs to refine interventions based on updated data and field realities.
- Aligning M&E indicators with national frameworks (e.g., NDPC results matrix, NDC tracking tools) for coherent reporting.

SECTION 1

Context and Framework Alignment

1.1 INTRODUCTION

Climate change is one of the most pressing global challenges of our time, and its impacts are already being felt across Ghana. As a tropical country heavily dependent on climate-sensitive sectors such as agriculture, water, and natural resources, Ghana remains uniquely vulnerable to rising temperatures, erratic rainfall, flooding, coastal erosion, and sea-level rise and extreme weather events. Recognizing its vulnerability to climate impacts Ghana has responded proactively by establishing comprehensive national frameworks and policies to guide climate adaptation and resilience building across sectors and governance levels.

The Government of Ghana's commitment to addressing climate change is reflected through a robust suite of interrelated policies and strategies designed to mainstream adaptation into national, regional, and local development planning. It is therefore essential for Ministries, Departments and Agencies to effectively align their Sector Medium-Term Development Plans with these national guiding documents, ensuring a coherent and coordinated adaptation response at all planning levels.

As lead sectoral agencies, MDAs have a pivotal role in implementing climate adaptation priorities under Ghana's NAP, NCCAS, and the Updated NDCs. This includes aligning sectoral SMTDP goals, targets, and budget lines with climate risk data and national frameworks.

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.

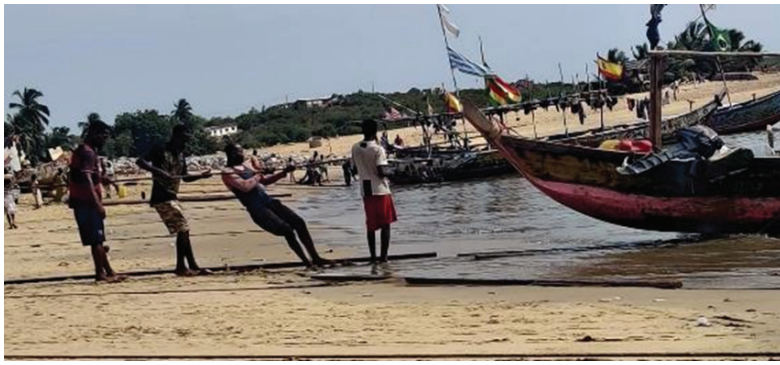
The NCCP emphasizes building institutional capacity, promoting stakeholder collaboration, gender responsiveness, and innovative financing mechanisms to support adaptation activities. It also recognizes the importance of ecosystem-based adaptation strategies in reducing climate vulnerabilities in both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

Ghana's MDAs are mandated by the National Development Planning Commission (NDPC) to integrate climate change considerations into their Sector Medium-Term Development Plans (SMTDPs). For the 2026–2029 planning cycle, alignment with national climate policy frameworks—including the National Adaptation Plan (NAP), National Climate Change Policy (NCCP), National Climate Change Adaptation Strategy (NCCAS), and Ghana's updated Nationally Determined Contributions (NDCs)—is critical to ensuring a coherent, harmonized, and sector-wide approach to climate adaptation.

This toolkit is designed to support MDAs in fulfilling their sectoral responsibilities by providing practical guidance on how to:

- Systematically integrate climate adaptation measures into sectoral SMTDPs and strategic documents.
- Identify and prioritize climate risks and vulnerabilities using national-level data and sector-specific assessments.
- Apply gender-responsive, socially inclusive, and participatory approaches to the design and implementation of climate interventions.
- Utilize evidence-based and context-specific strategies that blend scientific insights with local knowledge.
- Strengthen resource mobilization by linking sectoral adaptation actions to budget submissions, climate finance mechanisms, and public-private partnerships.

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 Sector Medium-Term Development Plans, MDAs must have a clear understanding of the climate risks, vulnerabilities, and exposure pathways relevant to their sectoral mandates. While localized CVRAs conducted under initiatives such as the SIGRA project (e.g., in Mion, Nanumba South, Kumbungu, Akatsi, and Anloga) offer important community-level insights, MDAs require broader, sector-specific and national-scale assessments to inform planning and decision-making.

National agencies such as the Environmental Protection Authority (EPA), the Ghana Meteorological Agency (GMet), and the NDPC—with support from development partners—have produced valuable datasets, including national CVRAs, climate hazard maps, and vulnerability indices that can guide sector-wide adaptation efforts. Where formal sectoral assessments are unavailable, MDAs are encouraged to utilize alternative data sources such as:

- National climate vulnerability profiles
- GIS and remote sensing data
- Academic research
- Indigenous knowledge systems
- Gender-disaggregated socio-economic indicators

This section provides MDAs with a practical framework for integrating climate risk and vulnerability data into sectoral SMTDPs, in alignment with Ghana's NAP, NDCs, and sector policy strategies.

The goal is to ensure that all MDAs can:

- Identify sector-specific climate hazards and affected systems/populations.
- Prioritize adaptation interventions based on risk levels and service disruption potential.
- Support evidence-based decision-making for budget justification, policy alignment, and MEL.

2.2 STEP-BY-STEP INTEGRATION FRAMEWORK

STEP 1: *Summary of Climate Risks and Impacts*

Ghana faces a variety of climate hazards that vary in intensity and impact across ecological and administrative zones. These hazards—ranging from coastal erosion and sea-level rise to extreme heat and water scarcity—have direct implications on national infrastructure, service delivery, and sectoral performance. For MDAs, understanding these risks is critical for designing climate-resilient policies, investment programs, and operational strategies.

While most MDAs do not have dedicated Climate Vulnerability and Risk Assessment (CVRA) reports, sector-specific analyses, national climate datasets, and institutional reports—such as those from the Environmental Protection Authority (EPA), Ghana Meteorological Agency (GMet), National Development Planning Commission (NDPC), and sector ministries (e.g., MoFA, MoH, MESTI)—provide reliable evidence for climate risk integration.

MDAs are encouraged to use **Table 1** as a reference to identify and prioritize climate hazards relevant to their sectors. This table consolidates key national projections and potential impacts across thematic areas and population groups based on empirical literature, national climate reports, and adaptation policy frameworks.

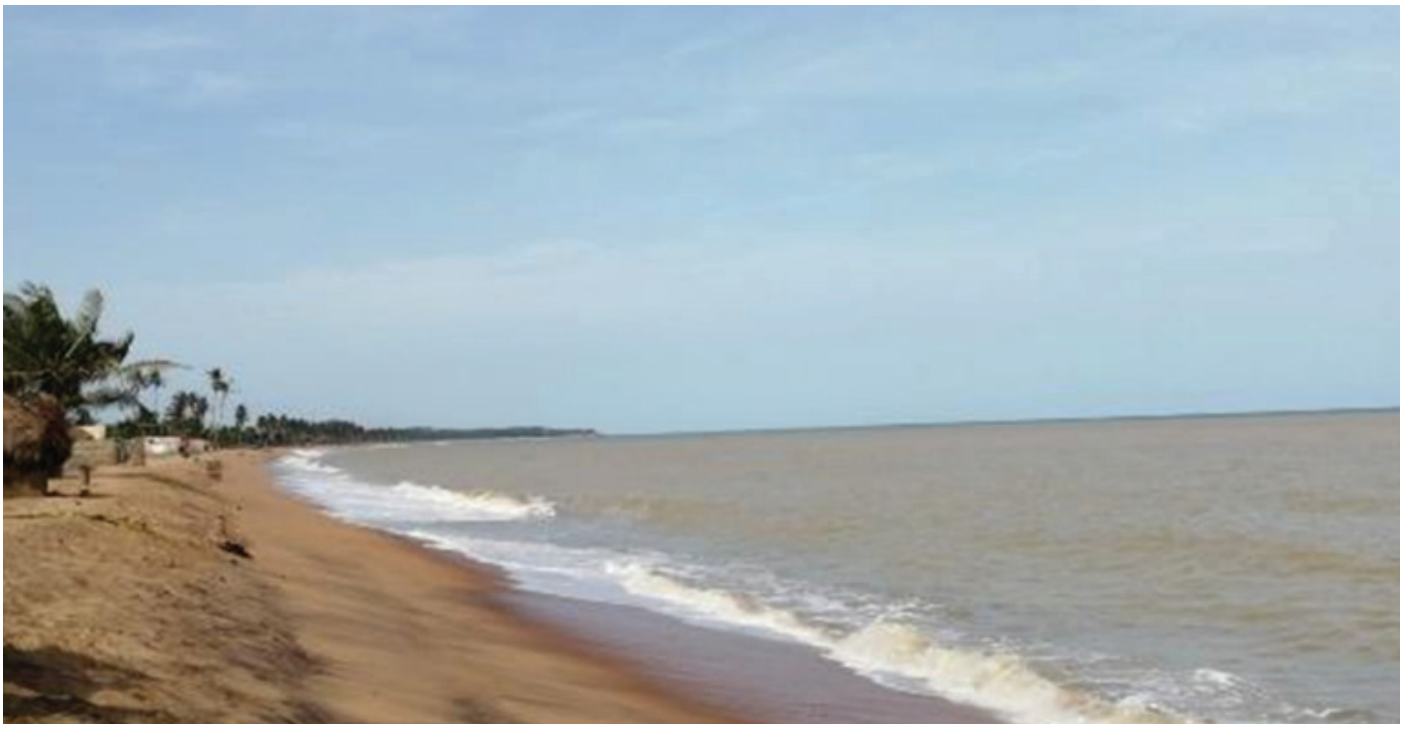
Climate Risk	Projected Impact	Relevant MDAs / Affected Sectors & Groups
Flooding	Increased urban/rural flooding from intense rainfall, drainage overflow, river overflow	Ministry of Works & Housing (urban planning), Ministry of Roads & Highways, NADMO, GHS, GES, MoGCSP (social protection), MWH
Drought	Reduced rainfall, increased evapotranspiration, prolonged dry spells in northern Ghana	MoFA (irrigation, crop failure response), Ministry of Sanitation & Water Resources (MSWR), Ministry of Energy (hydropower impacts), GHS (heat-related illnesses)
Sea-Level Rise	Saltwater intrusion, aquifer contamination, submerged infrastructure, biodiversity loss	Ministry of Fisheries & Aquaculture, Ministry of Tourism, MESTI, Ministry of Works & Housing, WRC
Coastal Erosion	Shoreline retreat, habitat loss, infrastructure damage, relocation needs	MESTI, Ministry of Transport (ports, jetties), Ministry of Lands & Natural Resources (MLNR), MoGCSP (resettlement support)
Extreme Heat	Urban heat stress affecting health, school attendance, worker productivity	GHS (heat-related illness), MoE/GES (school closures), Ministry of Labour (worker safety), Ministry of Environment

Windstorms	Infrastructure destruction, risk to schools, power lines, and rural communities	NADMO, Ministry of Energy (power infrastructure), MoE, MoESW (school safety)
Pest & Disease Outbreaks	Spread of climate-sensitive vector-borne diseases and crop pests	MoFA (fall armyworm, locusts), GHS (malaria, cholera), EPA, Ministry of Sanitation & Water Resources
Bushfires	Loss of forests, crops, grazing land, air pollution, damage to sacred sites	Forestry Commission (under MLNR), MoFA, NADMO, Ministry of Chieftaincy and Religious Affairs
Water Stress / Scarcity	Drying of rivers/dams, reduced access to clean water, especially in north	MSWR, MoGCSP (impacts on women & girls), GHS (hygiene), MoE (school sanitation), WRC
Landslides / Inland Erosion	Infrastructure damage in highland zones, especially near mines	MLNR, Ministry of Roads & Highways, Minerals Commission, EPA

Table 1: *Summary of Climate Risks, Projected Impacts, and Affected Sectors in Ghana.*
Source: CRVA Reports, Literature review

Key Notes for MDAs:

- MDAs should interpret these risks in relation to their specific mandates and geographic scope of service delivery (e.g., national hospital infrastructure, feeder road systems, water supply).
- Even without CVRAs, these risks provide a baseline for planning climate-resilient interventions and aligning with NAP/NDC sectoral strategies.
- Where possible, MDAs can partner with technical institutions (e.g., GMet, EPA, NDPC) to obtain geospatial data and vulnerability overlays relevant to national infrastructure or population targeting.



