



## UNLOCKING ADAPTATION POTENTIAL:

Insights into Ghana's climate change policies, initiatives and local actions



### Acknowledgements and citation

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# Acronyms

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<b>APRI</b>	Africa Policy Research Institute
<b>CSA</b>	Climate-Smart Agriculture
<b>CSO</b>	Civil Society Organisation
<b>DA</b>	District Assembly
<b>EPA</b>	Environmental Protection Agency
<b>FC</b>	Forestry Commission
<b>FGD</b>	Focus Group Discussion
<b>GCIC</b>	Ghana Climate Innovation Centre
<b>GDP</b>	Gross Domestic Product
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>KII</b>	Key Informant Interview
<b>LLA</b>	Locally Led Adaptation
<b>MCC</b>	Millennium Challenge Corporation
<b>MESTI</b>	Ministry of Environment, Science, Technology and Innovation
<b>MLGRD</b>	Ministry of Local Government and Rural Development
<b>MLNR</b>	Ministry of Lands and Natural Resources
<b>MOF</b>	Ministry of Finance
<b>MOFA</b>	Ministry of Food and Agriculture
<b>MOH</b>	Ministry of Health
<b>MOI</b>	Ministry of Interior
<b>MORE</b>	
<b>Women</b>	Movement of Rural Entrepreneurial Women
<b>MWRWH</b>	Ministry of Water Resources, Works and Housing
<b>NCCAS</b>	National Climate Change Adaptation Strategy
<b>NCCP</b>	National Climate Change Policy
<b>NDC</b>	Nationally Determined Contribution
<b>NDPC</b>	National Development Planning Commission
<b>NGO</b>	Non-Governmental Organisation
<b>ORGIIS</b>	Organisation for Indigenous Initiatives and Sustainability
<b>REDD+</b>	Reducing emissions from deforestation and forest degradation in developing countries and additional forest-related activities
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>VSLA</b>	Village Savings and Loan Association



# Executive summary

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## Context of the study

Without a doubt, the effects of climate change are increasingly being felt in African nations, with the most severe impacts experienced by the poorest and most vulnerable populations. These effects include land degradation, loss of biodiversity, water scarcity, decreased agricultural productivity, hindered economic growth, food insecurity, health risks and a decline in agroecological productivity due to rising temperatures and shifting precipitation patterns. Ghana, like many other African economies, is highly susceptible to climate change and its associated shocks, posing significant risks to its economic and human development.

Against this background, Ghana is actively implementing climate change adaptation policies and actions aligned with its Nationally Determined Contributions (NDCs). However, although adaptation priorities emphasise the importance of local implementation, the extent to which local needs, priorities, strategies and challenges are integrated and emphasised in these efforts in Ghana, particularly at the community level, remains unclear. To address this, the Africa Policy Research Institute (APRI) partnered with the Ghana Climate Innovation Centre (GCIC) to launch the 'Climate Adaptation Strategies, Practices, and Initiatives in Ghana: Issues and Pathways' project. This project explored climate change adaptation policies, strategies and local actions in Ghana, identifying barriers and enabling factors for adaptation to inform the country's NDC implementation. It highlights locally led adaptation (LLA) strategies, practices and lessons that can inform and guide the implementation of the NDCs and climate actions at the local and national levels. More specifically, the project sought to understand and document:

- status, needs and priorities for climate actions in Ghana;
- adaptation priorities and needs of local communities;
- available policies, strategies, practices and initiatives at national and community levels to address adaptation needs;
- challenges and barriers hindering LLA actions in Ghana;
- potential opportunities and entry points to support and encourage effective and sustained adaptation action for at-risk and vulnerable communities;
- recommendations for advancing local adaptation as a key component of Ghana's NDCs.

## Approach and methodology

This qualitative study employed multiple research methods. It began with a comprehensive review of the literature and relevant climate change documents to establish the existing knowledge and policy landscape. This was followed by mapping exercises to identify climate change policies, strategies, local actions and key stakeholders in the country.

Stakeholder engagement played a crucial role in gathering insights and perspectives. Two policy-convening workshops were conducted, bringing together senior officials from various institutions involved in climate action. These workshops provided a platform to discuss successes, challenges and progress related to LLA efforts in Ghana.

To gain in-depth understanding informed by the literature review and inputs from key stakeholders, three case studies were selected. The case studies represent different ecological zones and geographical categories:

- Case study I focuses on a livelihood-strengthening project that is empowering women in climate-vulnerable communities to use organic shea processing and village savings and loans to build resilient livelihoods in response to the changing climate.
- Case study II focuses on a project where farmers have embraced climate-smart agricultural practices, such as conservation farming, to mitigate the impacts of erratic rainfall patterns.
- Case study III focuses on community-based disaster risk reduction efforts in the Keta-Ada stretch to address coastal erosion and climate change impacts. It highlights locally led initiatives, including community engagement, use of dual canals, nature-based solutions and awareness programmes, to enhance resilience and reduce vulnerability.

Through field observations, focus groups, interviews with key informants and engagement with relevant stakeholders, primary data was collected to examine the enablers of and barriers to climate change adaptation actions and their impact on livelihoods. The research design aimed to provide a nuanced understanding of the complex dynamics of climate change adaptation responses in Ghana. By combining a literature review, mapping exercises, stakeholder engagement and case studies, the study aimed to generate valuable insights into the implementation of the NDCs through LLA.

## Key findings

### *Status, needs and priorities for climate actions in Ghana*

- Ghana faces significant climate change impacts, including coastal erosion, droughts and floods. Climate change has had significant impacts on key sectors of the Ghanaian economy, including agriculture, health, coastal resources and natural resources.
- Ghana has developed and updated its NDC to accelerate climate action. The updated NDC emphasises 13 specific adaptation measures out of a total of 47 programmes of action. Key priority areas for adaptation in Ghana include the development of resilient infrastructure, the promotion of livelihoods, strengthening of agricultural landscapes and food systems, urban

planning, early warning systems, enhancing the climate resilience of women and vulnerable groups and promoting social inclusion.

### ***Available policies, strategies, practices and local actions***

- In addition to the NDC, the research found existence of several policies and strategies that support Ghana's climate change agenda. These include the National Climate Change Policy (NCCP), the National Climate Change Adaptation Strategy (NCCAS) of 2012, the 2015 NDCs, the National Climate Change Master Plan Action Programmes for Implementation (2015–2020) and the National Adaptation Policy Framework (2018), all of which guide climate actions and initiatives.
- Key implementation strategies to build adaptive capacities at the local level include climate information services, integrated landscape planning, sea defence walls, early warning and disaster risk management, integrated water resource management, resilient community infrastructure, crop insurance and promoting opportunities for improving the livelihoods and resilience of women and vulnerable groups.
- Climate actions in Ghana involve a wide array of stakeholders, including technical agencies, directorates, non-governmental organisations (NGOs), the private sector, academic institutions and international organisations. However, there is growing recognition among stakeholders that the on-the-ground implementation of adaptation actions at the sub-national level is still insufficient.

### ***Motivations and outcomes of LLA practices***

- Local communities engage in various adaptation practices, such as climate-smart agriculture, soil conservation, diversification of livelihoods and ecosystem-based approaches. Local communities are motivated by various factors to engage in adaptation practices, such as improvement of rural women's livelihoods and incomes, restoration of degraded ecosystems, protection of livelihoods, assertion of individual and community agency, enhancing resilience and compensating for government inaction.
- Identified LLA practices and strategies included: Case I – Village Savings and Loan Associations (VSLAs), energy-saving stoves, local by-laws against logging and tree planting and climate-smart agriculture; Case II – tree planting, organic farming and solar-powered irrigation; Case III – building structures to prevent erosion, restoring mangrove forests, practising beach nourishment and creating water passages. These practices aligned with a number of NDC priority sectors as well as other national policies addressing climate change.
- The results of the study show that these strategies and practices are enabling communities to reduce vulnerabilities and improve livelihood opportunities. They are also improving the understanding of climate impacts such as floods, and fostering collaboration and community cohesion.
- Additionally, the adaptation measures offer co-benefits such as reduced economic losses, enhanced health and safety and reduced vulnerability to future disasters, financial literacy, conflict resolution and access to credit for women.

- Lessons learned emphasise the importance of community involvement, community needs and priority-based solutions, holistic approaches and strategies tailored to local contexts.

### ***Challenges and barriers hindering LLA actions***

- Limited financial resources hinder the implementation of LLA actions.
- Inadequate institutional coordination and policy gaps pose challenges to effective adaptation planning and implementation.
- Many communities face challenges in receiving support from government institutions and other relevant organisations.

### ***Potential opportunities and entry points for effective adaptation action***

- Strengthening community engagement and participation in decision-making processes can enhance the effectiveness of adaptation actions.
- Building partnerships and collaboration between government, civil society and the private sector can leverage resources and expertise for climate adaptation initiatives.

## **Main recommendations**

The research findings and conclusions in this report provide important messages and recommendations for policy makers and stakeholders involved in climate action and adaptation in Ghana and other African countries to ensure that communities are better equipped to address the challenges of climate change in their local contexts:

- Be clear about the 'local' in LLA: 'Local' can refer to a region, a district, a zonal area or a specific community. Resources and initiatives can move from the centre or national level to a district and may not necessarily reach the community level that needs such resources the most. As a result, a starting point for deepening LLA is to develop a clear focus on what 'local' means in LLA actions, in order to better direct efforts and resources.
  - Devolve and enhance access to financial resources: Develop mechanisms to improve access to financial resources for local governments and communities, especially for small-scale farmers, women's groups and community-based organisations involved in climate adaptation initiatives. This can include targeted funding programmes, microfinance schemes and partnerships with financial institutions to prioritise support for local adaptation actions.
  - Strengthen capacity-building efforts: Invest in capacity-building programmes to empower local communities with the knowledge, skills and tools needed to design and implement climate adaptation strategies. This includes providing training on climate-smart agriculture, sustainable land management, ecosystem restoration and disaster risk reduction.
  - Recognise and support local climate change practices, strategies and initiatives: Traditional knowledge and practices have enabled local communities to adapt to climatic variability over time. Policy makers should recognise and build on these practices in the design and implementation
-

of adaptation initiatives. These practices, strategies and initiatives are critical for building resilience to climate change at the local level and contribute to achieving national climate goals.

- **Foster participatory decision-making processes:** Promote inclusive and participatory decision-making processes that involve local communities, indigenous groups and other stakeholders in the planning, implementation and evaluation of climate adaptation policies and programmes. This ensures that local knowledge, needs and perspectives are integrated into decision-making processes.
- **Support knowledge-sharing and learning networks:** Establish platforms for knowledge-exchange and learning networks that facilitate the sharing of best practices, experiences and lessons learned among local communities, practitioners, policy makers and researchers. This can include workshops, conferences, online platforms and community-led knowledge-sharing initiatives.
- **Integrate traditional knowledge and practices:** Recognise and integrate traditional knowledge and practices into climate adaptation strategies. Local communities often possess valuable traditional knowledge and practices that have been developed over generations to cope with environmental changes. Incorporating these approaches can enhance the effectiveness and cultural appropriateness of adaptation actions.
- **Strengthen local institutions and governance structures:** Build the capacity of local institutions and governance structures to effectively coordinate and implement climate adaptation actions. This includes supporting the establishment of community-based organisations, strengthening local governance systems and promoting collaboration and partnerships between local governments, civil society organisations and communities.
- **Mainstream adaptation into development planning:** Integrate climate adaptation considerations into national and local development plans, policies and strategies. This ensures that climate resilience becomes a cross-cutting priority in all sectors, including agriculture, water management, infrastructure development and disaster risk reduction. Mainstreaming adaptation helps to align local actions with national priorities and facilitates the allocation of resources for climate resilience.

## Recommendations for the international community

Based on the research, we have some policy recommendations for the international community to enhance effective locally led climate adaptation:

- **Increase international climate finance for LLA:** Provide increased funding and financial resources specifically dedicated to supporting locally led climate adaptation initiatives. This can be done through the establishment of dedicated funds, grant programmes, and financial mechanisms that prioritise and allocate resources to local communities and organisations.
- **Strengthen capacity building and knowledge sharing:** Support capacity-building programmes and knowledge-sharing platforms that facilitate the exchange of best practices, lessons learned, and experiences between local communities, practitioners, and policy makers from different countries. This can include funding training programmes, workshops and conferences that focus on enhancing the skills and knowledge of local actors in climate adaptation.

- **Foster collaboration and partnerships:** Encourage collaboration and partnerships between international organisations, governments, NGOs and local communities to enhance locally led climate adaptation efforts. This can involve establishing networks, platforms and forums for dialogue and cooperation, and promoting the sharing of resources, expertise and technology transfer.
- **Promote policy coherence and integration:** Foster policy coherence at the international level by aligning climate adaptation policies, strategies and funding mechanisms with locally led approaches.

# **SECTION ONE**

Introduction

## Country background and context

Ghana is a lower-middle-income developing country with a total land area of 238,000 square kilometres. It has a population of approximately 31 million.<sup>1</sup> Women comprise up to 51% of the population and men 49%. The country is divided into 16 administrative regions and 261 local authorities or district assemblies. National-level policies and development plans are usually implemented through the local government system. Ghana's economy is largely dependent on agriculture, which employs about 40% of the population and accounts for about 20% of the country's Gross Domestic Product (GDP).<sup>2</sup> The country is also rich in natural resources, including gold, oil and cocoa, and has a growing services sector, including banking and finance, telecommunications and tourism. However, Ghana faces challenges with unemployment, poverty and inequality, with about 23.4% of the population living below the poverty line.<sup>3</sup> The country has been recording an average growth rate of about 5% since 2015. Table 1 highlights some of the core development indicators of Ghana.