Coastal erosion along the Ghanaian shoreline, a visible impact of climate change on vulnerable communities.
Photo by: Boafo, YA (2024)

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

Once climate risks relevant to your sector have been identified, the next step is to determine the specific populations, systems, and services that are most vulnerable to these risks. This helps MDAs design adaptation responses that are targeted, inclusive, and equitable, while addressing sector-specific development objectives (**Table 2**).

Vulnerability is shaped not only by exposure to climate hazards, but also by socio-economic, geographic, and demographic characteristics, such as income level, gender, age, disability, and access to infrastructure and services. For MDAs, this means considering how climate change may disproportionately affect different population groups and service delivery systems across regions.

As most MDAs do not have CVRAs, vulnerability identification should be based on:

- Nationally available socio-economic and demographic datasets (e.g., from Ghana Statistical Service).
- Sector-specific risk mapping and studies (e.g., MoFA, MoH, MESTI reports).
- Climate hazard maps and risk overlays (from EPA, GMet, NDPC).
- Stakeholder engagement, including civil society, professional groups, and frontline service providers.

Sector	Vulnerable Populations	Key Vulnerabilities (Examples)
Agriculture and Food Security	Smallholder farmers (esp. women, youth), dryland communities	Reduced crop yields, water stress, post-harvest losses, drought-related income loss
Health and Sanitation	Urban poor, women and children, elderly, persons with disabilities	Increased incidence of heat-related illnesses, malaria, cholera; access disruption during floods
Water Resources	Rural communities, women and girls, coastal populations	Drying of boreholes, flood-related contamination, salinization, water access inequality
Disaster Preparedness and Response	Coastal communities, flood-prone settlements, slum dwellers	Housing damage, infrastructure failure, loss of livelihoods and displacement
Natural Resource Management	Forest and savannah communities, charcoal producers, herders	Bushfires, deforestation, land degradation, biodiversity loss, soil erosion
Equitable Social Development	Persons with disabilities, female-headed households, informal workers	Limited adaptation support, exclusion from planning, socio-economic vulnerability
Energy, Industrial & Infrastructure Development	Off-grid rural populations, schoolchildren, small industries	Unreliable energy access, climate damage to facilities, productivity loss
Coastal & Marine Ecosystem Protection	Fishing communities, low-income coastal dwellers, tourism-dependent workers	Sea-level rise, loss of mangroves and breeding grounds, saline intrusion, erosion

Table 2: *Sector-Specific Climate Vulnerabilities and At-Risk Populations in Ghana*

Guidance for MDAs:

- Use this table as a starting point to define sector-specific adaptation targets and identify underserved populations in your national programs.
- Tailor vulnerability analysis to the spatial reach and thematic responsibilities of your agency (e.g., MoFA = food systems; GHS = climate-health risk).
- Where data is limited, consult sectoral departments, NGOs, or academia to validate findings with qualitative evidence.

STEP 3: ***Translating Climate Risk Insights into Sectoral Objectives***

Onceclimate risks and vulnerable populations relevant to a sector have been identified, MDAs must explicitly translate these insights into their Sector Medium-Term Development Plans (**Table 3**). This involves crafting clear, sector-specific and adaptation-focused objectives that respond directly to the most pressing climate vulnerabilities, informed by national datasets, institutional reports, and stakeholder engagement.

These objectives form the foundation for selecting adaptation strategies and budgeting priorities. Each objective should:

- Address a specific climate hazard or impact pathway.
- Be aligned with sector mandates and policy frameworks.
- Promote climate resilience, equity, and service continuity.
- Link to national goals under the NAP, NDCs, and relevant SDGs.

Sector	Adaptation Objective
Agriculture & Food Security	Promote climate-smart agriculture, including early-maturing crops, dryland irrigation, and extension services targeting northern Ghana.
Infrastructure & Transport	Climate-proof national roads, drainage systems, and bridges in high-risk urban centers and transport corridors.
Public Health	Strengthen the resilience of health infrastructure and early warning systems for heatwaves and disease outbreaks.
Water & Sanitation	Expand safe water access through borehole rehabilitation, rainwater harvesting, and watershed protection in climate-stressed areas
Disaster Management	Establish national early warning and preparedness protocols for floods and heat events, in coordination with NADMO and RCCs.
Environment & Natural Resources	Restore degraded ecosystems and enforce fire management in savannah and forest transition zones.
Gender and Social Inclusion	Mainstream gender-responsive programming in sector interventions, especially in agriculture, livelihoods, and informal workspaces.
Energy & Industry	Expand off-grid renewable energy systems and improve climate resilience of industrial and public infrastructure.
Coastal & Marine Resources	Implement mangrove and shoreline restoration programs to reduce erosion and protect coastal livelihoods.

Table 3: *Adaptation-Focused SMTDP Objectives Aligned with Sectoral Climate Risks*

STEP 4: ***Priority Adaptation Actions***

With adaptation-focused objectives in place, the next step is to identify and prioritize specific adaptation actions that respoobjectives defined, MDAs must identify specific, actionable interventions that address the most urgent and impactful climate risks. Prioritization is necessary where financial and institutional resources are constrained (**Table 4**).

Actions should be:

- Aligned with the sector's mandate and NDC/NAP strategies.
- Scored/ranked based on impact, urgency, cost-effectiveness, and implementation feasibility.

Adaptation Action	Sector	Priority Level
Deploy drought-resilient seed varieties and irrigation kits	Agriculture	High
Construct and retrofit flood-control infrastructure in urban slums	Infrastructure	High
Integrate heatwave response protocols into public health programs	Health	High
Expand solar-powered water systems in water-stressed regions	Water	Medium
Restore mangroves in erosion hotspots (e.g., Anloga, Ada)	Coastal Management	High
Install solar mini-grids in rural clinics and schools	Energy	Medium
Provide targeted climate finance access for women and youth-led enterprises	Social Development	High
Implement agroforestry and bushfire response in savannah belt	Environment	High
Establish early warning systems for floods and droughts	Disaster Preparedness	High

Table 4: *Prioritized Climate Adaptation Actions by Sector and Urgency*

STEP 5: ***Spatial Mapping for Adaptation Targeting***

Where possible, Geographic Information Systems (GIS) should be used to visualize climate vulnerabilities, overlay adaptation needs, and guide intervention targeting.

Options for MDAs:

- Use national datasets (e.g., EPA, GMet, WRC) for hazard mapping.
- Integrate spatial overlays into project design (e.g., flood risk zones, degraded landscapes).
- Where GIS capacity is limited, use Google Earth imagery, national survey maps, or participatory mapping outputs.

Examples:

- Highlight flood-prone infrastructure corridors (e.g., Greater Accra roads).
- Map northern districts facing acute water stress for targeting water interventions.
- Demarcate coastal erosion zones for shoreline protection initiatives.

STEP 6: ***Mainstreaming Gender Equity and Social Inclusion (GESI)***

Climate impacts are unevenly distributed. MDAs must design adaptation actions that account for social inequalities, especially for women, youth, PWDs, and informal workers (**Table 5**).

Group	Key Climate Issues	Proposed Actions
Women & Girls	Livelihood loss, unpaid care, low access to land/finance	Targeted CSA inputs, training, access to climate finance
Youth	Unemployment, low representation	Support for green jobs, training in climate-smart sectors
PWDs	Exclusion from alerts/services	Design accessible shelters, EWS, planning tools
Elderly	Physical vulnerability, isolation	Community support during disasters, health outreach
Informal Workers	Heat/flood exposure, no safety nets	Improve markets/infrastructure, link to social protection
Smallholder Women Farmers	Resource constraints	Tailored CSA packages, land tenure support
Migrants	Poor housing, information access	Inclusion in DRR plans, basic service delivery

Table 5: *GESI Considerations and Inclusive Adaptation Actions*

STEP 7: ***Explicit References to CVRA Documents in SMTDP***

MDAs must demonstrate the evidence base informing their proposed adaptation actions. While most MDAs do not have CVRA reports, alternative data sources can be cited, including:

- GMet climate data.
- NADMO flood risk maps.
- NDPC/NAP sector profiles.
- Stakeholder consultations.

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

To ensure coherence and national support, all adaptation actions in the SMTDP must be linked to Ghana's key frameworks (**Table 6**).

Adaptation Action	Aligned Frameworks
Scale CSA in vulnerable agro-ecological zones	NAP (2018), NDC (2021), NCCP (2013)
Deploy solar irrigation and cold storage	NDC, NCCP, NAP
Upgrade flood infrastructure	NCCAS (2012), NAP
Expand climate-health surveillance	NDC, NCCP
Restore wetlands and mangroves	NDC, NCCAS, NAP
Launch youth-led green jobs	NDC, National Youth Policy
Improve drainage and market infrastructure	NCCP, NDC
Promote gender-responsive livelihood schemes	NDC, National Gender Policy

Table 6: *Cross-referencing national frameworks*

2.3 HOW TO USE THIS SECTION

This final step provides guidance on how Ministries, Departments, and Agencies (MDAs) can systematically apply the previous eight steps to strengthen the climate adaptation components of their Sector Medium-Term Development Plans (SMTDPs). The objective is to ensure that climate adaptation planning is evidence-informed, inclusive, and aligned with national policy commitments, while responding to sector-specific mandates and priorities.

Whether drawing from national vulnerability datasets, sectoral reports, or participatory stakeholder consultations, this section empowers MDAs to structure their adaptation interventions with clarity, coherence, and policy relevance.

Key Recommendations for MDAs:

- **Follow each step sequentially (Steps 1 to 8):** Use the toolkit's templates, national datasets, and sector-specific examples to identify risks, define objectives, prioritize actions, and ensure institutional coordination.
- **Document your process:** Attach relevant annexes such as climate risk summaries, maps, vulnerability assessments, and stakeholder engagement notes to provide a clear justification for adaptation decisions.
- **Foster cross-sectoral integration:** Identify and capitalize on synergies across ministries (e.g., collaboration between MoFA, MoH, MESTI, and MSWR on health-agriculture-water resilience programs).
- **Engage diverse stakeholders:** Include voices from civil society organizations, professional associations, women's groups, youth networks, private sector actors, and marginalized communities to validate priorities and strengthen ownership.
- **Ensure alignment across levels and frameworks:** Clearly link sectoral climate risks to SMTDP objectives and proposed adaptation actions. Reference national frameworks—such as Ghana's NAP, NDCs, NCCP, and NCCAS—to ensure coherence and eligibility for funding support.
- **Use the toolkit annex and templates:** Organize and present climate adaptation components in an SMTDP-compatible format to facilitate internal approvals and submission to NDPC.

2.4 CLIMATE VARIABLES TO CONSIDER IN SECTORAL PLANNING

For MDAs to develop robust and forward-looking climate adaptation strategies, it is essential to understand how changing climate variables affect national development outcomes across key sectors. These variables serve as the foundation for identifying risk hotspots, designing resilient infrastructure, planning sectoral interventions, and forecasting future needs **(Table 7)**.

With the integration of climate variables into SMTDPs, MDAs can ensure their decisions are evidence-based, proactive, and aligned with Ghana's national climate frameworks. This sub-section outlines key climate variables relevant to sector-level planning in Ghana and provides guidance on how MDAs can apply them within their mandates.

Climate Variable	What It Measures	Why It Matters for Sector Planning	Key Affected Sectors	Relevant Data Sources
Rainfall Patterns (annual total, intra-seasonal variability)	Changes in rainfall intensity, seasonality, and distribution	Supports decisions on national irrigation schemes, flood control, agricultural scheduling, and water infrastructure.	Agriculture, Water Resources, Disaster Risk Reduction (DRR), Sanitation	Ghana Meteorological Agency (GMet), EPA, WRC
Temperature Trends (average temps, heatwave days)	Rising daytime and nighttime temperatures across seasons	Informs health response planning, school design, energy demand projections, and urban resilience programs.	Health, Education, Energy, Urban Infrastructure	GMet, WHO Ghana Heat Guidelines, MoH
Drought Frequency & Duration	Length and frequency of dry spells in agro-ecological zones	Essential for dry-season farming, livestock support, water allocation, and resilience-building in food systems.	Agriculture, Livelihoods, Water Resources	EPA, NDPC, MoFA, GIDA
Flood Frequency & Severity	Recurrent flooding patterns in urban/rural settings	Guides flood-prone area zoning, infrastructure retrofitting, emergency preparedness, and sanitation system design.	Urban Development, Roads, Sanitation, Housing	NADMO, Hydrological Services Department, GMet
Sea-Level Rise & Coastal Erosion	Shoreline retreat, tidal surges, and saline intrusion	Critical for coastal settlements, fisheries management, infrastructure siting, and relocation strategies.	Coastal Infrastructure, Fisheries, Environment, Tourism	EPA, University of Ghana (Marine and Fisheries Science Dept.), MESTI

Windstorm Events	Frequency and intensity of wind-related hazards.	Important for structural design standards, school safety protocols, and rural housing resilience.	Infrastructure, Education, Energy, Rural Development	GMet, NADMO, Ministry of Works and Housing
Heat Index / Humidity Levels	Combined heat and moisture stress on human systems.	Informs heatwave early warnings, ventilation needs, and public health protocols.	Urban Health, Labour, Education, Gender	GMet, Ghana Health Service, EPA
Pest & Disease Outbreaks	Expansion of vectors (e.g., malaria, fall armyworm) tied to climate shifts.	Enhances surveillance, agricultural extension, and disease control strategies.	Agriculture, Health, Environment	MoFA, MoH, Noguchi, Research Institutes
Forest Cover & Land Use Change	Patterns of deforestation, land conversion, urban sprawl.	Underpins ecosystem restoration, green buffer planning, and fire risk management.	Forestry, Land Use, Natural Resources, DRR	Forestry Commission, Land Use Planning Authority, RS/ GIS Labs

Table 7: *Key Climate Variables and Their Relevance to Sectoral SMTDPs*

Recommendations for MDAs:

- Use nationally available datasets to analyze how each climate variable affects your sector's performance, infrastructure, and service delivery.
- Collaborate with technical institutions (e.g., GMet, EPA, WRC, Forestry Commission) for updated maps, projections, and overlays relevant to your operations.
- Where possible, visualize climate variable trends spatially using GIS or georeferenced indicators to prioritize geographic zones for intervention.

2.5 CHECKLIST: 8-STEP FRAMEWORK FOR INTEGRATING CLIMATE ADAPTATION INTO MDA SECTORAL SMTDPS

The checklist below summarizes the key steps outlined in this toolkit to support Ministries, Departments, and Agencies in mainstreaming climate adaptation into their SMTDPs (**Table 8**). It serves as a practical tracking tool for planning units, technical officers, and inter-ministerial teams to ensure that all critical dimensions of climate integration—from risk identification to policy alignment—are addressed systematically.

No.	Step	Key Action for MDAs	Tick when completed
1	Identify Climate Risks and Impacts	Summarize major climate hazards and projected impacts affecting your sector using national datasets or agency reports (e.g., GMet, EPA, MoFA, GHS)	☐
2	Identify Vulnerable Systems and Populations	Highlight the most climate-exposed population groups and critical systems (e.g., infrastructure, health services, agriculture, water) under your sectoral mandate	☐
3	Set Adaptation-Focused Sector Objectives	Formulate climate-responsive objectives linked to service continuity, resilience, and inclusive delivery	☐
4	Define and Prioritize Adaptation Actions	Develop specific actions for each objective, and prioritize based on urgency, impact, and feasibility	☐
5	Map Sectoral Risk Hotspots (GIS or Alternatives)	Use GIS overlays, remote sensing data, or national hazard maps to identify high-risk areas; where unavailable, use qualitative or participatory methods	☐
6	Mainstream Gender and Social Inclusion	Ensure actions are inclusive of women, youth, PWDs, informal workers, and other socially vulnerable groups	☐
7	Reference Evidence and Data Sources	Clearly cite sectoral assessments, climate studies, and stakeholder inputs that support your climate adaptation priorities	☐
8	Align with National Climate Frameworks	Cross-reference each adaptation action with Ghana's NAP, NDCs, NCCP, and other relevant national policies	☐

Table 8: *8-Step Framework for MDAs: Integrating Climate Adaptation into SMTDPs*

Use of the Checklist:

- During sector planning sessions and SMTDP reviews.
- As part of internal quality assurance by MDA planning units.
- For validation workshops with stakeholders and NDPC.
- To support justification for funding proposals or international partnerships.

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 is a systemic threat—disrupting not just one, but multiple sectors simultaneously. From agriculture to health, water to infrastructure, and energy to education, the effects are widespread and interconnected. For MDAs to drive resilient, inclusive development, climate-smart strategies must be fully integrated into the planning and execution of sectoral policies and Sector Medium-Term Development Plans.

Sectoral integration means moving beyond isolated or siloed interventions. It requires that ministries and departments—such as Agriculture, Energy, Water, Health, Environment, and Finance—collaborate to design and implement adaptation strategies that are coherent, synergistic, and aligned with national climate goals under the NAP, NDCs, and SDGs.

3.1.1 Why Sectoral Integration Matters for MDAs

- Prevents duplication and fragmentation in climate-related investments and programming
- Enhances coordination and co-benefits across sectors and ministries
- Increases access to climate finance by demonstrating inter-ministerial collaboration and mainstreaming
- Improves infrastructure efficiency and service delivery, especially for vulnerable populations
- Strengthens national reporting, monitoring, and cross-sector accountability toward NDC implementation.

3.1.2 Institutional Collaboration: Key Ministries and Agencies for Cross-Sector Integration

Climate adaptation requires collaboration beyond any single ministry. **Table 9** outlines critical agencies that MDAs can partner with to co-design, support, or scale sectoral adaptation interventions.

Agency / Ministry	Role in Climate Adaptation
Ministry of Food and Agriculture (MoFA)	Leads climate-smart agriculture, extension services, irrigation, and early warning systems
Ministry of Works and Housing	Oversees climate-resilient housing, drainage, and infrastructure standards
Ghana Health Service / Ministry of Health	Manages climate-sensitive disease control, heatwave preparedness, and infrastructure resilience
Environmental Protection Agency (EPA)	Provides technical guidance, climate policy coordination, and impact assessment
Ministry of Energy	Develops renewable energy solutions and supports energy efficiency in public facilities
Forestry Commission	Leads ecosystem restoration, forest protection, and fire prevention
Water Resources Commission / MSWR	Oversees integrated water management and groundwater protection
NADMO	Leads disaster risk reduction, early warning, and emergency preparedness
Ministry of Finance / NDPC	Guides climate budget tagging, sectoral planning, and M&E alignment with national frameworks

Table 9: *Key Ministries and Agencies Supporting Climate Adaptation Across Sectors*

3.2 PRIORITY SECTORS FOR ADAPTATION INTEGRATION

Drawing from Ghana's NAP, NDCs, and key national strategies, this toolkit identifies nine priority sectors where MDAs can deliver high-impact, cross-cutting adaptation results. These sectors are critical for building national resilience and service continuity.

1. Agriculture and Food Security

- Climate-smart agriculture.
- Post-harvest loss reduction.
- Drought-resistant seed systems.
- Target institutions: MoFA, GIDA.

2. Water Resource Management

- Rainwater harvesting, borehole rehab.
- Water quality monitoring.
- Protection of watershed ecosystems.
- Target institutions: WRC, MSWR, CSIR-WRI.

3. Infrastructure Development

- Climate-proofed roads, markets, drainage.
- Flood-resilient public facilities.
- Green public infrastructure planning.
- Target institutions: MoRH, MWH, MLGRD.

4. Public Health and Sanitation

- Climate-sensitive disease surveillance.
- Extreme heat early warnings.
- Sanitation systems for high-risk zones.
- Target institutions: GHS, MoH, MSWR.

5. Disaster Risk Reduction

- Early warning systems.
- Emergency shelters.
- Climate-risk zoning and DRR protocols.
- Target institutions: NADMO, RCCs.

6. Natural Resource Management & Ecosystem-Based Adaptation

- Reforestation, agroforestry, bushfire control.
- Wetland restoration and biodiversity corridors.
- Target institutions: EPA, Forestry Commission, MLNR.

7. Energy and Low-Carbon Development

- Off-grid renewables.
- Energy efficiency in schools and hospitals.
- Solar-powered public infrastructure.
- Target institutions: Ministry of Energy, Energy Commission.

8. Waste Management and Pollution Control

- Sanitation system upgrades.
- Circular economy and waste-to-energy.
- Pollution control in flood-prone areas.
- Target institutions: MSWR, EPA, MESTI.

9. Gender Equity and Social Inclusion (GESI)

- Livelihoods for women and youth.
- Infrastructure access for PWDs.
- Inclusive early warning and evacuation protocols.
- Cross-cutting mandate: MoGCSP, NDPC, Gender Desks in MDAs.

Each sector listed above is supported by templates and tools in subsequent sections of the toolkit to guide MDAs in formulating:

- Climate-resilient objectives.
- Priority actions.
- Indicators for monitoring and evaluation.
- Budgeting and financing strategies.

3.3 SECTOR-SPECIFIC ADAPTATION ACTIONS

This section presents detailed, evidence-informed adaptation actions across eight priority sectors. These actions are designed to support MDAs in translating climate vulnerabilities into concrete programmatic responses, aligned with national frameworks such as the NAP (2018), NDC (2021), NCCP (2013), and NCCAS (2012). Each table outlines strategic activities that can be integrated into sectoral SMTDPs and annual plans.

A. *Agriculture and Food Security*

Mandate: Ministry of Food and Agriculture (MoFA), GIDA

Objective: Increase agricultural resilience through climate-smart practices, value chain support, and livelihood diversification.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Promote climate-smart agriculture (CSA)	Train farmers on drought-resistant crops, soil health, and weather-based advisory services	NCCP, NDC, NCCAS, NAP
Expand irrigation and water harvesting	Scale solar-powered irrigation in dry zones (e.g., Upper East, North East)	NCCP, NCCAS
Strengthen agri-extension and climate forecasting	Deploy mobile apps, climate advisories, and farmer field schools	NCCAS, NAP
Enhance value chains for resilient crops	Improve storage, processing, and market linkages for CSA crops	NCCP, NDC
Support livelihood diversification	Promote small ruminant farming, beekeeping, agro-processing for vulnerable rural groups	NDC, NCCAS
Diversify rural livelihoods	Support alternative income sources (beekeeping, small livestock, processing enterprises) to buffer climate shocks	NDC, NCCAS

Table 10: *Climate-Resilient Agricultural Adaptation Actions and Policy Alignment*

B. *Water Resources Management*

Mandate: MSWR, Water Resources Commission (WRC), CSIR-WRI.
Objective: Strengthen water security through infrastructure, governance, and watershed protection.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Promote rainwater harvesting	Install systems in schools, health facilities, and farms in drought-prone areas	NCCP, NCCAS
Rehabilitate and climate-proof water systems	Upgrade boreholes and piped systems in flood and drought hotspots	NCCP, NDC, NAP
Restore wetlands and upstream catchments	Reforest degraded watersheds (e.g., Pra, Densu) and protect wetland ecosystems	NCCAS, NAP
Strengthen water governance	Establish and train Water User Associations; develop early warning for water stress	NAP, NCCAS
Expand climate-water data systems	Install local gauges, digitize water usage monitoring	NCCP, NAP
Diversify rural livelihoods	Support alternative income sources (beekeeping, small livestock, processing enterprises) to buffer climate shocks	NDC, NCCAS