**Table 1: Key development indicators of Ghana**

Key demographic indicators	
Population (2021)	31 million
Population growth	2%
Population living in urban areas	56.7%
Population living in rural areas	47.8%
Economic indicators	
GDP per capita (2022)	USD 2,000
Human Development Index (2021)	0.632

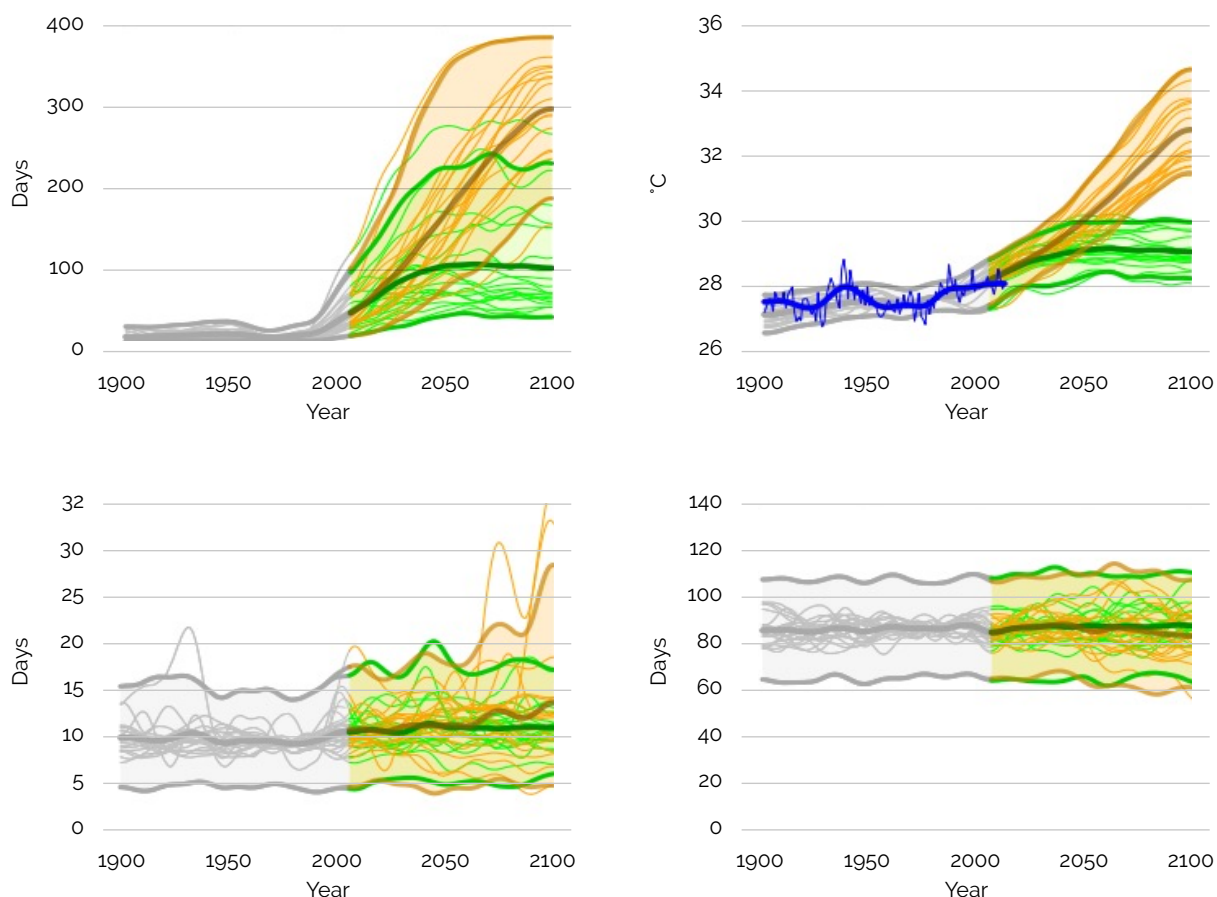
Source: Ghana Statistical Service. 2021. *Ghana 2021 Population and Housing Census General Report Volume 3B*. <https://census2021.statsghana.gov.gh/subreport.php?readreport=MjYzOTE0MjAuMzc2NQ=&Ghana-2021-Population-and-Housing-Census-General-Report-Volume-3B>

## Climate change trends, status and needs of Ghana

Ghana is highly vulnerable to the impacts of climate change due to its dependence on climate-sensitive sectors such as agriculture and forestry, and socio-economic factors.<sup>4</sup> Ghana is ranked 109 out of 181 countries in the 2020 ND-GAIN Index.<sup>5</sup> As such, climate change has been identified by policy makers as a key risk that threatens to constrain future aspirations of the country.<sup>6</sup> Ghana has been experiencing significant changes in weather patterns, resulting in severe climate-related risks such as drought, flooding and erratic rainfall. Rising temperatures, changing rainfall patterns and an increased frequency and intensity of extreme weather events such as floods and droughts are already negatively affecting agriculture and forestry production, which are the mainstay of the economy. This poses significant risks for food insecurity and loss of income.<sup>7</sup> According to Ghana's Fourth Communication report, the mean annual temperature is projected to rise by about 4.8°C on average from 1990 to 2100; the number of days of warm spell in Ghana is projected to increase from 10 days in 1990 to over 280 days on average in 2100.<sup>8</sup> Also, though rainfall is expected to decline, the number of days with heavy precipitation (20 mm or more) is projected to rise by about four days on average from 1990 to 2100, increasing the risk of floods (Figure 1).<sup>9</sup> The country's high poverty rates, inadequate infrastructure, weak institutions and governance structures, and limited access to



**Figure 1: Overview of selected climate indicators of Ghana:**  
**(top left) Mean annual temperature (1900–2100);**  
**(top right) Days of warm spell (heatwaves, 1900–2100);**  
**(bottom left) Days with extreme rainfall;**  
**(bottom right) Consecutive dry days or droughts (1900–2100)**



Source: WHO. 2015. *Climate and health country profile – 2015 Ghana*.  
<https://apps.who.int/iris/rest/bitstreams/g26011/retrieve>

technology and financial resources exacerbate its vulnerability to climate change impacts. Growing evidence from different studies further suggests that the vulnerability to climate change increases as one moves from the coast (Tropical rainforest and Coastal savannah zones) towards the Transition zone (Semi-deciduous forest and Transitional zone) and Northern savanna zones.<sup>10</sup> Vulnerability and exposure to the impacts of climate change are complex and affected by a mix of multiple, interacting non-climatic processes. These processes, which include socio-economic processes, livelihood changes and resource access, act together to influence the risk and impacts of climate change.<sup>11</sup> Women, especially those in rural areas, are often disadvantaged by traditional, patriarchal decision-making processes. In addition, their limited access to land, migrant status, age, type of household, livelihood orientation, and agency in determining their adaptive options mean that they shoulder most of the climate-induced risks and vulnerabilities.<sup>12</sup>

Moreover, climate change has had significant impacts on key sectors of the Ghanaian economy. In agriculture, rising temperatures and changing rainfall patterns have led to reduced crop yields,

affecting food security and livelihoods.<sup>13</sup> Health has been impacted by increased incidence of malaria and other climate-sensitive diseases. Water resources have been affected by reduced rainfall and increased evaporation, leading to water scarcity that is affecting hydropower generation.<sup>14</sup> Livelihoods have been affected by droughts, loss of crops and livestock and increased food prices. Forestry has been impacted by deforestation, forest degradation and loss of biodiversity. Climate change also poses a significant threat to economic growth, with potential impacts on trade, tourism and infrastructure. Climate change has also had significant impacts on coastal communities in Ghana, with sea level rise leading to erosion and flooding.<sup>15</sup> This has impacted the livelihoods of fishers and people in coastal towns and villages. In peri-urban and urban areas, climate change has led to increased urban heat, affecting health and productivity, as well as increased flooding due to inadequate drainage systems.<sup>16</sup> These challenges disproportionately affect the most vulnerable communities, such as women, children and the poor.

## Status and trends of climate action in Ghana

To address the above-mentioned impacts and challenges, the government of Ghana has developed several policies, strategies and actions, including the National Climate Change Policy Framework and the updated Nationally Determined Contributions (NDCs) to guide its climate change response.<sup>17</sup> These strategies focus on building the adaptive capacity of vulnerable communities, enhancing the resilience of key sectors such as agriculture, and promoting low-carbon development pathways. In addition to the government's efforts, various private firms, non-governmental organisations (NGOs) and civil society groups are working on climate change adaptation and mitigation initiatives at different levels.

Despite progress on climate action in Ghana, significant gaps and shortcomings remain. Financing for adaptation planning is limited, and the updated NDC requires up to USD 15.5 billion to implement climate action measures from 2020 to 2030, with only a fraction available for unconditional programmes. Climate finance has also not adequately reached vulnerable groups and local authorities. For example, one study found that about half of the climate change adaptation programmes of local authorities in Ghana outlined from 2013 to 2021 were never implemented and more than 70% have not been completely successful due to limited finance.<sup>18</sup> There is also a limited understanding of the differential impacts of climate change on adaptation options for diverse groups. Furthermore, climate information and capacity development are insufficient, and there is a lack of understanding of the mediating factors that limit potential benefits from planned adaptation actions. In addition, local communities' voices and ideas are rarely included in decision-making processes, and a major knowledge gap remains regarding the effectiveness of climate change initiatives.

Given the shortcomings of the present approach to tackling climate change and the gaps exposed by Ghana's adaptation processes and responses, there is a need for a deeper understanding of the narratives, visions, priorities and expectations of climate adaptation initiatives at the local level and how these are consistent with the priorities and actions of the government, civil society organisations (CSOs) and other actors at the forefront of climate change and its impacts. Such an understanding will inform policy makers to promote better adaptation initiatives for more effective and sustainable adaptation actions. Secondly, there is currently limited documentation on motivations, barriers, enabling factors and what works well and what does not across various adaptation initiatives in Ghana. As the country continues to develop new policies, strategies and approaches to tackle climate change, investment in adaptation is critical. There is an even more urgent need to draw lessons from locally led adaptation (LLA) actions.

## Conceptual narratives on climate action and LLA

Climate action encompasses both mitigation and adaptation efforts, with the former focusing on reducing greenhouse gas emissions and the latter emphasising building resilience to the impacts of climate change. Adaptation actions are crucial for achieving the Sustainable Development Goals and safeguarding vulnerable communities from climate hazards. Adaptation involves adjusting practices, processes and structures to cope with climate change and its effects, aiming to increase adaptive capacity and resilience and to reduce vulnerability.<sup>19</sup> Local-level adaptation policy development is considered essential as it allows for context-specific strategies that respond to community needs and empower local actors. LLA is an approach that prioritises the involvement of local communities, organisations and governments as decision makers in adaptation interventions, enabling them to have agency over the process.<sup>20</sup> LLA recognises the resourcefulness and knowledge of local people, promotes sustainable and effective solutions and aligns with the principles of democratic and equitable decision making.<sup>21</sup> According to the Global Commission on Adaptation, eight key principles underpin LLAs, as shown in Table 2.

**Table 2: Principles of LLA**

Principle	Description
Devolving decision making to the lowest appropriate level	Giving local institutions and communities more direct access to finance and decision-making power over how adaptation actions are defined, prioritised, designed and implemented; how progress is monitored; and how success is evaluated.
Addressing structural inequalities faced by women, youth, children, disabled, displaced, Indigenous peoples and marginalised ethnic groups	Integrating gender-based, economic and political inequalities that are root causes of vulnerability into the core of adaptation action and encouraging vulnerable and marginalised individuals to meaningfully participate in and lead adaptation decisions.
Providing patient and predictable funding that can be accessed more easily	Supporting long-term development of local governance processes, capacity and institutions through simpler access modalities and longer-term and more predictable funding horizons, to ensure that communities can effectively implement adaptation actions.
Investing in local capabilities to leave an institutional legacy	Improving the capabilities of local institutions to ensure they can understand climate risks and uncertainties, generate solutions and facilitate and manage adaptation initiatives over the long term without being dependent on project-based donor funding.
Building a robust understanding of climate risk and uncertainty	Informing adaptation decisions through a combination of local, traditional, Indigenous, generational and scientific knowledge that can enable resilience under a range of future climate scenarios.
Flexible programming and learning	Enabling adaptive management to address the inherent uncertainty in adaptation, especially through robust monitoring and learning systems, flexible finance and flexible programming.
Ensuring transparency and accountability	Making the processes of financing, designing and delivering programmes more transparent and accountable downward to local stakeholders.
Collaborative action and investment	Collaboration across sectors, initiatives and levels to ensure that different initiatives and different sources of funding (humanitarian assistance, development, disaster risk reduction, green recovery funds, etc.) support each other, and their activities avoid duplication, to enhance efficiencies and good practice.

Source: Global Commission on Adaptation. 2020. *Principles for locally led adaptation action*. [https://gca.org/wp-content/uploads/2022/04/Locally\\_Led\\_Adaptation\\_Principles\\_-\\_Endorsement\\_Version.pdf?\\_gl=1\\*blxmvk\\*\\_ga\\*MTI5MjkyNzUwMC4xNjg1MDA4MzQ0\\*\\_up\\*MQ](https://gca.org/wp-content/uploads/2022/04/Locally_Led_Adaptation_Principles_-_Endorsement_Version.pdf?_gl=1*blxmvk*_ga*MTI5MjkyNzUwMC4xNjg1MDA4MzQ0*_up*MQ).

LLA emphasises the importance of building on existing social, economic and environmental systems, rather than imposing external solutions that may not be sustainable or effective in the long term.<sup>22</sup> Empowerment of local communities is of key importance if communities are to have genuine agency over the decisions and actions taken. Thus, attention to LLA will be critical to the success of the implementation of climate actions, set out by countries in their NDCs. Adaptation actions are crucial to safeguard development outcomes, and they involve adjusting systems and building resilience, particularly for vulnerable communities. Adaptation aims to increase adaptive capacity, enhance resilience and reduce vulnerability. Adapting to the impacts of climate change remains critical to the progress towards the Sustainable Development Goals, the Paris Agreement and other national sustainable development objectives.

While climate change actions are gaining prominence in Ghana, there are several gaps and barriers in the implementation of climate action and adaptation policies. These include weak coordination and integration into local planning activities, inequalities in accessing climate financing, weak technical and scientific capacity for adaptation strategies, and limited consideration of local communities' adaptation needs. The link between national policies and implementation is also weak. Thus, research is needed to identify gaps, opportunities and country-specific priorities in climate solutions that align with endogenous adaptation practices and the needs of local communities. This knowledge can inform policy coherence and support the implementation of effective and sustainable climate action in Ghana, while considering the goals of job creation and economic development without undermining local adaptation efforts.

Consequently, this research was designed to fill some of these gaps. 'Climate Adaptation Strategies, Initiatives and Practices: Issues and Pathways in Ghana' was implemented by the Africa Policy Research Institute (APRI) in close collaboration with the Ghana Climate Innovation Centre (GCIC) and other local stakeholders. The project focus is on the adaptation components of NDCs and other national and local frameworks and strategies for climate adaptation. The project seeks to rigorously evaluate and analyse the elements and dimensions of adaptation policies to identify and communicate challenges and opportunities to initiate and sustain appropriate adaptation policies as well as other local climate actions.

## Research aims and objectives

The general objective of this research is to explore climate change adaptation policies, strategies and local actions in Ghana to tease out the barriers and enabling factors for adaptation to inform Ghana's NDC implementation. The specific objectives are to:

- explore local actions and initiatives practised in response to the impacts of climate change;
- explore motivations for LLA actions;
- identify enablers and opportunities for successful local adaptation in Ghana;
- examine barriers for successful LLA in Ghana;
- draw lessons and make recommendations for advancing local adaptation as a key component of Ghana's NDCs.

## The project's broader methodological approach and design

This study was designed as a qualitative study. The methodological approach for this research comprised a literature review; mapping of climate change policies, strategies and local actions; multi-stakeholder engagement; and deep dive case studies (Figure 2).

**Literature review:** An extensive review of the literature and relevant climate change documents on Ghana was first carried out to understand the state of knowledge on climate change adaptation in the country. The document analysis involved reviewing documents, reports and other written materials related to the research objectives. This included policy documents, project reports and academic works. The documents provided contextual information that helped to understand and highlight the research focus areas. The document review was further conducted to understand the main stakeholders and their responsibilities or mandate concerning climate actions in Ghana.

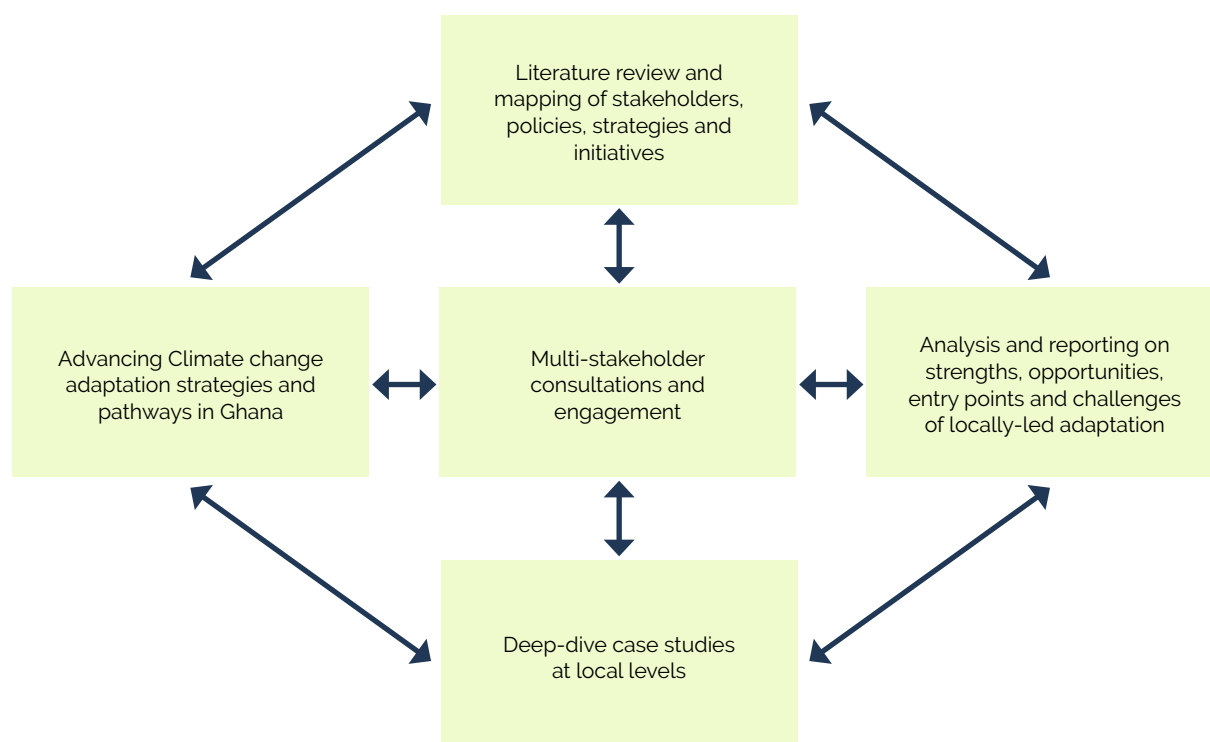
**Mapping climate change policies, strategies, local actions and stakeholders:** Following the initial desk research, a further mapping of climate change policies, strategies, local actions and stakeholders was undertaken. The mapping enabled a thorough understanding of how climate change issues were framed, and of the main stakeholders operating across the climate action landscape and their roles and responsibilities. A further review of documents and actions submitted to the United Nations Framework Convention on Climate Change (UNFCCC) was undertaken. These included the updated NDCs; Ghana's Fourth National Communication; the first, second and third biennial updates; the Adaptation Communications and challenges of climate change adaptation policies; and the mapping of local climate actions.

**Stakeholder engagement:** Stakeholders at different scales and categories of actors also informed the results and conclusions drawn from this research. As part of the stakeholder engagement strategy, two main policy-convening workshops were held. The first was held on 19 October 2022 to brainstorm and identify the key successes, challenges and progress for LLA efforts in Ghana. The second workshop, held on 9 February 2023, was aimed at collecting further data, as well as sharing and obtaining feedback on preliminary findings. The workshops were attended by 26 senior officials drawn from a range of institutions and units involved with climate action in Ghana. The participants represented a rich interdisciplinary and cross-sectoral mix of skills and experiences relating to Ghana's climate change policy processes and implementation.

**Deep dive cases of local adaptation actions:** Following a series of consultations, three case studies were selected for further study and analysis. The case studies were designed as a multi-sited qualitative case study approach. This way the emphasis was not so much on gathering quantitative data but on rigorously obtaining information from a small number of cases across different parts of Ghana that would provide an indication of some of the key lessons on the enablers of and barriers to LLA actions. Case studies enable investigators to acquire a deep understanding of society and its local actors' perceptions and provide access to a detailed supply of context-specific evidence and observations. Such an approach allows researchers to generate research topics and gain multiple insights without compromising the richness of the data. The logic was to select cases that represent different ecological zones in Ghana (Northern/Savannah/Middle-Belt/Southern/Coastal) and further represent different geographical categories (urban and rural) as well as unique needs associated with these categories (farming, flood and coastal erosion). Other considerations that informed the selection of the deep dive cases included sectors of relevance to climate adaptation action, relevance to local social and cultural needs, values and aspirations and relevance to global goals on climate action and development. The

broader aim of the case studies was to generate lessons on the enablers of and barriers to climate change adaptation actions and provide insights into the ways in which the implementation of the NDCs through LLA can influence livelihoods within the host and surrounding communities. The deep dives therefore led to the collection of primary data from field observations, focus groups, key informants and relevant stakeholders using several data collecting tools.

**Figure 2: Overview of research approach**



Source: Authors' Construct, 2023

## Tools of data collection

In this study, the following data collection tools were used:

- In-depth interviews: In-depth interviews were conducted with participants and were semi-structured to allow for flexibility in exploring the research question.
- Focus group discussions (FGDs): At the community levels, FGDs were also conducted with participants from different backgrounds. The groups were formed based on age, gender and experience of participation in projects. The discussions were aimed at eliciting opinions, attitudes and perceptions on the research questions.
- Participant observation: The researcher spent time with the participants, and further observed some of the impacts of climate change as well as some of the climate change adaptation strategies employed by communities.
- SWOT analysis: Based on the findings and insights gathered from the research process, further policy analysis was conducted on Ghana's climate change adaptation progress to identify opportunities, barriers, lessons and entry points for deepening LLA.

The graphic consists of a horizontal bar divided into three sections: a yellow section on the left, a dark grey section in the middle, and a yellow section on the right. The text is positioned in the rightmost yellow section.

## **SECTION TWO**

Mapping the climate  
action landscape

## Introduction

This section provides the results of the mapping of key policies, strategies, frameworks and climate actions to identify the key narratives around climate change adaptation in Ghana associated with the country's commitments, institutional readiness, successes, strengths and gaps in deepening climate change adaptation. Key areas of attention for the mapping included: i) the NDCs; ii) national policies, strategies, initiatives and actions on climate change; iii) local climate actions, strategies and practices; iv) climate finance flows; and v) discussions with various stakeholders involved with climate change adaptation actions.

Mapping the climate action landscape proved valuable for several reasons:

- It helped to provide a picture of progress of climate adaptation policy and actions.
- It helped to identify barriers, challenges and gaps associated with the design and implementation of climate change adaptation strategies and initiatives in Ghana.
- It enabled the research to identify key stakeholders connected to climate change adaptation, which forms the basis for the multi-stakeholder engagement component of this research.

## Methodology for mapping key policies, strategies, frameworks and climate actions

### *Data collection methods and tools*

Document review, a national stakeholder workshop and follow-up interviews were the main methods of collecting data on the mapping of climate actions in Ghana. Two main national workshops were held for this purpose. The first was organised in Accra on 19 October 2022. The second, held on 9 February 2023, was aimed at collecting further data and sharing and obtaining feedback on preliminary findings. The workshops were attended by 26 senior officials drawn from a range of institutions and units involved with climate action in Ghana. These stakeholders represent government institutions, private firms and CSOs. The participants represented a rich interdisciplinary and cross-sectoral mix of skills and experiences relating to Ghana's climate change policy processes and implementation.

Follow-up interviews with some of the participants for further conversations on Ghana's strategies, policy direction and approach for advancing LLA were subsequently conducted.



Plate 1: First stakeholder workshop on LLA



Participants making contributions during the stakeholders' workshop meeting.



Workshop participants brainstorming during a group discussion session



Presentation of results after group discussions during the first stakeholder workshop

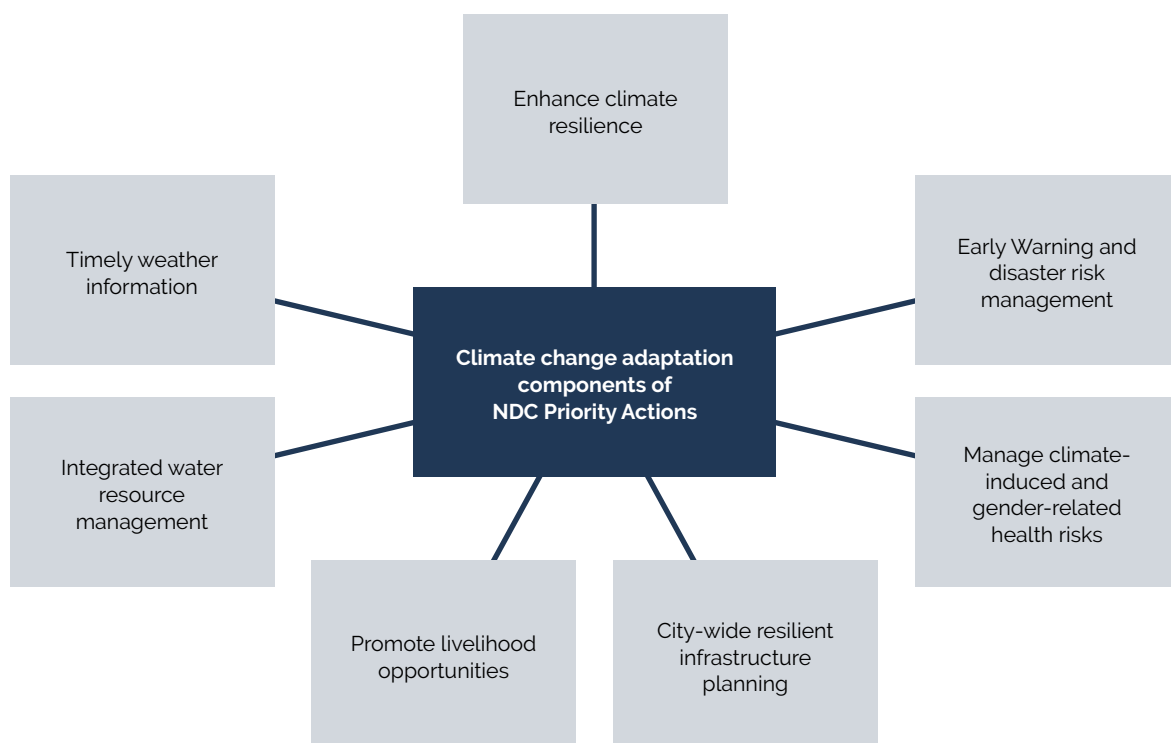
Source: Authors

## Results

### *NDCs and adaptation efforts*

Ghana is a signatory to several regional and international protocols that focus on environmental sustainability and climate action. As part of its commitment to the Paris Agreement and efforts to quicken the implementation of climate actions, Ghana prepared its NDC in 2015 and updated it in 2021. The updated NDC specifies 47 programmes of action, which comprise 13 adaptation measures and 34 mitigation actions. These programmes of action are categorised under 19 priority actions (8 for adaptation and 11 for mitigation; see Table 3).<sup>23</sup>

**Figure 3: Key adaptation components of Ghana's NDC**



*Source: Authors (adapted from EPA and MESTI, 2021. Ghana's updated Nationally Determined Contribution under the Paris Agreement (2020–2030). [https://mesti.gov.gh/documents/ghanas-updated-nationally-determined-contribution-unfccc\\_2021/](https://mesti.gov.gh/documents/ghanas-updated-nationally-determined-contribution-unfccc_2021/))*

According to the updated NDC (2021), the key adaptation priority areas have been on resilient infrastructure, promoting livelihoods, strengthening the agricultural landscape and food systems and urban planning.<sup>24</sup> Other priorities include early warning systems; the climate resilience of women and vulnerable groups, including health-related climate risks; and fostering social inclusion (Figure 3). The NDC Implementation Plan has been categorised into three phases: i) Readiness (2018–2020), to focus on support for technical capacity, resource mobilisation, preparation and socialisation; ii) Compliance (2020–2025), with a focus on institutional capabilities and implementation of priority actions; and iii) Stocktaking (2025 and 2030+), focusing on the evaluation of NDC implementation and progress.

**Table 3: Policy actions for NDC implementation**

19 policy actions from 2020–2030	Area	Funding (USD million)	Funding (%)
Enhance climate resilience of women and the vulnerable	Adaptation	2.2	0.02
Early warning and disaster risk management	Adaptation	15.0	0.16
Enhance climate services for efficient weather information management	Adaptation	10.0	0.11
Manage climate-induced and gender-related health risks	Adaptation	117.0	1.26
Integrated water resource management	Adaptation	108.0	1.17
Build resilience and promote livelihood opportunities for the youth and women in climate-vulnerable agriculture landscapes and food systems	Adaptation	1,855.0	20.03
City-wide resilient infrastructure planning	Adaptation	827.0	8.93
Promote gender-responsive sustainable forest management	Adaptation/ Mitigation	395.5	4.24
Expand the adoption of market-based cleaner cooking solutions	Mitigation	386.4	4.17
Promote sustainable charcoal production, including youth and women entrepreneurs	Mitigation	292.1	3.15
Low-carbon electricity generation	Mitigation	141.4	1.53
Adopt alternative urban solid waste management	Mitigation	60.4	0.65
Promote clean rural household lighting	Mitigation	35.7	0.39
Decarbonisation of oil and gas production	Mitigation	31.5	0.34
Promotion of energy efficiency in homes, industry and commerce	Mitigation	786.9	8.50
Sustainable production in industry	Mitigation	7.4	0.08
Refrigeration and air conditioning (RAC)	Mitigation	3.2	0.03
Scale up renewable energy penetration by 10% by 2030	Mitigation	2,296.9	24.81
Expansion of inter-city transportation modes	Mitigation	1,890.5	20.42
<b>Total</b>		<b>9,259.1</b>	<b>100.00</b>

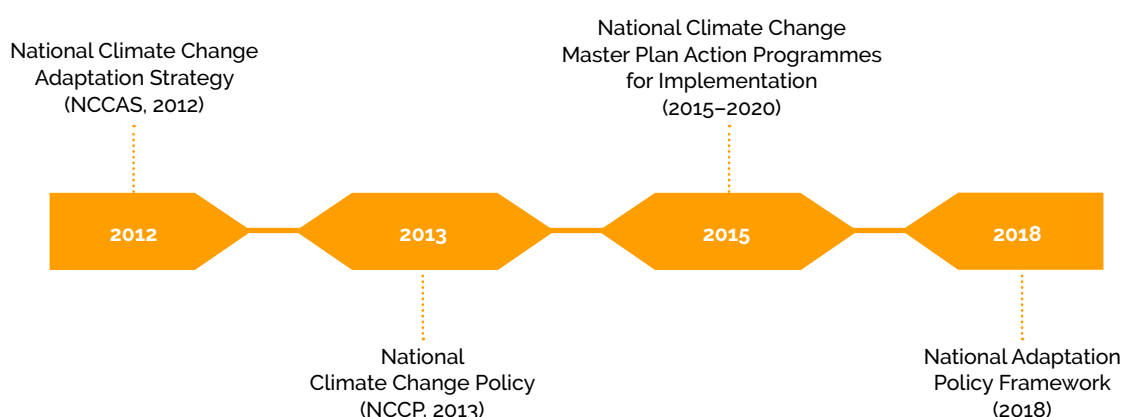
Source: Authors (adapted from updated NDC, with additional materials from Acheampong, T. (2022). *The Energy Transition and Critical Minerals in Ghana: Diversification Opportunities and Governance Challenges*. : Ghana Extractive Industries Transparency Initiative (GHEITI).