Table 11: *Climate-Resilient Water Resources Adaptation Actions and Policy Alignment*

C. *Health and Sanitation*

Mandate: Ministry of Health, Ghana Health Service.
Objective: Safeguard health systems from climate-sensitive diseases and enhance sanitation resilience.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Establish climate-health early warning systems	Link GMet data with disease surveillance (e.g., heat, malaria, cholera)	NCCP, NDC
Upgrade resilient health infrastructure	Elevate and ventilate CHPS compounds, retrofit clinics in high-risk zones	NAP, NCCP
Strengthen public health education	Train health officers on heat stress and hygiene promotion	NDC, NCCAS
Expand mobile and outreach health services	Improve flood-season response for remote and flood-prone areas	NCCAS, NAP
Improve climate-resilient sanitation	Design flood-tolerant toilets and waste drains in markets and schools	NCCP, NDC

Table 12: *Climate-Resilient Health sector Adaptation Actions and Policy Alignment*

D. *Disaster Preparedness and Response*

Mandate: NADMO, MESTI, RCCs.
Objective: Reduce exposure to climate hazards and build institutional capacity for risk management.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Install early warning systems	Use SMS, radio alerts, and community alarms in flood-prone areas	NCCP, NDC, NCCAS
Develop multi-hazard contingency plans	Simulate and test disaster protocols with local and regional coordination	NCCAS, NAP
Build resilient shelters and schools	Construct dual-use evacuation centers in high-risk coastal and floodplain zones	NCCP, NAP
Train disaster response volunteers	Empower youth brigades and community taskforces with evacuation skills	NDC, NCCAS
Implement risk-informed land use planning	Integrate flood maps into zoning and prevent settlement in hazard zones	NCCP, NAP

Table 13: *Climate-Resilient Disaster Preparedness and Response Adaptation Actions and Policy Alignment*

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

Mandate: Forestry Commission, EPA, MLNR.
Objective: Protect, restore, and manage ecosystems to buffer climate impacts and support livelihoods.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Restore degraded forests and savannahs	Plant native species in forest buffer zones and dryland woodlots	NDC, NAP
Promote agroforestry and climate-smart landscapes	Scale tree-crop systems (e.g., dawadawa, shea, mango)	NCCAS, NAP
Conserve wetlands and biodiversity corridors	Engage coastal and riparian communities in protection efforts	NAP, NDC
Enforce environmental compliance	Support bye-law enforcement and permit regulation on logging, mining	NCCP, NCCAS
Strengthen bushfire prevention	Train community fire volunteers; install bushfire alert systems	NAP, NCCP

Table 14: *Climate-Resilient Natural Resources and Ecosystem-based Adaptation Actions and Policy Alignment*

F. *Energy and Low-Carbon Development*

Mandate: Ministry of Energy, Energy Commission.
Objective: Increase access to renewable energy and build energy system resilience to climate risks.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Expand off-grid renewables	Deploy solar mini-grids in underserved regions	NCCP, NDC
Climate-proof energy infrastructure	Flood-proof substations and reinforce energy lines	NAP, NCCAS
Solarize public institutions	Provide CHPS compounds and schools with solar PV systems	NCCAS, NDC
Retrofit energy-efficient infrastructure	Install LED lighting, natural ventilation, and solar heating	NCCP
Promote clean cooking transitions	Support LPG/ethanol fuel switching through community initiatives	NCCP, NDC

Table 15: *Climate-Resilient Energy and Low-Carbon Development Adaptation Actions and Policy Alignment*

G. *Coastal Zone Management and Marine Ecosystem Protection*

Mandate: MESTI, EPA, Fisheries Commission, CODA.
Objective: Protect coastal infrastructure, ecosystems, and livelihoods from sea-level rise and erosion.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Rehabilitate mangroves and lagoons	Engage communities in restoring Anloga, Ada wetlands	NAP, NCCAS
Build sea defenses and breakwaters	Reinforce vulnerable shorelines and ports (e.g., Keta, Elmina)	NCCP, NDC
Implement ICZM protocols	Align zoning, resettlement, and land use plans in coastal districts	NDC, NCCAS
Monitor and manage marine ecosystems	Prevent overfishing, sand mining, and oil pollution	NCCP, NAP
Support coastal green livelihoods	Develop eco-tourism, aquaculture, and seaweed farming programs	NCCAS, NAP

Table 16: *Climate-Resilient Coastal Zone Management and Marine Ecosystem Protection Adaptation Actions and Policy Alignment*

H. *Waste Management and Pollution Control*

Mandate: MSWR, EPA, MMDAs.
Objective: Enhance urban resilience and reduce GHG emissions through adaptive waste strategies.

Adaptation Action	Activity Details	Reference (Policy Alignment)
Develop integrated waste systems	Establish decentralized sorting, composting, and recycling hubs	NCCP, NDC
Promote circular economy and waste-to-energy	Convert organic waste into biogas or compost via public-private models	NCCP, NAP
Upgrade flood-resilient waste infrastructure	Raise dump sites, design covered drains and leachate barriers	NCCAS, NDC
Enforce open-burning bans and plastic regulations	Implement by-laws and incentives for plastic recovery	NCCP, NCCAS
Support green enterprises	Train youth and women in recycling cooperatives and reuse ventures	NDC, NCCAS

Table 17: *Climate-Resilient Waste Management and Pollution Control Adaptation Actions and Policy Alignment*

3.4 ENSURING COHERENCE WITH NATIONAL ADAPTATION FRAMEWORKS

Ghana has developed a suite of robust national climate policies and strategies that guide the country's vision, targets, and sectoral mandates for achieving climate-resilient development. These frameworks provide a structured basis for MDAs to align their Sector Medium-Term Development Plans, ensuring that climate-related actions are credible, fundable, and technically sound.

Core National Adaptation Frameworks:

- 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).

Why Alignment Matters for MDAs?

Aligning MDA sectoral actions with these national frameworks ensures that:

- National climate goals and reporting obligations are met (e.g., under the UNFCCC and Paris Agreement).
- Priority adaptation interventions are consistent with national and cross-sectoral priorities.

- Access to funding from the Ministry of Finance, the Green Climate Fund, and other donors is more likely.
- Synergies and partnerships across ministries and development agencies can be leveraged more effectively.
- Monitoring and Evaluation (M&E) efforts are streamlined using shared indicators from the NAP and NDCs.

What Does Alignment Look Like in Practice?

- Each sector-specific adaptation action in the SMTDP should be linked to one or more national frameworks.
- MDAs can use Step 8's cross-referencing table to verify which national objectives their proposed actions reinforce.
- Actions aligned with multiple frameworks (e.g., NDC + NAP + NCCP) demonstrate coherence and strategic relevance and are more likely to be supported.

3.5 HOW TO USE THIS SECTION

1. **Review each sectoral template** developed in Section 3.3 (e.g., Agriculture, Health, Energy, Water). Identify those that are most relevant to your sector's mandate, using climate risk data, sectoral reports, or national assessments.
2. **Customize the templates** by inserting your MDA's sector-specific data, targets, or regional interventions. Use inputs from policy documents, previous programs, vulnerability profiles, and stakeholder consultations.
3. **Clearly link each action** to national frameworks (NDC, NAP, NCCP, NCCAS). Refer to the Step 8 cross-referencing table for guidance on alignment and to justify your SMTDP proposals.
4. **Ensure actions are SMART** — Specific, Measurable, Achievable, Relevant, and Time-bound — and aligned with the capacity and financial planning cycle of your ministry or agency.
5. **Identify sectoral synergies.** For example:
   - A flood-resilient road project may contribute to the infrastructure, disaster risk reduction, and water management goals simultaneously.
   - A mangrove restoration program could advance objectives under biodiversity, fisheries, tourism, and GHG mitigation.
6. **Engage your technical and planning units.** Effective climate adaptation integration requires the involvement of multiple directorates — including policy, infrastructure, gender and social protection, budgeting, and M&E.
7. **Use the completed sectoral tables** as the foundation for your MDA's climate adaptation chapter in the SMTDP or as an annex to a sectoral investment plan or budget submission.

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 does not affect all people equally. Vulnerable populations—such as women, children, the elderly, persons with disabilities (PWDs), youth, and economically marginalized groups—experience disproportionate impacts due to structural inequalities, limited access to resources, and barriers to participation in decision-making processes.

For MDAs, integrating gender equity and social inclusion (GESI) into climate adaptation planning is critical for ensuring that policies, investments, and programs are responsive, equitable, and transformative. Doing so not only strengthens national resilience but also upholds Ghana's commitments to inclusive development and social justice.

This section provides a practical framework for mainstreaming GESI into sectoral SMTDPs, based on Ghana's climate and gender policy commitments, including:

- National Adaptation Plan (NAP, 2018).
- National Climate Change Policy (NCCP, 2013).
- National Gender Policy (2015).
- Updated Nationally Determined Contributions (NDC, 2021).
- Sustainable Development Goals (SDGs), especially SDG 5 (Gender Equality) and SDG 13 (Climate Action).

4.2 WHY GENDER EQUITY AND SOCIAL INCLUSION MATTER IN SECTORAL CLIMATE ADAPTATION

Key Challenges & Considerations

1. ***Differentiated Climate Vulnerabilities***
   - Women and girls often bear a greater burden of water insecurity, unpaid care, and food stress during climate shocks.
   - PWDs may face inaccessible evacuation infrastructure or be excluded from early warning systems.
   - Poor and informal households frequently lack financial resources to adopt climate-resilient technologies or relocate from high-risk zones.
2. ***Barriers to Participation in Decision-Making***
   - Women, youth, and minority groups are often underrepresented in sectoral planning and budgeting processes.
   - Sectoral strategies may fail to reflect the priorities of socially excluded populations unless intentional engagement mechanisms are put in place.
3. ***Gender-Differentiated Economic Impacts***
   - Women and youth are overrepresented in informal sectors—agriculture, food vending, domestic labor—that are highly vulnerable to climate risks.
   - Limited access to extension services, credit, and land tenure hampers adaptive capacity and economic recovery following climate events.

Policy Justification for GESI Mainstreaming in MDA Planning

- ***National Gender Policy (2015)*** Mandates gender-responsive planning, budgeting, and implementation across all ministries, departments, and agencies.
- ***Ghana's Updated Nationally Determined Contributions (NDC, 2021)*** Calls for the design of gender-responsive adaptation strategies, with emphasis on climate finance access for women and youth.
- ***National Climate Change Policy (NCCP, 2013)*** Recognizes the role of social equity in building long-term climate resilience.
- ***National Adaptation Plan (NAP, 2018)*** Encourages mainstreaming of gender and inclusion considerations across sectoral action plans and targets.
- ***Sustainable Development Goals (SDG 5 and 13)*** Promote gender equality and inclusive climate action as foundational principles for sustainable development.

4.3 FRAMEWORK FOR INTEGRATING GENDER & SOCIAL INCLUSION INTO CLIMATE ADAPTATION

To ensure national climate adaptation is equitable and inclusive, MDAs must adopt a gender-responsive and socially inclusive approach. This means recognizing and addressing how age, gender, disability, location, and socio-economic status affect people's climate vulnerability and access to resources. The steps below provide MDAs with a structured framework for mainstreaming inclusion into sectoral climate planning.

STEP 1: *Conduct Gender and Social Vulnerability Assessment*

Begin by mapping how different population groups are affected by climate risks and what barriers they face in adapting. Where no Climate Vulnerability and Risk Assessment (CVRA) exists, MDAs can use stakeholder consultations, socio-economic data, and program evaluations (**Table 18**).

Vulnerable Group	Climate Risk Exposure	Key Barriers to Adaptation	Recommended Response
Women (rural farmers)	Drought, rainfall variability	Limited access to CSA, credit, land	Subsidized CSA inputs, female-led extension
Female traders (markets)	Flooding, heat stress	Insecure facilities, no drainage	Climate-proofed markets, micro-insurance
Elderly	Heatwaves, floods	Isolation, mobility challenges	Community cooling shelters, evacuation support
PWDs	Disasters, floods	Inaccessible shelters, excluded from EWS	Inclusive early warning systems, accessible planning
Informal urban workers	Sanitation risks, flash floods	Unregulated workspaces, no safety nets	Social protection, improved infrastructure
Youth (unemployed)	Drought, job loss	Limited green job skills, access to capital	Climate entrepreneurship, green skills training
Pregnant/lactating women	Food insecurity, water scarcity	Nutritional stress, healthcare inaccessibility	Maternal outreach, nutrition aid
Migrants/displaced persons	Floods, housing loss	Legal insecurity, planning exclusion	Inclusive DRM, basic service access

Table 18: *Gender and Social Vulnerability Assessment Template*

How MDAs Can Use This Template

- **Integrate findings into sectoral vulnerability profiles.**
- **Prioritize inclusive project targeting and delivery.**
- **Design appropriate adaptation responses per group.**

STEP 2: *Plan Gender-Responsive Sectoral Adaptation*

Use the vulnerability insights to embed inclusion into your SMTDP sectoral strategies. MDAs should move beyond awareness and design interventions that actively reduce inequality (**Table 19**).

Sector	Action
Agriculture	Targeted CSA training for women, youth, and PWDs
Water	Place boreholes closer to homes/schools; ensure PWD access
Health	Integrate maternal health in climate-health plans
Infrastructure	Build accessible public infrastructure with safety features
DRR	Inclusive shelters with separate spaces and signage for PWDs
Environment	Train women/youth in forest restoration and eco-jobs
Energy	Support women/youth enterprises in solar and clean cooking
Waste	Engage women/youth in circular economy businesses
Livelihoods	Provide business training, seed capital for affected groups
Planning	Involve gender desks, CSOs, and social welfare in all processes

Table 19: *Gender-Responsive Adaptation Actions by Sector*

STEP 3: *Promote Inclusive Participation in Climate Governance*

Participation must go beyond symbolic inclusion. MDAs should actively structure space for the voices of those most affected by climate risks (**Table 20**).

✔	Action
✔	Ensure 30–50% representation of women/youth in committees
✔	Provide resilience and leadership training to marginalized groups

✔	Host safe, accessible platforms for engagement (e.g., women's durbars)
✔	Use local languages, radio, visuals for low-literacy outreach
✔	Integrate climate topics in school/youth clubs
✔	Conduct feedback forums with informal workers and migrants
✔	Partner with CSOs and traditional leaders to reach hard-to-reach populations

Table 20: *Inclusive Participation Action Points*

STEP 4: ***Support Climate-Resilient Livelihoods***

Sustainable adaptation must strengthen income and well-being for vulnerable populations. MDAs can help by scaling inclusive livelihoods with co-benefits for climate and development (**Table 21**).

Livelihood	Target Group	Adaptation Benefit
Agroforestry	Women/youth	Drought resilience, income diversification
Solar energy services	Youth entrepreneurs	Clean energy access, green jobs
Eco-tourism	Coastal/rural communities	Ecosystem protection + income
Recycling/upcycling	Urban poor, PWDs, cooperatives	Circular economy, urban resilience
Shea/NTFP processing	Women in northern regions	Resource value addition, empowerment
Aquaculture	Coastal youth/fisherfolk	Reduced marine pressure, nutrition security
Beekeeping	Elderly, youth	Low-input income generation, biodiversity support
Mobile green services	Migrants, informal youth	Urban greening, job creation

Table 21: *Inclusive Climate-Resilient Livelihood Options*

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

To ensure adaptation efforts are equitable, MDAs must track not only outcomes, but who benefits. MEL systems should include both quantitative and qualitative inclusion indicators (**Table 22**).

Indicator	Measurement Target
% of women/youth in decision-making groups	At least 30–50%
# of gender-responsive projects implemented	Annual increase, disaggregated
% of budget/funding to inclusive initiatives	Tracked per year, documented in budget reports
# of inclusive shelters built	One per high-risk zone, with accessibility features
# of staff/community trainings on GESI	At least one per year
# of livelihood programs for vulnerable groups	Disaggregated targets for women, youth, PWDs
Use of participatory tools in planning	At least 2 instances per planning cycle

Table 22: *Gender-Inclusive Climate MEL Indicators*

Reporting Tip for MDAs:

Integrate these indicators into:

- Sectoral Results Frameworks.
- Annual Progress Reviews (APRs).
- Climate finance reporting (where applicable).
- Midterm and End-of-SMTDP evaluations.

4.4 ENSURING ALIGNMENT WITH NATIONAL AND INTERNATIONAL POLICIES

For climate adaptation strategies to be credible, fundable, and scalable, MDAs must ensure that gender-responsive and socially inclusive actions are aligned with Ghana's national priorities and international commitments (**Table 23**). This alignment ensures that sectoral SMTDPs contribute directly to broader policy coherence, climate finance eligibility, and sustainable development outcomes.

GESI alignment enhances:

- Policy legitimacy in sectoral planning and budgeting processes.
- Visibility and integration into international reporting (e.g., SDG, UNFCCC).
- Access to climate finance through national and global funding mechanisms.
- Partnership-building with donors, civil society, and international institution.

National and International Policy Anchors for GESI in Climate Adaptation

- **National Gender Policy (2015)** – Guides gender mainstreaming in public planning, budgeting, and service delivery.
- **NAP (2018)** – Emphasizes gender-differentiated vulnerability and inclusive adaptation strategies.
- **NDC (2021)** – Includes targets for gender-responsive and socially inclusive adaptation actions.
- **NCCP (2013)** – Recognizes the need for equity and inclusion in climate resilience.
- **SDGs 5, 6, 8, 13, and 16** – Advance equality, clean water, decent work, climate action, and inclusive institutions.
- **Ghana's WASH Sector Strategic Plan (2021) and National Disaster Management Policy** – Support inclusive infrastructure and DRR.

SMTDP Gender-Inclusive Action	Relevant National and International Policies
Climate-smart agriculture training and tools for women	National Gender Policy (2015), NAP (2018), NDC (2021)
Establishing safe, nearby water points in vulnerable communities	NCCP (2013), NAP (2018), NDC (2021), SDG 6
Gender-sensitive evacuation plans and DRR	NCCAS (2012), NAP (2018), National DRM Policy
Livelihood support for youth, women, and PWDs	NDC (2021), Ghana Vision 2057, SDG 8
Inclusive sanitation infrastructure in public spaces	NCCP (2013), WASH Strategic Plan (2021), SDG 6
Mainstreaming GESI in sectoral SMTDPs	National Gender Policy (2015), NDPC Planning Guidelines, SDG 5
Enhancing women's participation in climate planning	NAP (2018), Gender Policy (2015), SDG 13, SDG 16

Table 23: *Alignment Matrix – Gender & Social Inclusion in Climate Adaptation Policies*

How to Use This Section:

This section provides a practical, step-by-step approach for MDAs to integrate gender and social inclusion into all stages of sectoral adaptation planning—ensuring consistency with national strategies and global benchmarks.

1. ***Step 1: Assess Gender-Differentiated Climate Vulnerabilities***
   - Analyze how women, youth, elderly, PWDs, and informal workers experience climate risks.
   - Use CVRAs, social protection data, and GESI assessments.
2. ***Step 2: Apply Inclusive Adaptation Planning Tools***
   - Use the provided templates (e.g., Vulnerability Matrix, Gender-Responsive Action Table) to tailor sectoral responses.
   - Ensure that strategies address both risk reduction and empowerment.
3. ***Step 3: Institutionalize Inclusive Participation***
   - Guarantee the representation of marginalized groups in planning and budgeting sessions.
   - Track and document participation levels, especially in decision-making forums.
4. ***Step 4: Monitor and Evaluate GESI in Adaptation***
   - Use disaggregated indicators to measure inclusiveness and equity.
   - Conduct community scorecards, public validation forums, and report inclusivity outcomes in sector reviews.

4.5 GESI ALIGNMENT CHECKLIST FOR MDA CLIMATE ADAPTATION PLANNING

This checklist helps Ministries, Departments, and Agencies (MDAs) ensure that gender equity and social inclusion (GESI) are systematically integrated into climate adaptation planning, budgeting, implementation, and monitoring activities (**Table 23**). This alignment ensures that sectoral SMTDPs contribute directly to broader policy coherence, climate finance eligibility, and sustainable development outcomes.

GESI Integration Questions

- Has a Gender and Social Vulnerability Assessment been conducted or referenced using national data or consultations?
- Have adaptation actions been tailored to the specific needs of women, youth, PWDs, elderly, and other vulnerable groups?
- Does the SMTDP include a gender-responsive section with clearly labeled GESI interventions across sectors?
- Are there gender-inclusive indicators in the M&E framework, including sex-, age-, and disability-disaggregated data?
- Have women, youth, and marginalized groups been represented (30–50%) in planning and validation meetings?
- Are infrastructure and services (e.g., shelters, water, health, energy) designed to be inclusive and accessible?
- Do proposed livelihood programs explicitly target vulnerable groups with climate-resilient options?
- Has the SMTDP cross-referenced GESI actions with national and international policy frameworks (e.g., NAP, NDC, SDG 5, SDG 13)?
- Has the team consulted Gender Desks, Social Welfare officers, and/or CSOs working on GESI?
- Are there budget lines or financial allocations specifically supporting gender-responsive climate actions?

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

For MDAs, Monitoring, Evaluation, and Learning (MEL) is essential to assess whether climate adaptation actions are effective, equitable, and scalable. A robust MEL system ensures that climate interventions:

- Track real impact beyond activity counts.
- Promote evidence-based learning and course correction.
- Build transparency and accountability with stakeholders.
- Support resource mobilization and reporting under Ghana's NAP, NDC, and global climate frameworks.

5.2 KEY PRINCIPLES FOR EFFECTIVE CLIMATE MEL

An effective climate MEL system enables MDAs to track progress, demonstrate results, and adapt their strategies over time. To ensure consistency, credibility, and usefulness, these systems must be grounded in a set of clear guiding principles. Table 24 outlines key principles that MDAs should adopt when designing or strengthening their climate MEL frameworks. These principles help ensure that MEL efforts are not only robust and data-driven but also inclusive, gender-responsive, and aligned with national climate and development priorities.

Principle	What It Means for MDAs
Data-Driven	Use quantitative (e.g., rainfall trends, yield data) and qualitative (e.g., focus groups, site inspections) data
Outcome-Oriented	Prioritize tracking real-world outcomes (e.g., improved resilience, reduced flood losses)
Gender-Responsive	Disaggregate indicators by sex, age, and vulnerability group; assess equity in results
Participatory	Involve civil society, communities, private sector, and academia in MEL processes
Policy-Aligned	Integrate indicators aligned with Ghana's NAP, NDCs, NCCP, and NDPC SMTDP Results Framework

Table 24: *MDAs should align their climate MEL systems with the following principles*

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 SMTDP Results Framework and tracked across the implementation period.

MDAs 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 25)

Indicator Type	Definition	Examples
Input Indicators	Track the resources invested into climate adaptation	% of SMTDP 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 25: *Type of Overview of Indicator Types*

5.4 DESIGNING A CLIMATE-RESPONSIVE MEL FRAMEWORK FOR MDAS

Every MDA must develop a climate-responsive Monitoring, Evaluation, and Learning (MEL) framework that enables them to track progress, report outcomes, and improve climate adaptation performance over time. This framework should be embedded in the MDA's sectoral SMTDP Results Framework and aligned with national climate reporting systems (NAP, NDC, NCCAS).

A strong MEL system ensures that planning is not only activity-focused, but also results-oriented, measuring improvements in resilience, equity, and sustainability across sectors and vulnerable population.

STEP 1: *Setting Measurable Climate Indicators*

MDAs should adopt SMART (Specific, Measurable, Achievable, Relevant, Time-bound) indicators that capture (**Table 26**):

- Exposure to climate risks.
- Effectiveness of adaptation actions.
- System-level resilience outcomes.