### **National policies, strategies, initiatives and actions**

In addition to the NDC, the Ghanaian government has further developed several policies and strategies aimed to support the policy and strategic direction of the NDCs. These include: the National Climate Change Policy (NCCP), the National Climate Change Adaptation Strategy (NCCAS, 2012), the NDCs (2015), the National Climate Change Master Plan Action Programmes for Implementation (2015–2020) and the National Adaptation Policy Framework (2018) (Figure 4).

Adaptation strategies emphasised in these policy documents include a mix of behavioural, capacity-building, technological, financial and integrated approaches. The key strategies emphasised in these policies include climate information services, integrated landscape planning, improving livelihoods, sea defence walls, resilient community infrastructure, crop insurance and opportunities for improving livelihoods. The Ghanaian government seeks to prioritise early warning and disaster risk management as well as integrated water resource management as part of its investment into adaptation activities.

**Figure 4: Overview of national climate change policy documents guiding actions**



Source: Authors (based on review of documents)

Results from the mapping exercise and consultations with stakeholders during the multi-stakeholder workshop further identified a patchwork of cognate policies that outline strategies and policy actions that further inform climate change actions in Ghana (Table 4).

**Table 4: Key policy frameworks for climate change adaptation in Ghana**

Name of policy, strategy or plan	Status (released)	Timeframe covered	Responsible institution
Agenda for Jobs: Creating Prosperity and Equal Opportunity for All	2018	2018–2021	NDPC
40-Year Socio-Economic Transformational Plan	2015	2018–2057	NDPC
National Decentralization Policy and National Decentralization Strategy	2020	2020–2024	MCC
Ghana Shared Growth and Development Agenda I & II	2010	2010–2017	NDPC, MOF
National Planning and Budgeting Guidelines	2014	2014–2013	MOF, NDPC
Sector and Districts Guidelines on Mainstreaming Climate Change	2013	N/A	MESTI, DA, NGOs
Local Governance Act, 2016 (Act 936)	2016	N/A	MLGRD
National Climate Smart Agriculture Food Security Action Plan	2016	2016–2020	MoFA
National climate Change and Green Economy Learning Strategy	2016	N/A	MESTI
National Migration Policy	2016		MOI
Ghana Forestry Development Master Plan	2016	2016–2036	FC
National Ghana Forest and Wildlife Policy	2012		MLNR

Name of policy, strategy or plan	Status (released)	Timeframe covered	Responsible institution
National REDD+ Strategy	2016	2016–2035	Forestry Comm.
Food and Agricultural Sector Development Policy	2012		MoFA
Ghana's Medium-Term Agriculture Sector Investment Plan	2009	2003–2015	MoFA
National Environment Policy	2014		MESTI
National Water Policy	2007		MWRWH
National Health Policy	2007	2010–2013	MoH

Note: See the Acronym list for full versions of all acronyms.

Sources: Environmental Protection Agency. 2020. Ghana's Fourth National Communication to the United Nations Framework Convention on Climate Change, [https://unfccc.int/sites/default/files/resource/Gh\\_NC4.pdf](https://unfccc.int/sites/default/files/resource/Gh_NC4.pdf); and national stakeholder workshop

## Local actions, strategies and practices

In addition to the national adaptation policies, communities have been implementing several strategies, initiatives and practices to adapt to the impacts of climate change. Work on these strategies has been self-initiated and/or supported by government services, CSOs and NGOs. These local actions and strategies include efforts to intensify sustainable forest resource management, climate-smart agriculture, crop insurance, community-based conservation actions, and early warning mechanisms to minimise the impacts of floods and disaster risk management. Other local adaptation actions include: the promotion of livelihood opportunities for the youth and women in climate-vulnerable agriculture landscapes and food systems, especially in Northern Ghana; integrated water resources management; and reduction and recycling of waste. Some of these local efforts are being promoted through initiatives such as the Greater Accra Resilient and Integrated Development Project (GARID), the main objective of which is to develop sustainable capacity for flood risk management; construction of sea defence walls via coastal protection projects; a sustainable land and water management project; and early warning and disaster risk management initiatives at various sub-national levels. The main sectors of interest for adaptation are agriculture, education, environment, development planning, health and interior (see section on climate finance flows).

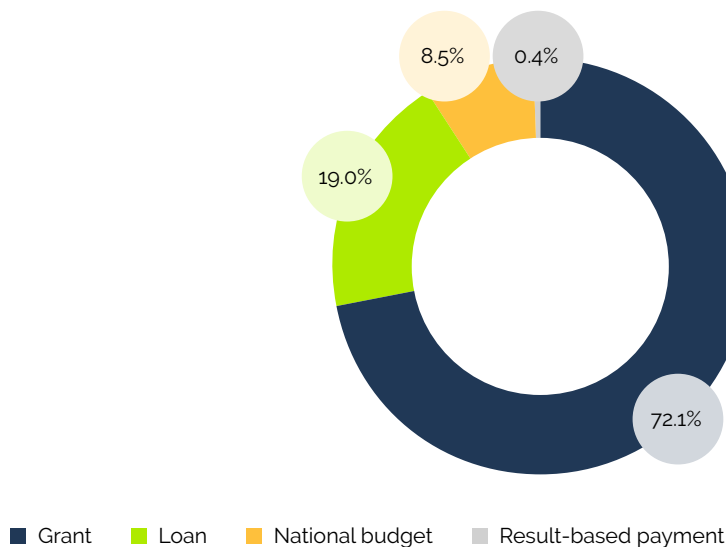
## Climate finance flows

Climate finance is generally difficult to track in Ghana, for various reasons:

- Several organisations in the country receive climate funding from multiple sources that do not pass a central point, such as the Ministry of Finance.
- Weak institutional coordination within government and among donors, as well as other CSOs, leads to duplication of climate change interventions.
- It is also difficult to monitor and report non-monetary supports.

However, available evidence from public documents, such as the Fourth Communication report,<sup>25</sup> suggests that total climate inflows committed for the period 2011–2019 were approximately USD 1.3 billion.<sup>26</sup> As shown in Figure 5, the sources of the climate funds include grants (72.1%), followed by loans (19%), national budget (8.5%) and result-based payments (0.4%). Climate finance for mitigation activities constituted 87.4% of the total inflows committed for the period, while adaptation activities took 3.4% (see Figure 6). The rest went into supporting means of implementation activities, including capacity-building efforts.

**Figure 5: Sources of climate finance to Ghana (2011–2019)<sup>1</sup>**



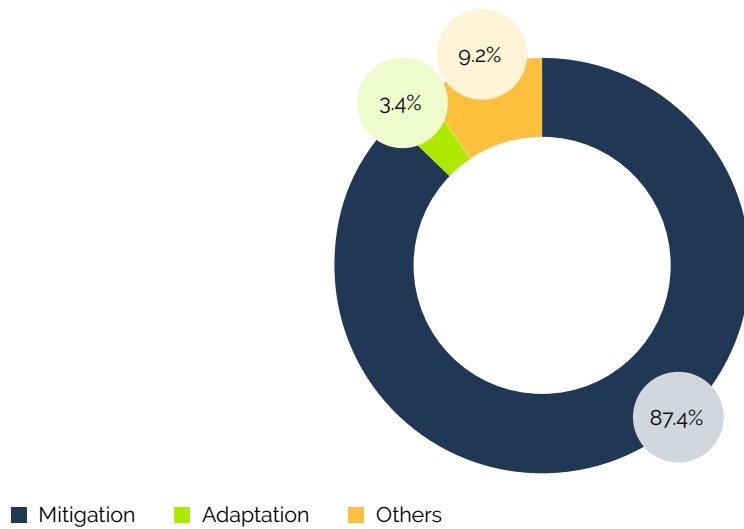
Source: Environmental Protection Agency, 2020. Ghana's Fourth National Communication to the United Nations Framework Convention on Climate Change. [https://unfccc.int/sites/default/files/resource/Gh\\_NC4.pdf](https://unfccc.int/sites/default/files/resource/Gh_NC4.pdf)

The leading recipient of climate inflows, in terms of sectors, is energy. The total climate funds to the energy sector for the period amounted to USD 758.8 million, making up 57.8% of total funds committed. The forestry sector is the second biggest recipient (25.7%) for the same period.<sup>27</sup> Both the energy and forest sectors had stronger emphasis on mitigation activities. Agriculture is the third biggest recipient of climate inflows over the same period. In total, energy, forestry, agriculture and transport sectors received approximately 95% of the total climate inflows. In terms of distribution of adaptation funding (USD 4.55 million), three-quarters of the inflow is spent in the areas of agriculture, education and environment (Figure 7).

Ghana's updated NDC outlines the need for significant investment ranging from USD 9.3 billion to USD 15.5 billion to implement climate action measures from 2020 to 2030. Out of this total, a minimum of USD 3.9 billion is allocated for the implementation of unconditional programmes of action until 2030, while the remaining USD 5.4 billion (at least) is required to complement conditional programmes of action. These funds are expected to be sourced from public, international and private sector investments, as well as carbon markets.

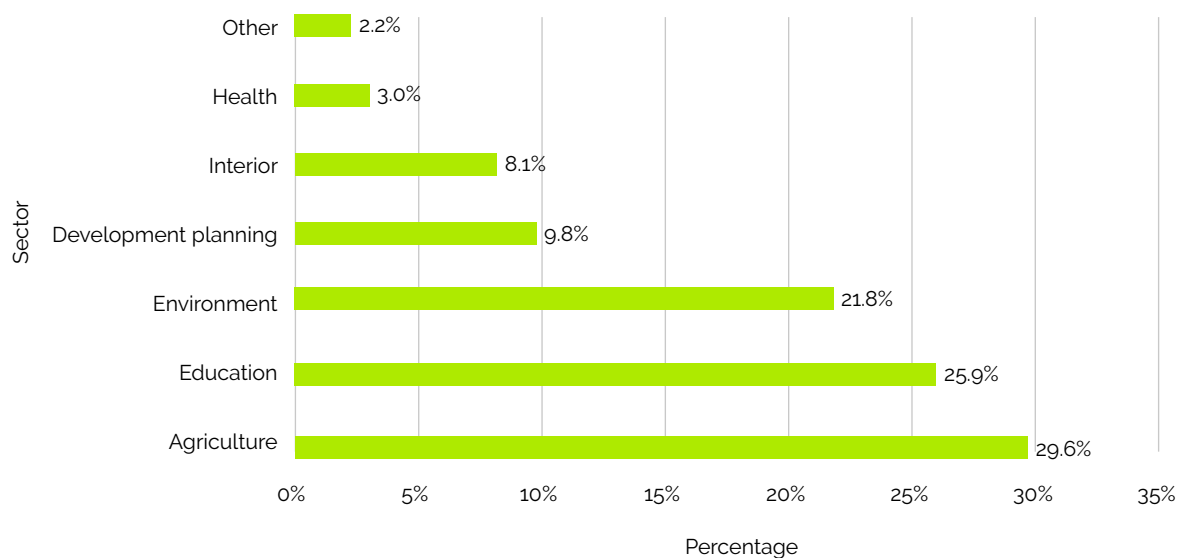
1 Total climate finance flows to Ghana (2011–2019) are USD 1,312,094,437

Figure 6: Allocation of climate change finance inflows (2011–2019) by broad action



Source: Adapted from Environmental Protection Agency. 2020. Ghana's Fourth National Communication to the United Nations Framework Convention on Climate Change. [https://unfccc.int/sites/default/files/resource/Gh\\_NC4.pdf](https://unfccc.int/sites/default/files/resource/Gh_NC4.pdf)

Figure 7: Distribution of adaptation funding, by sector



Source: Environmental Protection Agency. 2020. Ghana's Fourth National Communication to the United Nations Framework Convention on Climate Change. [https://unfccc.int/sites/default/files/resource/Gh\\_NC4.pdf](https://unfccc.int/sites/default/files/resource/Gh_NC4.pdf)

## Stakeholder mapping

There are a number of development partners, national and private institutions and/or stakeholders that operate in the climate adaptation policy space in Ghana. Some of these institutions implement specific climate change initiatives at the local level, while some also engage in climate change policy advocacy at the national level. The various stakeholders include:

- **Government agencies:** Government agencies play a central role in climate change policy and implementation. The Ministry of Environment, Science, Technology, and Innovation (MESTI) is responsible for coordinating climate change activities, developing policies and implementing mitigation and adaptation measures. The Environmental Protection Agency (EPA) is the central agency under MESTI that monitors, regulates, coordinates and provides updates and communication on climate change and environmental issues. The Ministry of Food and Agriculture (MoFA) focuses on climate-smart agriculture and rural development. Various ministries, departments and agencies (MDAs) such as the Ministry of Local Government and Rural Development as well as the Forestry Commission also implement projects with climate change components.
- **Non-governmental organisations:** NGOs play a vital role in advocating for climate change mitigation and adaptation measures. Organisations such as Arocha Ghana and Strategic Youth Network for Development engage in raising awareness, capacity building, project implementation and promoting sustainable development practices.
- **Research institutions:** Research institutions, including universities and think tanks, contribute to the climate change policy arena through research, data analysis and providing scientific evidence. Institutions such as the Council for Scientific and Industrial Research (CSIR), the Bureau of Integrated Rural Development, and the Institute for Environment and Sanitation Studies (IESS) offer expertise and knowledge on climate change impacts and mitigation strategies.
- **Private sector:** The private sector plays a critical role in climate change action, particularly in areas such as renewable energy, sustainable agriculture and green technologies. Companies involved in renewable energy development, sustainable manufacturing and carbon offset projects have a vested interest in climate change policies that create a favourable business environment.
- **International organisations:** International organisations, including the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank, provide technical and financial support to Ghana's climate change efforts. They collaborate with the government, NGOs and other stakeholders to implement projects, provide funding and build capacity.
- **Community-based organisations:** Local community-based organisations and traditional leaders play an important role in implementing climate change initiatives at the grassroots level. They have a deep understanding of local contexts, traditional knowledge and practices that can contribute to climate change adaptation and resilience-building efforts.