Category	Key Indicators	Measurement Approach
Climate Risks & Exposure	Frequency of climate events, # people affected	GMet, NADMO, CVRA, EPA
Infrastructure Resilience	# of resilient infrastructure upgrades, % of critical systems climate-proofed	Works Department, MoRH reports
Water Security	% of households with resilient access, # of water systems installed	MSWR, WRC, community surveys
Agriculture & Food Security	% of CSA adopters, yield performance under stress	MoFA extension data, remote sensing
Disaster Preparedness	% of communities with EWS, emergency response time	NADMO reports, local DRM plans
Ecosystem Protection	Area restored, # of local conservation initiatives	Forestry Commission, satellite imagery
Social & Gender Inclusion	% of women/youth in planning, # of inclusive projects	Gender Desk, Social Welfare, CSOs

Table 26: *Climate M&E Indicator Categories and Approaches*

STEP 2: *Establishing Data Collection and Reporting Mechanisms*

To ensure effective monitoring and reporting of climate adaptation actions, MDAs must establish clear data collection systems and assign appropriate roles and responsibilities to all relevant actors.

This step outlines three essential components: identifying reliable data sources, defining stakeholder roles, and setting realistic reporting timelines (**Tables 27, 28 and 29**).

Source Type	Examples	Purpose in M&E
Primary	Field surveys, focus group discussions (FGDs), key informant interviews, site inspections	Ground-truthing and validating adaptation outcomes at the community level
Secondary	GMet (climate data), NADMO (disaster reports), WRC (water data), EPA (environmental trends), MoFA, Forestry Commission	National-level baselines, trend analysis, and cross-district comparison

Table 27: *Common Data Sources for Monitoring Climate Adaptation Interventions*

Stakeholder	Role in M&E
Local Communities & Traditional Leaders	Provide local insights, validate findings, and co-monitor community-based actions
CSOs & Faith-Based Organizations	Co-design inclusive MEL tools, support data collection, ensure gender and social equity
Academic & Research Institutions	Offer technical guidance, tools, and data analysis for climate indicators
Private Sector Entities	Share infrastructure or utility data; co-monitor results from PPP climate investments
MDA Departments/Units	Coordinate sector-specific data gathering, reporting, and analysis

Table 28: *Roles and Contributions of Key Stakeholders in Climate MEL*

Level	Reporting Frequency	Purpose
Project-Level	Monthly	Track implementation progress, resolve issues quickly, and capture short-term outcomes
Sectoral-Level	Quarterly	Analyze trends across departments and assess performance gaps
Agency-Wide	Annually	Consolidate data for submission to NDPC, RCCs, and national climate reporting platforms

Table 29: *Recommended Climate M&E Reporting Frequencies*

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

The Scorecard enables MDAs to track progress toward their adaptation targets over time and identify areas for improvement during implementation (**Tables 30**).

Performance Area	Indicator	Baseline (2025)	Target (2029)	Status (2027)
Climate-Smart Agriculture	% of CSA adopters	15%	50%	30%
Water Security	% with improved access	40%	80%	55%
Flood Resilience	Km of roads flood-proofed	10 km	50 km	25 km
EWS Coverage	% of communities covered	30%	90%	65%
Ecosystem Recovery	Hectares restored	500 ha	2000 ha	1250 ha

Table 30: *Sample Climate Adaptation Performance Scorecard*

Tip: Use traffic light colors *(🟢 = on track, 🟡 = moderate risk, 🔴 = off track) for visibility.*

STEP 4: ***Conduct Climate Impact Assessments***

Unlike activity tracking, impact assessments measure real-world outcomes—who benefited, what changed, and how adaptation contributed to resilience (**Tables 31**).

Type	Purpose	Method
Resilience Impact Study	Measure outcome of interventions	Field data, before-after studies
Community Feedback	Capture experience of beneficiaries	Reflection workshops, scorecards
Policy Alignment Review	Ensure strategic relevance	Compare with NAP/NDC updates, revise SMTDP plans

Table 31: *Climate Impact Assessment Components for MDA*

Implementation Tips for MDAs:

- Conduct impact assessments at mid-term and end-of-plan (e.g., 2027 and 2029).
- Use findings to adjust plans, funding allocations, or scale up successful actions.
- Involve CSOs, sector departments, and vulnerable groups throughout the process.
- Document and share adaptation success stories (e.g., flood control benefits, restored livelihoods).

5.5 STRENGTHENING INSTITUTIONAL CAPACITY FOR CLIMATE MEL

Even the most technically sound MEL frameworks can fail if MDAs lack the institutional capacity to implement, analyze, and act on climate data. For climate adaptation efforts to be sustained and scaled, ministries, departments, and agencies must invest in

- Skilled personnel.
- Fit-for-purpose digital tools.
- Sector-wide coordination mechanisms.
- Continuous learning systems.

This section outlines practical actions MDAs can take to institutionalize climate-responsive MEL within existing systems (**Table 32**)

Area	Capacity Strengthening Action
Human Resource Development	Train Planning Officers, M&E Units, and Sector Directors on collecting, analyzing, and reporting climate indicators.
	Provide refresher workshops on gender-, age-, and disability-disaggregated data.
Digital Tools & Technology	Develop digital dashboards or data systems for real-time MEL tracking.
	Use mobile data collection tools (e.g., KoboToolbox, ODK) for field-level monitoring.
GIS and Remote Sensing	Build capacity in GIS for mapping risks, assets, and interventions
	Collaborate with RCCs, EPA, or universities for satellite imagery and analysis support.
Institutional Coordination	Form a Climate MEL Working Group within the ministry or agency, including sector heads (e.g., Agriculture, Water, Health, Environment, Gender, Energy
	Develop joint reporting formats and inter-departmental responsibilities.
Learning & Knowledge Management	Document lessons from implementation, evaluations, and community engagement.
	Archive MEL reports, adaptation scorecards, and geospatial maps within the MDA for future planning and peer exchange

Table 32: *Key Capacity Building Priorities for MDAs*

Key Actions for Institutionalizing Climate MEL in MDAs

- Integrate MEL-related training into sector capacity development plans.
- Allocate funding for MEL in SMTDP and annual budget cycles.
- Collaborate with NDPC, RCCs, EPA, CSIR, and SIGRA for technical support and peer learning platforms.

5.6 LEARNING LOOPS AND ADAPTIVE MANAGEMENT

5.6.1 Why Learning Loops Matter for MDAs

Monitoring, Evaluation and Learning (MEL) for climate adaptation must go beyond reporting—it must support real-time learning and adaptive management. Learning loops ensure that evidence and feedback from the field continuously inform (Table 33):

- Planning revisions.
- Budget reallocations.
- Policy adjustments.
- Partnership development.

This is central to resilience-building and ensures that climate responses evolve as new risks or opportunities emerge.

Component	What It Means for MDAs
Observation	Track seasonal trends, risk patterns, and performance of sector interventions (e.g., GMet data, CSA adoption, DRR coverage).
Reflection	Hold structured review meetings with technical units, partners, and communities to interpret what the data means.
Adaptation	Adjust sectoral targets, budget allocations, or scale interventions based on what is working or underperforming.
Documentation	Systematically record what has been learned, what failed, what was scaled, and why.
Sharing	Present lessons and results during NDPC reviews, RCC sector platforms, donor briefings, or inter-MDA learning exchanges.

Table 33: *Key Elements of a Climate Learning Loop for MDAs*

5.6.2 How MDAs Can Embed Learning Loops

1. Schedule Learning Reviews

- Integrate mid-year and annual "Climate Learning Sessions" into the MDA's M&E calendar.

2. Use Stakeholder Feedback

- Apply tools such as community scorecards, sector reflection sessions, and participatory FGDs.

3. Revise SMTDP Sector Strategies Mid-Cycle

- Update climate-related goals and activities annually or biannually in response to observed climate events, funding shifts, or performance outcomes.

4. Establish Knowledge Management Systems

- Assign dedicated personnel to track MEL outputs, lessons learned, and innovation updates in a central repository or dashboard.

5. Foster Cross-Sector Learning

- Share success stories, M&E results, and innovations with peer ministries and through RCC and NDPC platforms.

How to Use this Section:

This section provides MDAs with a step-by-step guide for designing and managing climate-responsive MEL systems that are embedded in national sector strategies and Sector Medium-Term Development Plans. The tools, templates, and frameworks outlined here are intended to help MDAs build MEL systems that are inclusive, results-based, and aligned with national climate goals.

To maximize the effectiveness of this section:

1. Select Relevant Sectoral Climate Indicators for Your Mandate

- Identify priority indicators based on sector-specific climate risks, vulnerability assessments (e.g., CVRAs), and SMTDP targets.
- Engage technical departments and planning units to determine which indicators best reflect sectoral adaptation needs (e.g., health, energy, water, infrastructure, DRR).
- Ensure indicators are SMART: Specific, Measurable, Achievable, Relevant, and Time-bound.
- Choose indicators that allow for disaggregation by sex, age, disability, and location to track equity.

2. Implement Structured Data Collection and Reporting Mechanisms

- Establish systems for collecting both primary (e.g., surveys, inspections, community scorecards) and secondary (e.g., GMet, NADMO, EPA) data.
- Define clear timelines for data reporting (monthly for projects, quarterly for sectors, annually for comprehensive review).
- Assign responsibilities to specific departments or units (e.g., Planning, M&E, Gender, NADMO, Agriculture).
- Use standardized templates and reporting tools that align with NDPC and NAP/NDC guidelines.

3. Use Scorecards and Performance Assessments to Track Progress

- Apply the Climate Adaptation Performance Scorecard to monitor annual progress across key thematic areas (e.g., CSA, water security, EWS coverage).
- Hold periodic review sessions to:
  - Compare current performance against baseline and targets.
  - Identify bottlenecks and underperforming areas.
  - Adjust plans or reallocate resources where necessary.
- Include MEL results in Annual Progress Reviews (APRs), midterm reviews, and national sectoral reporting.

4. Align MEL Systems with National Climate and Development Frameworks

- Cross-reference MDA-specific indicators and targets with:
  - National Adaptation Plan (NAP, 2018).
  - Updated Nationally Determined Contributions (NDC, 2021).
  - National Climate Change Policy (NCCP, 2013).
  - NDPC Guidelines on SMTDPs.
- This ensures your MEL system:
  - Supports national climate reporting and evaluation.
  - Enhances eligibility for climate finance and technical support.
  - Promotes coherence across government and partner initiatives.

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

For an effective climate adaptation at the national level, there is the need for institutional leadership, technical skills, and cross-sectoral coordination. For Ministries, Departments, and Agencies, building and sustaining this capacity is critical to integrating adaptation into policy, planning, budgeting, and monitoring frameworks.

This section provides a structured approach for MDAs to assess and strengthen institutional capacity, while creating knowledge-sharing mechanisms to support innovation, peer learning, and adaptive management at the national and subnational levels.

6.2 KEY OBJECTIVES OF CAPACITY DEVELOPMENT FOR CLIMATE ADAPTATION

Objective	What It Involves	Expected Outcome
Enhance Institutional Knowledge	Train staff on climate risk assessment, SMTDP entry points, and national frameworks (NAP, NDC)	Stronger sectoral adaptation integration and reporting
Improve Technical Expertise	Build capacity in CVRA interpretation, GIS, data collection, scenario modeling, and gender-responsive planning	Evidence-based and inclusive decision-making
Foster Multi-Sector Collaboration	Facilitate coordination between MDAs, RCCs, private sector, CSOs, and academia	Shared responsibilities and resource leveraging
Enable Knowledge Exchange	Establish platforms for peer-to-peer learning and cross-sector innovation	Faster uptake of best practices and innovations
Empower Constituency Partners	Engage with youth networks, professional groups, and traditional leaders for grassroots resilience-building	Greater inclusion and sustainability of adaptation actions

Table 34: *Capacity Development Objectives for MDAs*

Recommended Approaches for MDAs:

- Conduct MDA-specific Climate Training Needs Assessments to identify knowledge and skill gaps across directorates and departments.
- Include capacity development priorities in SMTDP budgets, linked to NDPC's national strategy and RCC plans.
- Collaborate with universities, civil society, EPA, CSIR, NDPC, and international partners for technical support and upskilling.
- Establish internal and inter-agency Climate Working Groups for knowledge sharing and peer learning.
- Leverage public education tools (e.g., sector bulletins, webinars, national climate dialogues) to share findings, innovations, and progress.