Table 5 provides an overview of some of these key national institutions and/or stakeholders as far as climate change adaptation policies are concerned.



**Table 5: Key stakeholders in the climate adaptation policy space**

Government agencies	CSOs and private sectors	Development partners
Ministry of Finance and Economic Planning	Arocha Ghana	UNDP
Ministry of Gender and Social Protection	Greener Impact International	UNEP
Ministry of Food and Agriculture	Strategic Youth Network for Development	Foreign, Commonwealth and Development Office
National Development Planning Commission	Foundation for Environment Ghana	European Union
National Disaster Management Organization	Safe Water Network	United States Agency for International Development
Ministry of Local Government and Rural Development	Abibiman Foundation	World Bank
Environmental Protection Agency	CAN-Ghana/HATOF	
Ministry of Environment, Science, Technology and Innovation	Civic Response	
Ministry of Water Resources, Works and Housing	KASA Ghana	
Ministry of Lands and Natural Resources	Communities, women, children	
Ghana Meteorological Agency	Sustainability Traits Consult	
Ministry of Energy	Ghana Alliance for Clean Cooking	
Local government authorities (District Assemblies)		

Source: Authors (2023)

## Analysis and summary of key messages

Ghana's economic and human development has become very vulnerable to climate change and climate-related shocks. The prevailing effects of climate change and the emerging projections suggest that adaptation measures should be critical for the country. The mapping of the climate action landscape in Ghana has revealed that the country has made steady progress in formulating various policies, strategies and frameworks to guide climate change actions. Ghana has an updated NDC under the Paris Agreement that prioritises adaptation efforts across different sectors such as agriculture, water resources, energy, forestry, coastal areas and health. It also has a range of climate change policies and strategies in place, including the NCCP, the National Adaptation Policy Framework and the Climate Change Master Plan. The NDC, particularly, provides a high-level and strategic vision for climate action. The NDC provides clarity on the priority sectors, adaptation measures and actions that would enable the country to better strengthen the resilience and adaptive capacity of the population most vulnerable to climate change. The NCCP, the Adaptation Communication to the UNFCCC (ADCOM), the National Adaptation Policy Framework and the several policies developed to advance climate action further provide an overview of key adaptation strategies, policies and action plans. The dominant narrative stressed in these policies and by stakeholders conceives of adaptation as an effort to reduce climate change vulnerabilities, build adaptive capacity and resilience and promote sustainable development.

Additionally, the mapping showed that climate actions in Ghana involve a wide array of stakeholders, including government agencies, directorates, NGOs, the private sector, academic institutions and international organisations. These actors are involved in implementing various policies, practices and strategies to tackle the challenges posed by climate change. This ranges from public investments (into, for example, sea defence projects), donor-supported projects implemented by national agencies, using decentralised structures and planning systems, private finance, projects implemented by a consortium of public, private and non-governmental agencies, civil-society-led initiatives and community-based/grassroots initiatives.

However, the mapping exercise and analysis of available documents also reveal several gaps and challenges in the design and implementation of climate policies and actions. For example, there appears to be very limited coordination and collaboration among stakeholders. Both government and non-governmental agencies in Ghana also face challenges in scaling up and coordinating climate change adaptation initiatives. The absence of effective coordination mechanisms hinders the synergistic and streamlined implementation of projects and other actions.

Furthermore, Ghana faces obstacles in adequately financing climate change adaptation measures, particularly those aligned with the NDCs. First, of the total inflows of climate finance committed between 2010 and 2019, climate finance allocated to mitigation activities accounted for 87.4%, while adaptation activities received only 3.4%. This distribution highlights a significant disparity between mitigation and adaptation funding in Ghana. Findings further reveal that there is a significant gap between the finance required for climate adaptation and the actual funds available. Thus, the implication of Ghana's updated NDC funding requirements is that a substantial amount of financial resources is needed to effectively implement climate action measures in the country. The estimated investment of USD 9.3 billion to USD 15.5 billion over the period of 2020 to 2030 highlights the scale of the financial commitment required to address climate change challenges and meet the goals outlined in the NDC. To mobilise this funding, Ghana will need to engage a diverse range of stakeholders, including public institutions, international organisations, private sector entities and carbon markets.

Awareness of and access to various financing models as well as a concerted effort are necessary to secure the necessary financial resources and effectively allocate them to implement both unconditional and conditional programmes of action. Meeting these funding requirements will enable Ghana to enhance its climate resilience and achieve its climate targets as outlined in its NDC. It will also contribute to sustainable development, job creation and the overall well-being of communities and ecosystems in the face of climate change impacts. However, the mobilisation of such a significant amount of funding can present challenges, including the need for effective coordination, transparent financial mechanisms and accountability to ensure that the funds are utilised efficiently and effectively. Collaboration between different stakeholders and innovative financing approaches will be crucial in meeting the funding needs and driving successful climate action implementation in Ghana.

Lastly, although local communities are already on the frontlines of climate change impacts, their voices and ideas are not sought or included in decisions that most affect them. Climate change decisions and planning are currently largely top-down, receiving less financing at the sub-national level, limiting the learning and various initiatives of mitigation and adaptation that are ongoing at the local level. The current top-down approach to climate change decisions and planning in Ghana has resulted in limited allocation of resources at the sub-national level. This lack of financial support

hampers the implementation of local-level mitigation and adaptation initiatives, hindering the progress towards climate resilience. A study found that about half of the climate change adaptation programmes of local authorities in Ghana outlined from 2013 to 2021 were never implemented and more than 70% have not been completely successful due to limited finance.<sup>28</sup> Major knowledge gaps also remain regarding the potential effectiveness and success factors of a wide range of local initiatives on climate change. Lessons from such initiatives could play a significant role in shaping successful pathways towards appropriate, effective and sustainable adaptation. There is insufficient understanding of the diverse needs, expectations and visions of communities. This requires more attention to enable policy makers and project developers to address gaps and uncertainties on climate change and to create effective and sustainable pathways for adaptation initiatives. The next section explores three cases of LLA actions and draws lessons that can further inform the implementation of Ghana's NDC.

## **SECTION THREE**

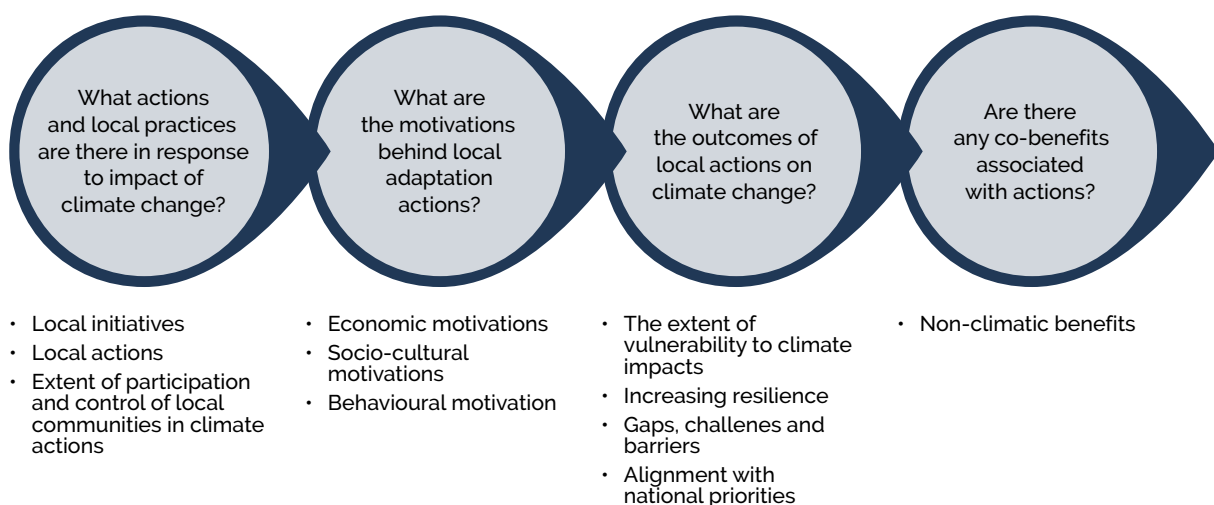
Case studies

## General introduction

The previous section provided an overview of national policies, plans and frameworks for tackling climate change in Ghana. In addition to the national adaptation policies, communities have developed several strategies, initiatives and practices to adapt to the impacts of climate change. This section presents the results of a series of local adaptation case studies, which highlight valuable insights into local adaptation strategies, the main motivations of the actions, and the challenges and successes encountered in various contexts.

LLA has emerged as an important approach, giving decision-making power to local communities, organisations and governments at the lowest administrative level. LLA involves understanding local needs, co-designing context-specific adaptation measures and building on existing systems. LLA implies 'climate adaptation in which local communities, community-based organisations, citizen groups, local government, and local private sector entities at the lowest administrative structure are included as decisionmakers in the interventions that affect them'.<sup>29</sup> Such an approach is focused on ensuring that local people have individual and collective agency over the adaptation process. It further recognises the resourcefulness and capabilities of local communities and emphasises the importance of funding and support for their adaptive solutions. LLA emphasises the importance of building on existing social, economic and environmental systems, rather than imposing external solutions that may not be sustainable or effective in the long term. Attention to LLA will be critical to the success of the implementation of climate actions, set out by countries in their NDCs. Thus, research is needed to identify gaps, opportunities and community-specific priorities in climate solutions that align with endogenous adaptation practices and the needs of local communities. The broader aim of the case studies was to generate lessons on the enablers of and barriers to climate change adaptation actions at the local level and provide insights into the ways in which the implementation of the NDCs through LLA can be enhanced to support climate action and livelihoods within the host and surrounding communities. The research was guided by questions such as: What local actions and initiatives are practised to respond to climate change? Who is behind such actions? What are the motivations for actions from the communities? And what are the outcomes and co-benefits of such actions? (Figure 8).

**Figure 8: Conceptual framework for analysing LLA cases**



Source: Authors (2023)

By examining these diverse experiences, we aim to contribute to the growing body of knowledge on climate adaptation and inspire informed decision making and policy development. This knowledge can inform policy coherence and support the implementation of effective and sustainable climate action in Ghana, while considering the goals of job creation and economic development without undermining local adaptation efforts.

## General case study approach

The cases were designed as qualitative studies. Their aim was to obtain information from a small number of cases across different parts of Ghana that would identify key lessons regarding the enablers of and barriers to locally led climate change adaptation actions. Case studies enable investigators to acquire a deep understanding of society and its local actors' perceptions as well as access to a detailed supply of context-specific evidence and observations.<sup>30</sup> This approach allows researchers to generate research topics and gain multiple insights without compromising the dimensionality and richness of the data.

In these studies, therefore, qualitative data were gathered through a series of FGDs, semi-structured face-to-face interviews with key informants and in-depth interviews, observations, photo documentation and document reviews. Targeted respondents included a cross-section of community members, beneficiaries of LLA initiatives, community leaders and other stakeholders (public officials and project officials) connected to the initiative.

## Case study selection

The selection of the cases resulted from the policy-convening workshop organised by APRI in collaboration with the GCIC in Accra on 20 October 2022. The workshop involved a wide range of stakeholders operating in the climate change adaptation space. Group activities of the day yielded a number of initiatives, interventions and possible areas where deeper studies can be undertaken to highlight key lessons on the enablers of and barriers to locally led climate change adaptation actions. The discussions during the workshop, coupled with a series of consultations with relevant stakeholders within Ghana's climate change adaptation space, aided the selection of three cases representing different ecological zones in Ghana (Northern/Savannah/Middle-Belt/Southern/Coastal), the different geographical categories (urban and rural) as well as unique needs associated with these categories (farming, waste management, and coastal erosion or flooding). The following criteria influenced the selection of cases:

- sectors of relevance to climate adaptation action;
- relevance to local social and cultural needs, values and aspirations;
- relevance to national, regional or local climate action policies and development strategies;
- relevance to global goals on climate action and development;
- actions and activities with potential to generate greater value beyond economic value, especially in support of communities' life, livelihood and well-being needs;
- application of local strategies and practices for adaptation.

## Overview of case study profiles

### ***Case study 1: Building resilient livelihoods through Village Savings and Loans Associations and organic shea processing in the drylands of Northern Ghana***

This case study focuses on two communities, Kpiri and Sor No. 1, in the West Gonja district of the Savannah Region in Ghana. A local NGO, Movement of Rural Entrepreneurial Women (MORE Women), leads an adaptation action in response to the communities' vulnerability to climate change impacts, such as increased temperatures, erratic rainfall and prolonged droughts. These challenges disrupt traditional farming practices and exacerbate food insecurity and economic hardships, especially for women. MORE Women works with the communities to strengthen their resilience through the establishment of Village Savings and Loans Associations (VSLAs) and organic shea processing. This approach acknowledges the communities' understanding of their own challenges and empowers them to develop suitable (climate-resilient) solutions. It leverages local resources and knowledge and promotes income improvement and resilience-building activities. The study identified key motivations driving the adoption of locally led strategies, including livelihood diversification, income enhancement, ecosystem restoration, reduced reliance on charcoal and firewood and improved food production. The main adaptation strategies include VSLAs for group-based organic shea processing, energy-saving stoves, local by-laws against logging and charcoal burning, and tree planting initiatives. The research found promising outcomes of the case study, including women's increased access to credit through VSLAs, providing a safety net during economic stress caused by climate change. The adaptation actions further contribute to environmental protection through organic farming practices and reduced use of harmful chemicals. Additionally, they provide a reliable income source for women, enhancing their resilience against climate change vulnerabilities.