6.3 IDENTIFYING CAPACITY GAPS

MDAs must periodically review their institutional readiness to deliver climate adaptation across policy, implementation, and monitoring functions. The checklist below can guide internal capacity assessments and inform development partner support (**Table 35**).

✔	Assessment Area	Key Questions
☐	**Technical Risk Knowledge**	Do technical teams understand and apply CVRA findings in their planning and implementation work?
☐	**Climate-Responsive Planning**	Are staff trained in integrating climate risks into sector policies, budgets, and infrastructure design?
☐	**Sector-Specific Adaptation Skills**	Do sector leads (e.g., MoFA, MoH, MoE) apply climate-smart approaches in their respective mandates?
☐	**Emergency Preparedness**	Are DRM teams trained to manage climate-induced risks like heatwaves, floods, or droughts?
☐	**Monitoring & Evaluation Systems**	Is a climate MEL framework in place with relevant indicators and data flow mechanisms?
☐	**Public Access to Climate Information**	Are awareness and early warning systems reaching vulnerable populations, including urban informal workers and PWDs?
☐	**ICT and Data Infrastructure**	Does the MDA have access to GIS, mobile data tools, or remote sensing platforms for planning and reporting?
☐	**Internal Coordination**	Are planning, finance, gender, technical, and M&E teams collaborating on adaptation actions?

Table 35: *Capacity Gap Checklist for MDAs*

How MDAs Can Use This Checklist

- Apply it during strategic reviews, policy audits, or training needs assessments.
- Use as a baseline for multi-year capacity development plans, integrated into the SMTDP and annual budgets.
- Share findings with NDPC, RCCs, or development partners to design joint support programs.
- Reassess annually to measure progress in closing gaps and improving institutional readiness.

6.4 STRUCTURED CAPACITY DEVELOPMENT APPROACH

To institutionalize adaptation, MDAs must adopt a step-by-step approach that develops both internal expertise and external partnerships.

STEP 1

Institutional Capacity Strengthening

- Train MDA staff on climate policy integration (NAP, NDC, NCCP), risk assessment, and adaptation financing.
- Launch leadership training for Directors and Senior Technical Officers.
- Establish or strengthen Climate Desks or Focal Points in each agency.

STEP 2

Technical Skills Development

- Train engineers and planners in climate-resilient infrastructure (e.g., stormwater design, energy systems).
- Build capacity in GIS and remote sensing for national-level spatial analysis.
- Support sector-specific capacity (e.g., CSA extension, climate-health surveillance).

STEP 3

Community-Based Capacity Building

- Develop toolkits and campaigns for civil society, youth, and producer groups.
- Build capacities of frontline staff (extension, WASH, DRM) to engage with vulnerable communities.
- Leverage traditional ecological knowledge (e.g., land rotation, flood season indicators) in design and training.

STEP 4

Knowledge Exchange and Learning

- Facilitate peer-learning forums across ministries, agencies, and RCCs.
- Develop digital repositories and portals to host adaptation resources and training materials.
- Organize an Annual Climate Sector Learning Exchange to showcase innovation and lessons learned.

6.5 TRAINING AND KNOWLEDGE SHARING PLATFORMS

MDAs should leverage diverse platforms for continuous learning and sector-wide mainstreaming of climate adaptation (**Tables 36 and 37**).

Training Method	Target Group	Expected Outcome
Workshops & Seminars	Technical officers and planning teams	Improved planning and policy integration
Technical Field Training	Engineers, extension staff, DRM teams	Applied skills in infrastructure and climate-smart practices
Webinars & Online Courses	MDA and RCC staff, CSOs	Scalable access to national/global tools and updates
Study Tours & Exchange Visits	Sectoral teams and RCC focal persons	Learning from real-world adaptation successes
Community Sensitization Campaigns	Local stakeholders and frontline agencies	Strengthened local ownership and social inclusion

Table 36: *Training Modalities for Climate Adaptation (MDA Level)*

Platform	Purpose
National Adaptation Portals (EPA, NDPC, SIGRA)	Host templates, reports, learning modules
RCC Climate Networks	Enable cross-sector dialogue at subnational level
Inter-Agency Learning Forums	Promote coordination and exchange across ministries
Indigenous Knowledge Repositories	Preserve and integrate local adaptation strategies
Community Sensitization Campaigns	Local stakeholders and frontline agencies

Table 37: *Knowledge Sharing Platforms*

6.6 PUBLIC AWARENESS AND STAKEHOLDER ENGAGEMENT FOR MDAS

Engaging the public ensures that adaptation efforts are socially grounded and politically supported. MDAs must coordinate communication strategies that empower local action and raise national awareness (**Table 38**).

Check	Activity	Purpose
✔	Radio/TV climate broadcasts	Inform mass audiences using local languages
✔	Social media outreach	Engage youth and professionals in adaptation narratives
✔	Stakeholder town halls	Validate SMTDP content and gather local priorities
✔	School engagement	Promote intergenerational knowledge transfer
✔	Faith/traditional leader collaboration	Build legitimacy and behavior change through trusted voices

Table 38: *Public Engagement Strategies*

Tips for MDAs:

- Allocate a dedicated communications budget.
- Partner with media houses, CSOs, and local institutions for co-delivery.
- Track impact using feedback tools and citizen scorecards.

6.7 PARTNERSHIPS FOR CLIMATE CAPACITY DEVELOPMENT

MDAs should cultivate strategic partnerships that bring together knowledge, finance, innovation, and reach (**Table 39**).

Partner	Role
NDPC	Policy alignment, national reporting, SMTDP support
EPA	CVRA, climate MEL, GIS mapping, technical backstopping
Universities & CSIR	Scenario modeling, training delivery, impact evaluation
Private Sector	Tech innovation, co-investment, job creation (e.g., energy, agriculture)
Development Partners	Funding, global knowledge, institutional strengthening
CSOs & NGOs	Gender inclusion, community mobilization, field innovation
RCCs	Coordination, learning hubs, inter-district exchange facilitation

Table 39: *Potential Climate Adaptation Partners and Roles*

Tips for MDAs:

- Map potential partners by sector (energy, agriculture, DRM, health).
- Include their roles in project design and SMTDP annexes.
- Use MoUs or TORs to clarify roles and contributions.

6.8 MEASURING THE IMPACT OF CAPACITY DEVELOPMENT

Capacity development must show tangible benefits: improved performance, institutional resilience, and community outcomes (**Table 40**).

Indicator	Target/Measurement
# of MDA officials trained	≥80% technical and planning staff by 2029
# of community climate trainings	≥5 per year in vulnerable areas
% adoption of CSA or green solutions	≥40% increase from baseline
# of inter-agency knowledge events	≥1 national exchange per year
Participation rate of women/youth in events	30–50% across engagement processes

Table 40: *Sample Capacity Development Indicators*

How to Use This Section:

1. ***Assess Institutional and Technical Gaps:*** Use the checklist (Section 6.3) to identify key weaknesses and prioritize interventions.
2. ***Develop a Capacity Development Plan:*** Align the plan with sector mandates, SMTDPs, and national adaptation frameworks (NAP, NDC).
3. ***Choose the Right Learning Platforms:*** Combine formal training with peer learning, e-modules, and community outreach.
4. ***Engage Partners Strategically:*** Co-create training and implementation plans with key stakeholders.
5. ***Measure and Improve Continuously:*** Track uptake, learning outcomes, and institutional behavior change using Section 6.8 indicators.

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 leads*

SECTION 7

Financial Planning and Resource Mobilization for Climate Adaptation

7.1 INTRODUCTION

For MDAs to successfully implement climate adaptation strategies, they must ensure predictable, adequate, and diversified financing. Resource mobilization allows national sector institutions to scale up adaptation interventions, improve resilience outcomes, and demonstrate alignment with national and global climate goals.

This section outlines a step-by-step approach to budgeting, accessing climate funds, engaging private sector actors, and institutionalizing green procurement practices. It supports implementation of Ghana's NAP (2018), NDC (2021), and sector-specific financing frameworks.

7.2 OBJECTIVES OF CLIMATE FINANCE PLANNING FOR MDAS

- Integrate climate adaptation into sectoral budgeting processes and SMTDP financing frameworks.
- Diversify funding sources, including government, donor, and private sector contributions.
- Strengthen financial management systems to track and report on climate-related expenditures.
- Align finance strategies with national climate policies and international funding criteria (e.g., GCF, AF, SDGs).

7.3 BUDGETING AND ACCESSING FUNDS FOR CLIMATE ADAPTATION

MDAs must establish dedicated budget lines within sector SMTDPs for climate-related priorities. These can be supported through both domestic and external funding sources (**Table 41**).

Source	Description
DACF/Ministry Budgets	Core allocations for climate-relevant programming under MoF and NDPC guidance
Ghana Green Fund (GGF)	National fund for green infrastructure, energy, and resilience investments
Green Climate Fund (GCF)	Global fund for large-scale adaptation projects via accredited national agencies
Adaptation Fund (AF)	Direct access through EPA for community-based adaptation initiatives
Development Partner Grants	Technical assistance and financing from UNDP, GIZ, DANIDA, etc.
Public-Private Partnerships (PPPs)	Co-investment models in sectors like energy, infrastructure, and agriculture

Table 41: *Sources of Climate Financing for MDAs*

STEP 1: ***Categorizing Adaptation Budget Needs***

Budget Category	Examples of Expenditures
Capital Investments	Climate-resilient infrastructure (e.g., roads, solar-powered irrigation, flood defenses)
Operational Costs	Capacity-building workshops, climate awareness campaigns, emergency simulation drills
Research & MEL	Climate risk assessments, GIS and data systems, monitoring and evaluation frameworks

Table 42: *Categorizing Budget Needs for Climate Adaptation in MDAs*

STEP 2: ***Estimating Adaptation Costs***

Adaptation Action	Cost Estimate (GHS)	Potential Funding Source(s)
CSA training for farmers	80,000	Ministry of Food and Agriculture (MoFA), UNDP
GIS tools for spatial climate tracking	100,000	Regional Coordinating Council (RCC), CSIR
Solarized health centres	1,000,000	Ghana Green Fund (GGF), Corporate Social Responsibility (CSR), MoH
Early warning systems	300,000	NADMO, EPA, Adaptation Fund
Wetland restoration	600,000	Ministry of Environment, Green Climate Fund (GCF)

Table 43: *Sample Budget Estimates and Funding Sources for Climate Adaptation Actions*

7.4 DEVELOPING CLIMATE FINANCE PROPOSALS

To attract funding, MDAs must prepare bankable proposals that are:

- Policy-aligned.
- Technically sound.
- Outcome-oriented.

Proposal Development Checklist

- ✔ Clearly define the climate risk or challenge
- ✔ Outline adaptation goals and theory of change
- ✔ Include costed budget and sustainability plan
- ✔ Demonstrate alignment with NAP/NDC/SDGs.
- ✔ Show co-benefits (e.g., livelihoods, biodiversity)
- ✔ Embed MEL and gender/inclusion strategies.

7.5 STRENGTHENING FINANCIAL MANAGEMENT SYSTEMS

Best Practice	What It Means for MDAs
Dedicated budget lines	Classify climate adaptation within programme-based budgeting structures
Transparent accounting	Tag and track expenditures using SMTDP-aligned templates
Climate expenditure audits	Conduct annual audit of adaptation-related projects
Digital tracking tools	Use sector dashboards and NDPC-compatible systems
Staff capacity building	Train Finance and Planning Units in climate finance protocols

Table 44: *Best practices for strengthening financial management systems*

7.6 MONITORING & REPORTING CLIMATE FINANCE FLOWS

Indicator	Target
% of sector budget dedicated to adaptation	≥10% by 2029
# of adaptation proposals submitted	At least 2 annually
Total external funding mobilized	Year-on-year increase
Private sector contributions	Tracked per intervention
Adaptation cost per unit output	Documented and analyzed annually

Table 45: *Key Finance Indicators for MDAs*

7.7 ENGAGING THE PRIVATE SECTOR IN FINANCING AND DELIVERY

To attract funding, MDAs must prepare bankable proposals that are:

Why It Matters

- Drives innovation in infrastructure and services.
- Supports green jobs and local resilience markets.
- Expands fiscal space and project scale.
- Leverages CSR and blended finance models.

Sector	Private Role	MDA Entry Point
Energy	Solar installations	PPPs, tax incentives
Agriculture	Supply chains & CSA inputs	Co-investment schemes
Construction	Resilient infrastructure	Green procurement clauses
Insurance	Risk-transfer tools	Public awareness campaigns
Tourism	Eco-restoration	SMTDP-integrated co-branding

Table 46: *MDA–Private Sector Collaboration Opportunities*

Engagement Steps for MDAs

1. Map climate-relevant firms (e.g., energy, WASH, waste, transport).
2. Develop partnership frameworks: MoUs, PPP guidelines, CSR pacts.
3. Host district or sectoral Climate Investment Forums.
4. Package "green business cases" with cost-recovery potential.
5. Monitor joint delivery, impact, and branding benefits.

7.8 MAINSTREAMING GREEN PROCUREMENT

What It Means

Procurement decisions must reinforce resilience. Green procurement selects suppliers, materials, and technologies that meet climate and environmental standards.

Why It Matters

- Reduces climate vulnerability of public infrastructure.
- Supports low-carbon transitions.
- Encourages local green enterprise.
- Enhances credibility with donors and co-financiers.

Principle	Example
Resilience	High-capacity culverts, elevated walkways
Sustainability	Bamboo fencing, recycled building blocks
Efficiency	Solar lighting, low-flow plumbing
Local Content	Contracts for eco-youth groups and cooperatives
Lifecycle Costing	Long-term savings from durable infrastructure

Table 47: *Green Procurement Principles*

Item	Traditional Option	Green Option
Streetlights	Grid-powered sodium bulbs	Solar-powered LEDs
Cooking fuel	Charcoal/firewood	Biomass briquettes, LPG
Roofing sheets	Corrugated iron	Reflective, insulated roofing
Water tanks	Plastic barrels	Rainwater harvesting with filtration
Culverts	Low-capacity, unlined	Reinforced concrete, flood-tolerant

Table 48: *Traditional vs Climate-Aligned Items*

MDA/Agency Actions

- Insert green clauses in procurement manuals.
- Prequalify suppliers of climate-resilient products.
- Train procurement teams on green standards.
- Add environmental scoring in tender evaluations.
- Monitor contract delivery using climate KPIs.

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 REOURCES

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 (for MDAs)

Accessing climate finance requires more than a good idea — it requires a clear, well-structured, and nationally aligned proposal. This guide provides MDAs with a simple, practical roadmap for developing bankable climate adaptation proposals that meet donor standards, attract co-funding, and deliver results under Ghana's national climate frameworks.

Step 1: Define the Climate Challenge

- Describe the climate hazard or vulnerability your ministry or agency is addressing (e.g., increased drought, coastal erosion, urban flooding, extreme heat).
- Use validated evidence from CVRAs, sector data, GMet, EPA, or stakeholder consultations.
- Emphasize the impacts on priority sectors and vulnerable populations (e.g., farmers, schools, health systems, road infrastructure).

Example:"Urban flooding has increased by 40% in the last decade, affecting 28% of health centers and 16,000 students in our jurisdiction."

Step 2: Align with National and Sectoral Priorities

- Demonstrate how the project aligns with:
  - Your MDA's sectoral SMTDP goals and performance indicators
  - Ghana's NAP, Updated NDC (2021), or NCCP
  - The SDGs, particularly Goals 13, 6, 11, 7, and 5
- Highlight how the intervention supports resilience, inclusion, and co-benefits.

Example: "The proposed adaptation project directly supports Ghana's NDC Priority 2.1.2: Enhancing urban drainage infrastructure in climate-vulnerable municipalities."

Step 3: Articulate the Proposed Solution

- Describe what will be done, where, by whom, and how.
- Highlight innovative and climate-smart features:
  - Nature-Based Solutions (e.g., mangrove restoration)
  - Resilient infrastructure (e.g., elevated schools, green transport hubs)
  - Inclusive design (e.g., gender-sensitive early warning systems)
  - Digital/technology-enabled solutions (e.g., remote monitoring, apps)

Step 4: Define Beneficiaries and Co-Benefits

- Provide clear, disaggregated data on who will benefit (women, youth, PWDs, informal workers, specific sectors).
- Include economic, social, and environmental co-benefits:
  - Job creation.
  - Improved service delivery.
  - Ecosystem restoration.
  - Food security or health outcomes.

Tip: Use sex-disaggregated baselines and include real case examples.

Step 5: Develop a Budget and Resource Plan

- Prepare a detailed budget, including:
  - Personnel/training
  - Infrastructure and equipment
  - Communication/awareness
  - M&E and sustainability
- Identify potential co-financing sources: government contributions, CSR, development partners.

Sample Budget Table

Budget Item	Cost (GHS)	Justification
Training 200 health staff	100,000	4 regional climate-health workshops
Solarizing 10 CHPS compounds	800,000	Reduce emissions, enable year-round service
Mangrove replanting (20 ha)	350,000	Coastal erosion control in 3 districts

Step 6: Define a Results Framework and Indicators

- Include a simple M&E framework with input, output, outcome, and impact indicators.
- Set realistic targets, a timeline, and responsible units.

Example:

- **Output**: "100 women-led enterprises trained in CSA"
- **Outcome:** "30% increase in climate-smart farm yields in 2 years"

Step 7: Include a Sustainability and Exit Strategy

- Describe how project gains will be institutionalized, owned, and maintained post-funding:
  - Local bylaws or regulations
  - Community management groups
  - Integration into sectoral service delivery
  - Partnerships with CSOs or private sector

Example: "Trained extension staff will continue CSA education through MoFA field schools and digital platforms beyond the project lifecycle."

Step 8: Package the Proposal Professionally

- Use donor or national templates when available.
- Keep it concise, data-driven, and policy-relevant.
- Attach supporting documentation:

- Executive Summary.
- CVRA excerpts or GIS maps.
- Letters of support.
- Gender analysis or safeguards.
- Photos of vulnerable sites.

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

A strong Theory of Change (ToC) communicates the logical pathway from intervention to long-term impact. It links climate risks with actions, explains how outcomes will be achieved, and identifies the conditions needed for success. This ToC template is designed for use by ministries, departments, and agencies (MDAs) to support the development of policy-aligned, results-driven climate adaptation proposals.

1. Problem Statement / Context

- What climate risk or vulnerability is the MDA addressing?
- What populations or sectors are most affected?
- What baseline evidence exists (e.g., CVRA, GMet, disaster loss data)?

Example: "Flooding disrupts health service delivery in peri-urban areas, affecting over 120,000 people annually. The Ministry of Health seeks to climate-proof health infrastructure in these high-risk zones."

2. Goal / Long-Term Impact

- What is the overarching objective of this project?
- How will resilience be improved or vulnerability reduced?

Example: "Strengthen climate resilience of national health systems to reduce service disruption during extreme weather events."

3. Inputs / Resources

- What funding, expertise, partnerships, or policies will be used?
- What technical or institutional capacities exist?

Example:

- GCF co-financing.
- EPA technical support.
- Health facility audit data.
- MoH engineers and planning units.

4. Activities

- What specific actions will be taken to address the problem?

Example:

- Climate vulnerability audits of 20 health posts
- Upgrading infrastructure in 8 flood-prone clinics
- Training 200 health staff in disaster protocols
- Community awareness campaigns on heat stress prevention

5. Outputs

- What are the tangible, measurable products of the activities?

Example:

- 20 facilities audited
- 8 clinics retrofitted
- 200 health professionals trained
- 12,000 community members reached

6. Outcomes (Short- to Medium-Term)

- What shifts in behavior, practice, capacity, or coordination will occur?

Example:

- Faster response to health emergencies during floods
- Increased public use of early warning systems
- Reduced incidence of heat-related illnesses

7. Impact (Long-Term)

- What is the overall result on national systems and vulnerable populations?

Example:

- 30% reduction in climate-related disruption to primary health services
- Enhanced resilience of health infrastructure in 5 regions

8. Assumptions & Enabling Conditions

- What conditions must hold true for this ToC to work?
- What external factors are critical?

Examples:

- Continued government and donor commitment to health adaptation.
- Inter-ministerial collaboration (e.g., MoH, MWRWH, EPA).
- Active participation from RCCs and District Health Directorates.

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

Engaging the private sector is critical to scaling up climate adaptation. This tool helps MDAs identify, assess, and engage relevant private actors in financing, delivering, or co-creating climate-resilient solutions. It is especially useful for ministries working in infrastructure, energy, water, agriculture, environment, and social protection.

This mapping should be updated annually and used during:

- Climate investment forums.
- Project co-design sessions.
- PPP planning and CSR engagement.
- Budget alignment and resource mobilization efforts.

Private Sector Mapping Template

Business Name	Sector (e.g., Energy, Agribusiness, Infrastructure)	Climate Relevance (e.g., CSA, solar, green buildings)	Current or Potential Role	Engagement Mechanism (e.g., PPP, MoU, CSR, Co-financing)	Notes / Priority Actions

Suggested Use by MDAs

1. Start with desk review of existing partnerships, projects, and PPP frameworks.
2. Engage sector directorates to identify ongoing or planned collaboration opportunities.
3. Involve RCCs, BRCs, and MoTI for insights on emerging local climate enterprises.
4. Prioritize actors who:
   - Have experience in adaptation-aligned sectors (e.g., WASH, CSA, renewables)
   - Show interest in green innovation and corporate responsibility
   - Have access to investment capital, infrastructure, or service networks
5. Use the completed tool to inform:
   - Sectoral SMTDP annexes.
   - Proposal development.
   - Stakeholder invitations to learning forums or financing dialogues.

APPENDIX D: Implementation Roadmap for MDAs

Integrating Climate Adaptation into Sectoral Medium-Term Development Planning (2025–2029)

Purpose of the Roadmap

This roadmap provides a phased approach for Ministries, Departments, and Agencies (MDAs) to integrate climate adaptation into sectoral SMTDPs. It is aligned with Ghana's decentralized development planning and reporting cycle and supports compliance with the National Adaptation Plan, NDCs, and NDPC planning guidelines.

Four Implementation Phases (2025–2029)

Phase	Timeline	Key Actions	Responsible Units
1. 1. Foundation & Readiness	Year 1 (2025)	- Conduct or update CVRAs using national and sector data	DPCU, EPA focal persons, Planning Unit, RCC
2. Identify vulnerable populations, hotspots, and risk-sensitive services	Year 1–2 (2025–2026)	- Develop climate-responsive SMTDP 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. Train sector teams on toolkit use and ToC proposal design	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. Align SMTDP goals with NAP/NDC targets	Sector Planning Units, MEL Units, EPA, NDPC, RCCs	- 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	Conduct climate risk mapping, train sector teams, align SMTDPs with climate goals
2026	Set up MEL systems, mobilize resources, begin pilot implementation
2027	Scale delivery, gather community/stakeholder feedback, report to NDPC
2028	Host national learning events, adjust indicators and targets
2029	Finalize outcome reporting, prepare new cycle proposal inputs

Use This Roadmap To:

- Guide annual climate adaptation work plans within MDA directorates.
- Inform coordination with NDPC, RCCs, CSOs, and donors.
- Align composite budget submissions with climate priorities.
- Support tracking of progress toward SDGs, NAP objectives, and NDC implementation.