### ***Case study 2: Strengthening grassroot communities to employ climate-smart agricultural practices to enhance nutrients in the soil and promote conservation of natural resources***

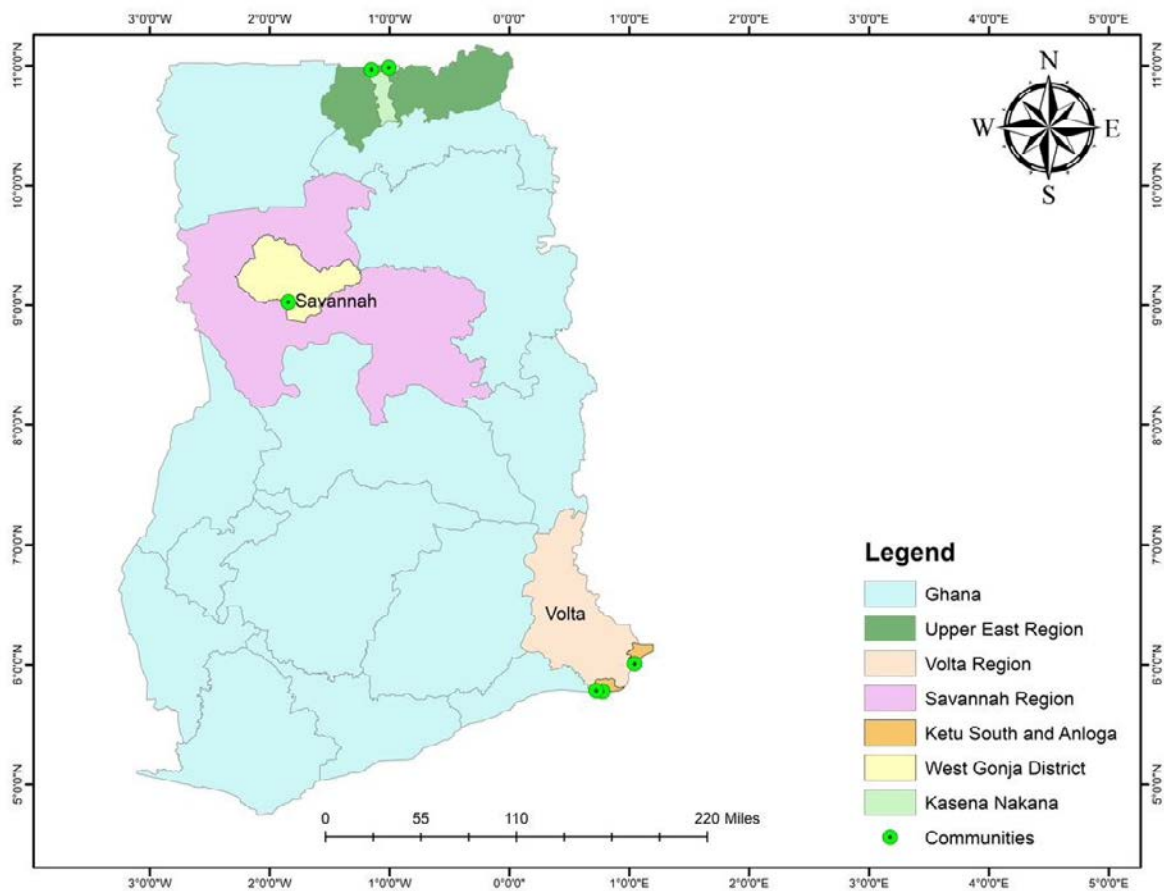
The case study conducted in Pindaa and Kuliya communities in Ghana's Upper East region highlights an initiative led by the Organisation for Indigenous Initiatives and Sustainability (ORGIS-Ghana) to restore degraded savannah forests and strengthen livelihoods through climate-smart agricultural practices. The initiative works with communities to employ climate-smart agricultural practices to help improve soil fertility and conservation of natural resources, as part of the locally led responses to the impacts of climate change such as increased temperatures, erratic rainfall and prolonged droughts. These climate challenges have adverse effects on traditional farming practices, leading to reduced crop yields, food insecurity and economic hardships. The initiative aims to address these impacts and enhance adaptive capacity.

### ***Case study 3: Community-based disaster risk reduction to respond to coastal erosion in Keta***

This case study explores the community-based disaster risk reduction efforts of the people in the Keta-Ada stretch. These efforts aim to respond to coastal erosion and impacts of climate change such as sea level rise and erosion of coastal lands. The communities engaged were: Fuveme, Dzita, Anyanui, Salakope, Adina, Agavedzi and Blekusu. These climate change impacts pose significant threats to the communities. The case study highlights the locally led initiatives undertaken by the communities to reduce their vulnerability to these risks and enhance their resilience. The research

showed that the communities recognise the significant threat posed by rising sea levels and coastal erosion to their homes, livelihoods and infrastructure. In response to this challenge, they have taken several measures and empowered themselves with knowledge of adaptive practices that will enable them to reduce their vulnerability and enhance their resilience. These initiatives involve community engagement strategies where residents actively participate in the identification of risks; creation of water passages (dual canals); transnational fishing; relocation of households; establishment of coastal, community-based early warning systems that might enable them to evacuate and prevent loss of life; implementing nature-based solutions such as mangrove restoration and beach nourishment; and general awareness programmes that enhance the community's understanding of coastal hazards and the importance of preparedness.

Figure 9: Study area for case studies



Source: Authors (2023)

## Data documentations, analysis and reporting

A systematically data-driven inductive thematic analysis approach was employed to identify the main themes and issues originating from the interviews.<sup>31</sup> The analysis included four main steps: i) interview notes and/or transcribed data were read several times to identify and master the raw data (familiarisation step); ii) an initial coding was done (initial coding step); iii) emerging themes and patterns were elicited and determined deductively based on the objectives of the study (discovery step); and iv) appropriate sections of the text of the empirical material were allocated to each theme to arrive at a consensus-oriented process (consensus step).



## Case study 1: Building resilient livelihoods through VLSAs and organic shea processing in drylands Northern Ghana

### *Case background and context*

This case study was conducted in two communities (Kpiri and Sor No. 1) in the West Gonja district of the Savannah Region. The main livelihood activity in these communities is agriculture, specifically shea nut picking and food crop production. The northern part of Ghana, which includes the five northern regions of North East, Northern, Savannah, Upper East and Upper West, is generally considered to be a climate-vulnerable landscape and dryland area. The region is characterised by a semi-arid climate with less rainfall compared to the southern parts of the country. This results in drier conditions and lower levels of vegetation, which make it challenging for agriculture and other livelihood activities that rely on rainfall. The region is home to a diverse range of ethnic groups, including the Dagomba, Gonja, Mamprusi and Fulani. The population is predominantly rural, with many communities located in remote areas that are difficult to access. This geographical region also has a high population growth rate, which places significant pressure on natural resources. Agriculture is the mainstay of the economy, and the region is known for its production of crops such as millet, sorghum, maize, groundnuts and shea nuts. Many farmers in the region practise subsistence farming, relying on their own crops to meet their basic needs. However, lack of access to markets and other infrastructure makes it difficult for farmers to earn a decent living. As such, poverty rates are higher when compared to Southern Ghana. Socially, the region is predominantly Muslim, and there is a general lack of access to basic social services, such as healthcare and education, for many communities in the region.

The climate in Northern Ghana is characterised by a long dry season which lasts from November to April, and a short rainy season which lasts from May to October. However, the region is experiencing the impacts of climate change, including increased temperatures, erratic rainfall patterns and longer dry seasons. During interviews and FGDs, the communities stressed that their main source of livelihood (farming) had been seriously affected as a result of climate change. Community members are losing their crops and livestock as a result of extreme drought and rains. Within the past ten years, the two studied communities have experienced a series of climatic changes. These are manifested through a rapid depletion of greater parts of forest resources; the destruction of communities' livelihoods; erratic rainfall patterns leading to lower food production and food security concerns; a decline in the fertility of agricultural lands; reduced income; increase in temperature; high incidence of bush fires; and the constrained capacity of the farmers to produce at optimal levels.

One of the most significant impacts of climate change on farmers is the increasing frequency and intensity of droughts. This has led to reduced crop yields, as well as the total loss of crops. Farmers in the region often rely on rainfall to water their crops, and with less rainfall, their crops suffer. This has been contributing to food shortages and economic hardship for farmers, as they are unable to sell enough produce to make a living. Also, climate change has led to changes in the timing and patterns of rainfall, making it more difficult for farmers to plan their planting and harvesting schedules.

Interviews and FGDs with research respondents showed that climate change is having a significant impact on farming and shea nut production and processing, with serious consequences for women who rely on this industry for their livelihoods (Box 1).

**Box 1: Impact of climate change on livelihoods**

We used to farm as early as April, by then the rains would have come. But as it stands now you can get to the end of May or even June and nothing is done because the rains are not yet in. Your crops will die if you plant early and don't wait for the rain. For me, this is a significant change. The rainfall pattern alone is enough for me to be convinced that climate change is happening in our communities. These changes are making it more difficult for us to plan our planting and even harvesting schedules. (Woman participant, FGD, Kpiri, West Gonja District)

If I say fair, I am wrong. I will say poor. It is very erratic and that is very bad. Farmers are unable to plant. Farmlands have declined in fertility, there has been extinction of certain animals and the few remaining ones are gradually moving deeper into the bushes. (Male participant, FGD, Sor No. 1, West Gonja District)

***Brief background of the project***

MORE Women is a women-led local NGO that envisages equal rights for every woman, ensuring that they are empowered and have the right to own resources and know how to use them. MORE Women has been working with over 20 women's groups across the West Gonja district to build resilient livelihoods of these groups through VLSAs and organic shea processing. This project was initially supported by partners of MORE Women but it is currently largely self-financed. Organic shea processing is profitable and sustainable. It uses organic methods, avoids chemicals and engages in fair trade practices. VSLAs provide economic safety during climate change impacts.

Interviews showed that the project was developed through a participatory approach, involving the local communities in the decision-making and planning processes. The project team engaged with the communities through meetings, FGDs and interviews to understand their needs and challenges and the options they have to improve their livelihoods in the face of climate change. A comprehensive needs assessment was further conducted, considering economic activities, resources and the environmental context. Stakeholder consultations were held with community leaders, women's groups and local government representatives to explore further pathways that will better build resilience and adaptive capacity. Considerations were made for gender equity and sustainability. Capacity-building activities facilitated by MORE Women are focused on enhancing community members' skills and knowledge in areas relevant to the project. Training sessions covered financial management, entrepreneurship, organic shea processing and market linkages.

The participatory approach of this project ensured that it was tailored to community needs, empowered community members and promoted ownership and sustainability. Thus, the project acknowledges the communities' understanding of their own challenges and empowers them to develop suitable solutions, while leveraging local resources and knowledge and promoting income improvement and resilience-building activities.

## **Motivation**

Results from the case study showed that the main motivations leading to the design and adoption of locally led strategies include the need to:

- improve and diversify livelihood sources of rural women in the communities;
- enhance the income levels of rural women;
- restore degraded ecosystems;
- make charcoal and firewood less attractive to rural communities;
- improve food production.

## **Practices and strategies**

Narratives gathered from the deep dive case study recorded several initiatives, practices and actions adopted by the communities in the face of the impacts of climate change, including:

- the use of VSLAs to promote group-based organic shea processing. MORE Women provides women's groups with a VSLA toolbox with seed capital. Members of the group then meet on a weekly basis to discuss their businesses and to contribute to the scheme and take credit from it in turns to finance their business operations;
- the use of energy-saving stoves in parboiling shea nuts, which optimises the combustion process, resulting in higher energy efficiency compared to traditional stoves. This efficiency leads to reduced fuel consumption, allowing farmers to save while protecting the environment;
- formulation of local by-laws against logging and charcoal burning to promote conservation, which would provide ideal conditions for farming and other livelihood activities;
- through the weekly VSLA meetings, VSLAs not only provide credit to the women's groups but also foster relationship-building and conflict prevention, and serve as social gatherings, enhancing cohesion and empowering participants in shea processing;
- promotion of tree planting.

## **Main outcomes of action/project**

The interviews and engagement with the local stakeholders showed that the VSLAs, organic shea processing, energy-saving stoves and local by-laws against logging and charcoal burning have empowered communities economically, environmentally and socially. They are better equipped to adapt to climate change impacts, protect natural resources and build resilient and sustainable livelihoods for a more secure future. For example:

Plate 2: Local adaptation practices to climate change impacts in Northern Ghana



Energy-saving stove



Energy-saving stove being used



Planted shea seedling

Source: Authors

- The VSLAs have provided communities with financial tools to save and increased women's access to credit, enabling them to invest in income-generating activities, climate-smart agriculture, tree planting and organic shea processing.
- The VLSAs have helped to provide a safety net for members of the various groups, especially during times of economic stress caused by climate change impacts such as droughts and crop failures.
- Organic shea butter is increasingly in demand in global markets, as consumers become more aware of the health and environmental benefits of organic products. By engaging in group-based organic shea production, production levels improve and the women are able to access higher-value markets and earn more income from their products. This helps them to adapt to the harsh realities of climate change (Box 2).

- The use of organic farming practices and reduction in the use of harmful chemicals helps to protect the environment and reduce the negative impact of climate change in the region.
- The provision of a reliable source of income for women allows them to build resilience against the impacts and vulnerabilities of climate change.
- Improved soil fertility supports agricultural production.
- There is a strong orientation and promotion of sustainable land use practices that prioritise the conservation of shea resources and promote the use of alternative sources of energy, such as improved energy-saving cookstoves and biogas (pilot phase).
- Improvement of the resilience of communities to climate change impacts such as droughts and extreme weather events.
- The establishment of community by-laws has played a particularly critical role in regulating land use practices and protecting natural resources and the environment. Thus, the LLA practices have contributed to building the resilience of women's livelihoods to climate change impacts, reducing their vulnerability and improving their well-being.

#### **Box 2: Respondent statement**

I have taken it as my job and have been able to earn enough money to send my children to school and take good care of other family needs, something I could not do in the past. With the training I received from MORE Women, I get more butter from the shea butter processing which is of higher quality and has increased its market value thereby making me get more income. (IDI, female processor, Sor No. 1)

### ***Co-benefits of the action/project***

Several co-benefits have also been derived from the project. These include:

- The financial literacy and book keeping/record keeping skills of the rural women have been enhanced. As such, they are able to determine the cost of production and accrued profits.
- The VSLAs have improved the conflict resolution capacity of rural women, enhanced unity and improved social cohesion amongst rural women, particularly members of the VSLA groups.
- The promotion and use of the energy-saving cooking stoves which produce less smoke could have potential health benefits for women and their families.
- The VSLAs and organic shea processing have helped women gain access to credit and build their financial independence.

- Due to the strategic importance of shea in this region, members of the VSLAs also come together to engage in the method of organic shea processing (the use of natural and sustainable methods to process shea nuts, without the use of chemicals or artificial additives) introduced to them by MORE Women.
- The VSLAs were also found to have facilitated the establishment of a network of support among the women, allowing them to share knowledge and resources and collaborate on projects that benefit their communities.
- Increased gender equality, as women have been empowered to participate in decision-making processes, thus contributing to the overall development of communities and positively impacting the social, economic and environmental well-being of women and their families.

### ***Connection/alignment to NDCs/national policies, strategies and actions***

The local adaptation actions gathered in this case study align well with a number of national policies, strategies and action plans that have been developed to address climate change impacts. These include the updated NDCs, the National Adaptation Policy Framework, the NCCP, the National REDD+ Strategy and the National Climate Smart Agriculture Food Security Action Plan (Figure 10).

### ***Lessons learned and best practices***

The LLA practices observed from this case study in Northern Ghana demonstrate the potential for locally led interventions to build resilience and reduce vulnerability to climate change impacts.

- The results from the practices and strategies highlight the importance of community engagement, women's empowerment and leadership, diverse livelihood strategies, knowledge sharing and peer-to-peer learning, and partnerships and collaboration.
- Successful responses to LLA practices depend on the active engagement and ownership of local communities. When such actions are driven and embraced by communities, it helps such interventions to be tailored to the needs and priorities of the people they are intended to benefit.
- The use of multiple and diverse livelihood strategies, such as VSLAs, organic shea processing and tree planting, promotes complementarity that helps communities build resilience to climate change impacts and reduce their vulnerability to shocks.
- LLA practices that focus on women's empowerment and leadership can have a significant impact on improving livelihoods, reducing poverty and enhancing social cohesion.

Figure 10: Alignment between Case 1 and national policies and strategies



Source: Authors (2023)

### Limitations and challenges

Despite the value and importance of this initiative, it faces several challenges and barriers, including:

- The lack of access to financial resources makes it difficult for women to invest in and expand the organic shea processing business. This is compounded by the fact that financial institutions in the area do not prioritise funding for small-scale farmers and women's groups.
- The limited availability of equipment and tools to support the organic shea processing business makes it difficult for women to produce the quantity needed to meet market demands. The lack of processing centres also impedes production levels and the ability to meet market demands (Box 3).
- There is a lack of supportive policies and regulations that address the needs and concerns of small-scale farmers and women's groups. Existing policies and regulations do not provide adequate support or incentives for LLA practices, leading to limited adoption and impact.

The unpredictable and extreme weather patterns associated with climate change also pose significant challenges. Farmers face difficulties in predicting planting and harvesting seasons, leading to reduced yields and income. Furthermore, inadequate water availability affects the colour of the finished products, devaluing them.

### **Box 3: Organic shea processing challenges**

The biggest challenge has to do with processing centres. Sometimes you bring them an order and you want them to process the butter fast to meet a deadline but that is not possible because they do some manually. So, they need adequate processing centres and also a mechanised borehole because shea butter processing uses so much water. Look, if you want the colour of the shea butter to become so white, it is about adding more water and mixing and cleansing. Another thing is inadequate number of motor kings [tricycles] so that they can go to the bush to actually cart the shea nuts home and be able to transport the butter from here to the market. (KII, male respondent, Kpiri)

Carting of the nuts from the bush to the house is also a problem. Some of us could collect as many as four or six bags of shea nuts but the carting becomes an issue. We have to carry them in bits and that makes some of the nuts to go bad because of delays. Sometimes you will see discolouration of some of the nuts and that affects the end product. So, we need a tricycle. (KII, female respondent, Kpiri)

## ***Entry points and opportunities***

This case study presents several opportunities and entry points for policy makers, practitioners and even international entrepreneurs and investors to support the communities to better adapt to climate change. These include:

- **Capacity building and technical assistance:** Policy makers and practitioners can provide targeted capacity-building and technical assistance programmes to support communities engaged in organic shea processing and VSLAs. This can include training in organic farming practices, shea nut processing techniques, financial management and market linkages. By equipping communities with the necessary skills and knowledge, they can enhance their productivity, profitability and climate resilience.
- **Access to finance and investment:** International entrepreneurs and investors can play a crucial role by providing financial support and investment opportunities for organic shea processing and VSLA initiatives. This can include funding for infrastructure development and equipment, and access to credit for community members. By increasing financial resources, communities can scale up their activities, improve production and processing capabilities and expand their market reach. This will not only enhance their adaptive capacity but also create economic opportunities and improve livelihoods.



- **Market development and value chain integration:** Policy makers, practitioners and international entrepreneurs can support communities by facilitating market development and value chain integration for organic shea products. This can involve creating platforms for market linkages and establishing fair trade agreements. By connecting communities with sustainable and premium markets, they can access better prices for their products, enhance income generation and incentivise climate-friendly practices.
- **Policy support and enabling environment:** Both national and local government authorities can finance institutional support and develop supportive policies, regulations and incentives for organic shea processing and VSLA initiatives. By aligning national policies with the needs and aspirations of communities, policy makers can foster an environment that encourages and rewards climate-resilient practices.
- **Knowledge exchange and collaboration:** Facilitating knowledge exchange and collaboration between communities, practitioners, policy makers, and international stakeholders can promote learning and innovation. This can involve organising workshops, conferences and study tours to share best practices, experiences and success stories. By fostering collaboration, stakeholders can collectively identify opportunities, address challenges, and develop innovative solutions to support communities engaged in organic shea processing and VSLA activities.

These entry points draw attention to several issues that provide opportunities for Ghana to adequately integrate LLA into the implementation of its NDCs. They include:

- **The role of women in climate adaptation actions.** Women play a critical role in the production and processing of shea nuts, which is an important source of income and food security in the region. Strengthening their role through increased access to resources, training and support can help to enhance their adaptive capacity.
- **Community-based approaches such as VSLAs and the passage of community by-laws** are showing promise in promoting LLA practices. These approaches enable communities to take ownership of the adaptation process and foster a sense of collective responsibility for natural resources.
- **LLA practices have the ability to create employment opportunities for women and other community members, particularly in the organic shea processing industry.**
- **Promoting LLA practices provides an opportunity for women to diversify their income streams, leading to improved livelihoods.** This is particularly true for organic shea processing, which generates more income than traditional processing methods.

## Case study 2: Strengthening grassroots communities to employ climate-smart agricultural practices

### *Case background and context*

The case study conducted in Pindaa and Kuliya communities of the Kassena-Nankani district in Ghana's Upper East region highlights an initiative led by ORGIIS-Ghana to restore degraded savannah forests and strengthen livelihoods through climate-smart agricultural practices. The project aims to restore degraded savannah forests and strengthen livelihoods through enhanced ecosystem services. It is part of the USD 54 million Ghana Shea Landscape Emission Reductions Project coordinated by the Forestry Commission of Ghana. The project supports self-financing community management in restoring savannah forests and by using public-private partnerships to restore degraded shea parklands.

The Kassena-Nankana forms part of Ghana's northern savanna zone that has nearly 400 million shea and other trees growing naturally. The primary livelihoods in the Kassena-Nankana district are predominantly based on agriculture and livestock rearing. Agriculture plays a crucial role in the district's economy, with farmers cultivating crops such as millet, sorghum, maize, groundnuts and vegetables. Livestock rearing, including cattle, goats and sheep, also contributes to the livelihoods of many residents.

The district experiences a semi-arid climate characterised by hot and dry conditions. The district is also susceptible to long dry spells and erratic rainfall patterns, with a short rainy season typically occurring from May to October. These climatic conditions pose challenges to agriculture and water availability, making the district particularly vulnerable to climate variability and climate change impacts. Furthermore, the Kassena-Nankana district, like many areas in the Upper East region, faces high rates of poverty which are influenced by various factors, including limited access to basic services, limited economic opportunities and the impacts of climatic variability on agricultural productivity. The poverty levels are reflected in limited infrastructure development, inadequate healthcare facilities and limited educational opportunities in some communities.

Interviews established that the ORGIIS-Ghana project was developed through extensive community engagement, needs assessment, stakeholder consultations, co-creation of strategies, capacity building and monitoring and evaluation. The project team actively engaged with local communities to understand their experiences and challenges related to climate change and agriculture. A comprehensive needs assessment was conducted to identify specific adaptation needs and priorities, considering the vulnerabilities of local agricultural systems to climate change. The organisation adopted a co-creation strategy so that, through engagement, climate-smart agriculture practices were collectively identified and prioritised, including conservation agriculture, agroforestry, crop diversification and water management techniques, tailored to the communities' needs and capacities.

## ***Motivation for the local adaptation initiative***

Results gathered from the deep dive case study revealed that the main motivations for this initiative include:

- increasing food security and improving household income by increasing crop yields and diversifying income sources;
- improving soil health, restoring degraded ecosystems and enhancing the biodiversity of the landscape.

## ***Practices and strategies***

Interviews and engagement with the communities and other stakeholders revealed that local communities in the case study district are implementing a number of adaptation strategies, such as:

- promotion and adoption of climate-smart agriculture;
- farmer participation in various awareness-raising training and practical demonstrations on the importance of climate-smart agriculture and their use of climate-smart practices such as conservation agriculture, sustainable land management, the use of drought-resistant crop varieties, water resources management, the use of agroforestry to improve soil fertility and provision of shade;
- adoption of integrated pest management techniques and the use of agroecological practices, including intercropping, crop rotation and the use of organic manure and pest control methods, aimed to improve soil fertility and crop productivity;
- promotion of tree planting through supply of seedlings (e.g. shea, mango, acacia) to farmers by ORGIIS, in collaboration with the Forestry Commission and other relevant state agencies, and encouraging them to plant and nurture them till maturity. Trees are planted in and around farms, as well as in designated communal areas;
- the use of a community-based solar-powered irrigation scheme which is managed through training from ORGIIS and involves the use of solar-powered pumps to collect water used for irrigation, especially during the dry season.

**Plate 3: Local climate-smart agricultural practices employed to enhance soil nutrients and promote conservation of natural resources in Northern Ghana**



Plant nursery



Use of climate-smart agriculture for the production of peppers and tomatoes



Solar panels



Irrigation dam

Source: Authors

**Main outcomes**

A number of outcomes were identified through this process, including:

- increased and alternative sources of income generation to support households through the cultivation of crops such as tomatoes and peppers;
- improved food security by increasing the availability of food, and reducing the vulnerability of farmers to crop failures due to drought or erratic rainfall;
- positive responses of community members to the adoption of climate-smart agriculture and agroecological principles;

- increased crop productivity and yield as farmers diversify the traditional varieties of crops like sorghum, millet and cowpea to drought-resistant varieties better suited to the changing climate conditions;
- improved soil health and fertility;
- the solar-powered irrigation schemes help to improve water availability and access during the dry season, leading to increased crop yield and income. This is particularly important in areas where water is scarce and where farmers are vulnerable to drought.

#### **Box 4: Testimony of a female vegetable farmer**

A female vegetable farmer in her forties who doubles as a petty trader had a farming business until weather conditions became unbearable. She began to record lower yields and at one point lost larger part of her crops due to the harsh weather conditions. On hearing about the importance of the climate-smart agriculture (CSA) and agroecology initiative being implemented by ORGIIS-Ghana, she gladly joined. She then began to use organic manure on her vegetable farm and also practised crop rotation as a way of improving the soil health and fertility. The season she practised that, she recorded very good yields and had good market/price for her produce.

Before, I was really running at a loss as a vegetable farmer because I invested so much into my farming business but ended up getting nothing in the end. Either the crops would fail or I'd record very low yields due to the harsh weather conditions. The little profit I made from my petty trading, I invested it into the vegetable production and ended up getting nothing in the end. So, when I heard about the CSA training being done by ORGIIS-Ghana, I decided to join and I took the trainings seriously because I was tired of the low yields I always recorded. I started recording good yields and improved income at the end of every production.

#### ***Co-benefits of the action/project***

The project activities and strategies provide additional co-benefits that go beyond the main objectives of the initiative. These include:

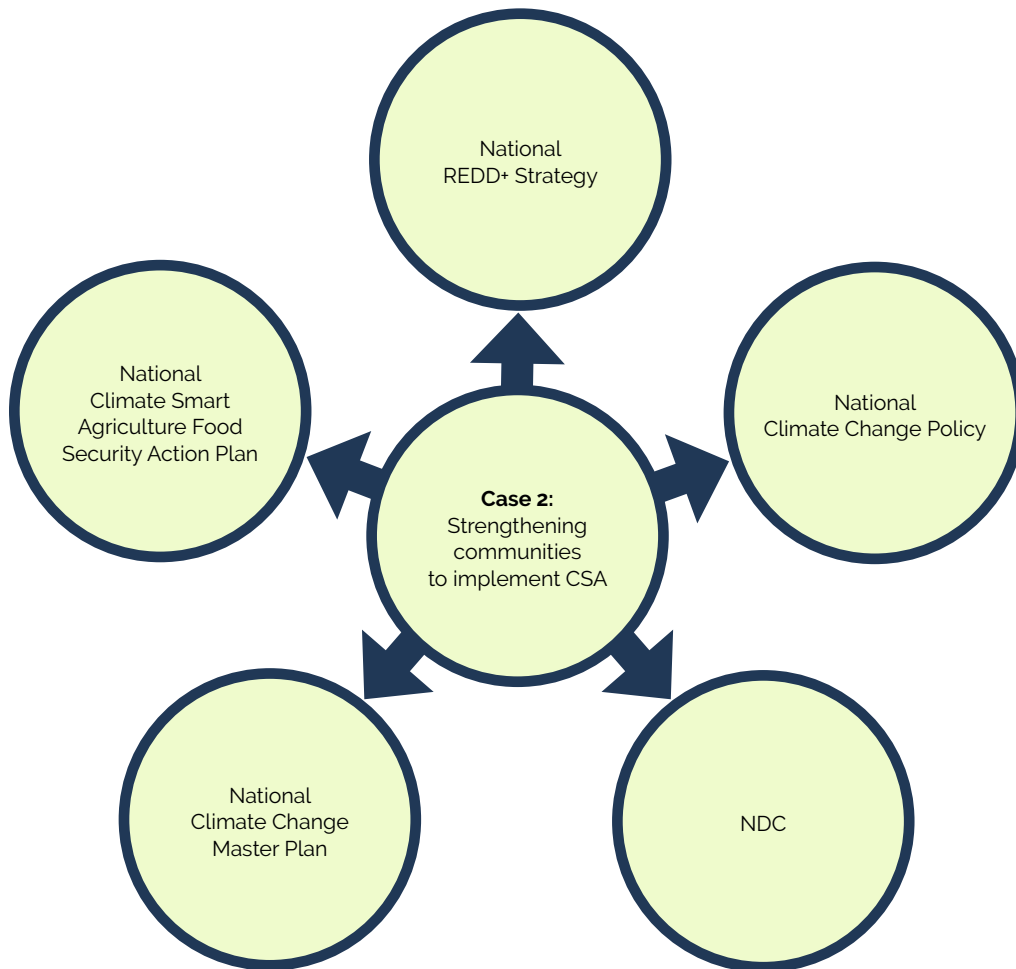
- **Soil erosion control:** The implementation of climate-smart agricultural practices, such as conservation agriculture, minimal tillage and agroecology, helps in controlling soil erosion.
- **Shade and shelter for livestock:** The emphasis on the presence of trees in the agricultural landscapes provides shade for livestock and enhances biodiversity by providing habitats for birds, insects and other wildlife.
- **Potential enhanced carbon sequestration:** Climate-smart agricultural practices have the potential to enhance carbon sequestration. This co-benefit contributes to climate change mitigation efforts and supports the overall goal of achieving carbon neutrality.

- Social benefits: For example, better information on climate change increased community cohesion and empowerment through the establishment of community-based organisations and the sharing of knowledge and resources.

**Connection/alignment to NDCs/national policies, strategies and actions**

These LLA practices align with the national policies, strategies and actions in several ways. The main policies and strategies are the updated NDCs, the National Adaptation Policy Framework, the NCCP, the National REDD+ Strategy and the National Climate Smart Agriculture Food Security Action Plan (Figure 11).

**Figure 11: Alignment between Case II and national policies and strategies**



Source: Authors (2023)

## ***Lessons learned and best practices***

Various lessons and best practices can be drawn from this case study:

- The case study demonstrated that projects with active involvement and support from community leaders can enable communities to better adapt to climate change. When community leaders are engaged and committed to the project, they can mobilise resources, promote participation and advocate for the project's sustainability.
- Bringing community members together in a project setting facilitates the sharing of ideas and resources. This collaboration fosters a sense of ownership and collective responsibility, leading to more effective implementation and better outcomes for everyone involved.
- The case study highlighted some of the contributions that LLA practices can make to building community resilience to climate change impacts. By empowering communities to identify and implement climate-smart agriculture practices that are tailored to their specific needs and contexts, the communities were better able to address the challenges they face and enhance their ability to adapt.
- The study found that the promotion, adoption and practise of climate-smart agriculture practices had several benefits. These practices improved agricultural productivity and resilience to climate variability, and increased income levels for farmers. By adopting sustainable farming techniques, farmers were able to optimise their resources, reduce risks and improve their overall livelihoods.

## ***Limitations and challenges***

The limitations and challenges associated with the initiative include:

- Limited access to resources: Communities' limited access to resources such as credit/finance, technology and infrastructure needed to implement climate-smart agricultural practices hinders their ability to adopt these practices effectively. Moreover, knowledge about the benefits, implementation techniques and available support systems for climate-smart agriculture is still limited, though it is growing. Capacity-building and awareness-raising efforts are necessary to bridge these knowledge gaps.
- Inadequate institutional support from government agencies, local authorities and extension services can hinder the adoption of climate-smart agricultural practices.
- Limited market access, weak value chains and inadequate infrastructure can impede the adoption of climate-smart agricultural practices. Inadequate storage facilities, transportation networks and market linkages can restrict farmers' abilities to benefit from improved agricultural practices and limit their income-generating potential.
- Gender inequalities, cultural norms and power dynamics hindered women's participation and decision making in agricultural activities.
- Difficulty in getting opinion leaders to understand the importance of the initiative to add their voices in encouraging their community members to fully participate.

**Box 5: Challenges and limitations in case study 2**

**FGD participant:** One negative impact that always brings us down in this project is water problem. Even the water cans are not many. We are using solar here, you will get here in the evening and the water will stop.

***Entry points and opportunities***

There are several entry points and opportunities for policy makers, investors and funding agencies to strengthen the grassroots communities in employing climate-smart agricultural practices. These include:

- **Policy support:** Policy makers can integrate LLA into climate decisions and create an enabling policy environment that promotes and supports climate-smart agriculture. This can include developing policies that incentivise the adoption of climate-smart practices.
- **Financial investments:** Investors and funding agencies can provide financial resources to support climate-smart agriculture initiatives at the grassroots level. This can involve funding for training and capacity building, access to climate-resilient inputs and technologies, and investment in infrastructure such as irrigation systems or post-harvest facilities. Financial investments can help farmers and communities overcome barriers and implement climate-smart practices effectively.
- **Knowledge transfer and technical assistance:** Investors and funding agencies can support knowledge transfer and technical assistance programmes to build the capacity of grassroots communities. This can involve providing training on climate-smart agricultural practices, sustainable farming techniques and climate risk management. Technical assistance can help communities adopt innovative approaches, access relevant information and improve their agricultural productivity and resilience.
- **Partnership and collaboration:** Collaborative efforts between policy makers, investors, funding agencies and grassroots communities are crucial. By forging partnerships with local organisations, farmer cooperatives and community-based groups, stakeholders can jointly design and implement climate-smart agriculture projects. This collaboration can leverage diverse expertise, resources and networks to ensure the success and sustainability of initiatives.



## Case study 3: Community-based disaster risk reduction to respond to coastal erosion in Keta

### Case introduction and context

There is mounting evidence across the 550 kilometre coastal line of Ghana that rising sea levels exacerbated by the impacts of climate change are swallowing some coastal-fringe communities at an astonishing rate.<sup>32</sup> For example, on 5 November 2021, tidal waves swept through the shores of the Volta Region, leaving thousands of homes submerged. Along the coast, once thriving fishing communities are becoming unreachable or even being submerged because of rising sea levels.

The Keta Municipality and Anloga district are two districts particularly exposed to these impacts. According to a 2021 projection of the Ghana Statistical Service, the population of the Keta Municipality is estimated to be 167,800 and that of the Anloga district is 94,895.<sup>33</sup> The municipality and the district are predominantly rural, with only about 17.4% of the population living in urban areas. Fishing is the main economic activity in the coastal region, with the municipality and the district being among the major fishing communities in Ghana. Both artisanal and industrial fishing are practised in the areas. Agriculture is also an important economic activity here, with crops such as cassava, maize and vegetables being cultivated. There is also a small-scale mining sector that mainly focuses on salt and sand. The coastal regions of Keta and Anloga have a tropical climate characterised by two seasons: the wet season (April to October) and the dry season (November to March). The region experiences high temperatures throughout the year, with average temperatures ranging between 26°C and 32°C. The region experiences high humidity levels, particularly during the wet season, with average humidity levels of about 80%. Due to its low elevation, the region is prone to flooding, particularly during the wet season.

The people of Keta are experiencing the devastating impact of climate change, with fishers being one of the most vulnerable groups. Coastal erosion, which is worsened by climate change, is a particular threat to their livelihoods. Given these conditions, a deep dive was carried out across seven communities in the Keta and Anloga districts to understand the nature of practices, initiatives and strategies that communities are employing to adapt to the climatic impacts of coastal erosion. The communities engaged were: Fuveme, Dzita, Anyanui, Salakope, Adina, Agavedzi and Blekusu. The study highlights the locally led initiatives undertaken by these communities to reduce their vulnerability to the impacts of climate change and enhance their resilience.

### Motivation

The findings show that local communities are motivated by a mix of economic, social and behavioural factors, including:

- the need for protection of homes and livelihoods from the impacts of erosion and other climate-change-related risks;
- asserting agency and control over their own futures by working together to build resilience and adapt to ongoing climate change impacts;
- LLA practices were also seen as a way to enhance the resilience of the community in the face of climate change impacts;

- these adaptation actions were also motivated by government inaction on the issue of coastal erosion;
- the need to enhance livelihood sources, improve income levels, improve fishing activities and minimise the destruction of properties.

#### **Box 6: Respondent statements**

'We know that climate change is affecting our community, and we need to adapt to survive. These measures help us to try to build our resilience to ensure that our community can continue to thrive'

'The government has been slow to act on coastal erosion, so we had to take matters into our own hands. We cannot wait for the government to solve our problems for us'

### ***Practices and strategies***

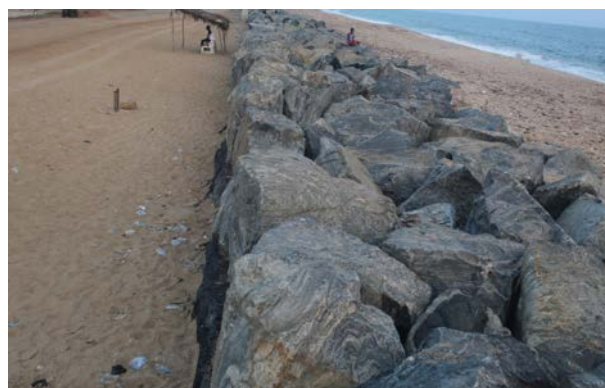
In response to the impacts of coastal erosion, communities have taken several measures and empowered themselves with knowledge of adaptive practices that will enable them to reduce their vulnerability and enhance their resilience to coastal erosion. These initiatives involve strategies such as:

- community engagement and general awareness programmes that enhance the community's understanding of coastal hazards and the importance of preparedness;
- creation of water passages (dual canals) which limit the extent of vulnerability that often accompanies sea erosion;
- application of community-led monitoring of the sea and traditional ecological knowledge, passed down through oral tradition, to provide early warning messages on impending coastal erosion to residents. These practices include observations of sea level rise and storm surges, changes in vegetation patterns such as changes in the growth or density of mangroves, changes in the colour and texture of sand and changes in fish behaviour;
- establishment of community-based early warning systems to alert residents about impending coastal hazards, so that they can be evacuated rapidly and the loss of life minimised;
- implementing nature-based solutions such as mangrove restoration and beach nourishment;
- sandbags and building of gabions and boulder revetments to prevent erosion;
- relocation/resettlement as a last-resort adaptation response.

Plate 4: Local adaptation practices in Keta



Mangrove



Gabions and boulder revetments



Use of sandbags and stones for pavement



Source: Authors

**Box 7: Experiences on various adaptation practices**

**Respondent, Blekusu:** We recognised the importance of mangroves in protecting our coastline and decided to take action. We initiated a project to restore and plant mangrove seedlings along our shores. The mangroves act as a natural barrier, reducing the impact of waves and erosion. However, we observed over time that the mangroves have limits and so it may have to be used with other practices.

**Respondent, Adina:** Awareness-raising campaigns have played a crucial role in mobilising our community to take action against coastal erosion. These campaigns have educated us about the causes and impacts of erosion and the importance of implementing adaptation practices. They have empowered us with knowledge and instilled a sense of ownership and responsibility for protecting our environment.

### ***Co-benefits of the action/project***

Interviews and engagement with stakeholders revealed two main co-benefits that can be associated with the adaptation practices. These are:

- The use of nature-based solutions, such as the planting of mangroves and the restoration of wetlands, has helped to enhance biodiversity and ecosystem services in the Keta-Ada coastal stretch area. The mangroves also help to protect homes from erosion and storm surges.
- The LLA practices have contributed to increased social cohesion and community empowerment. By working together to implement adaptation measures, communities have strengthened their social networks and built a sense of collective ownership and responsibility. These co-benefits demonstrate some potentials of the various adaptation practices to contribute to sustainable development and to improve the well-being of local communities.

### ***Lessons learned and best practices***

Various lessons learned and best practices drawn from this case study include:

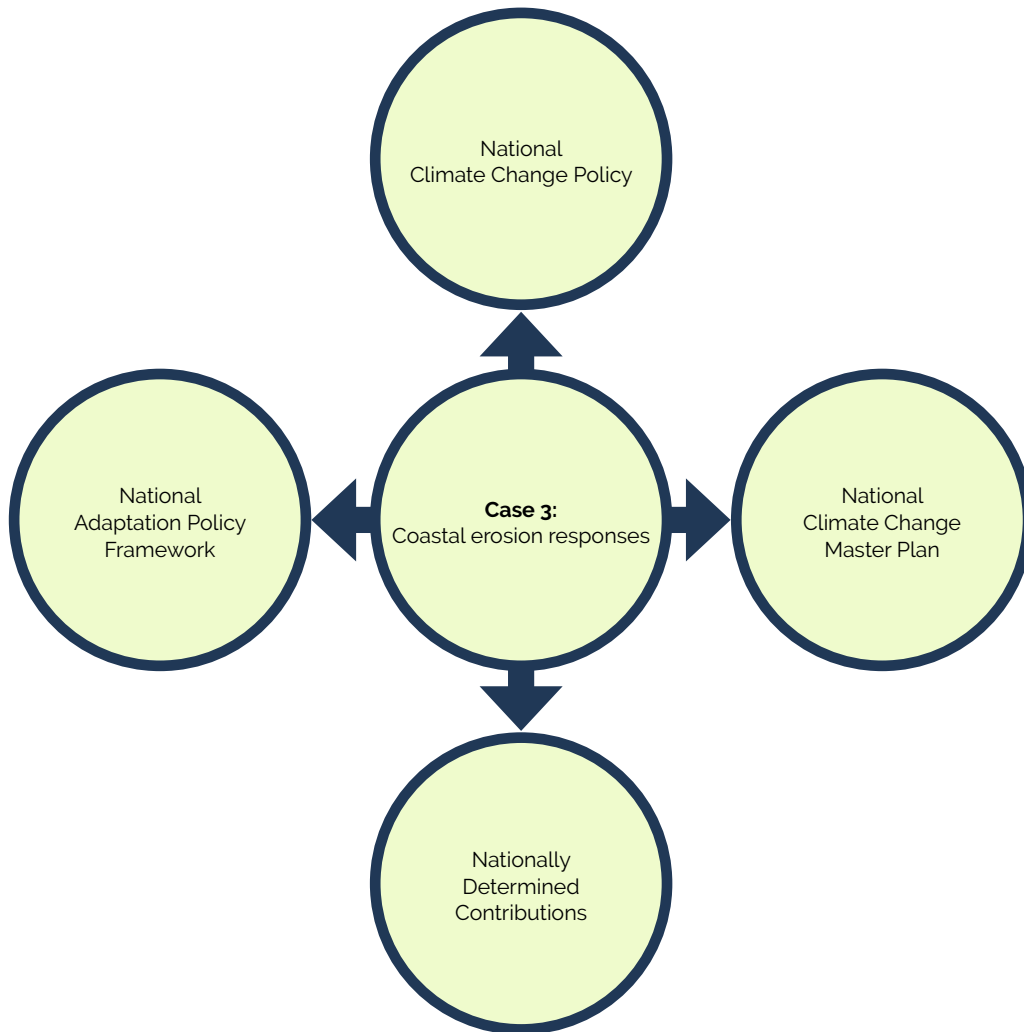
- Community ownership and participation are critical to the success of LLA strategies.
- Holistic approaches that integrate ecological, social and economic dimensions of coastal erosion and adaptation are necessary to ensure the sustainability of local adaptation measures.
- Effective stakeholder engagement and collaboration can promote the development of locally appropriate and effective adaptation strategies.
- Incorporating indigenous knowledge and traditional practices can enhance the effectiveness of coastal erosion response efforts. The local communities showed valuable insights and techniques for managing coastal areas that have been passed down through generations. Integrating these practices with modern scientific approaches can lead to more sustainable and context-specific solutions.
- Building the capacity of local communities in disaster risk reduction and climate change adaptation is vital. Training programmes and awareness campaigns on coastal erosion, its impacts and appropriate response strategies empower community members to make informed decisions and take proactive measures.
- Promoting sustainable livelihood diversification initiatives can reduce the dependency of coastal communities on vulnerable sectors. Encouraging alternative income-generating activities and providing support for entrepreneurship and skills development can enhance community resilience and reduce vulnerability to coastal erosion.

### ***Connection/alignment to NDCs/national policies, strategies and actions***

These LLA practices are well aligned with the national policies, strategies and actions in several ways (Figure 12). The key policies and strategies that support these practices include the NCCP, the NCCAS of 2012, the NDCs of 2015, the National Climate Change Master Plan Action Programmes for

Implementation (2015–2020) and the National Adaptation Policy Framework of 2018. These policy frameworks provide a comprehensive and coordinated approach to climate change adaptation, ensuring that local initiatives align with national priorities and objectives. The Ghanaian government is quite fixated presently on building costly sea defence walls as the most effective approach to dealing with the coastal floods. While such hard engineering pathways play an important role, the integration of locally led practices into national policies could strengthen the overall resilience and adaptive capacity of Ghana to address the challenges posed by climate change.

**Figure 12: Alignment between Case 3 and national policies and strategies**



*Source: Author's Construct*

### **Entry points and opportunities**

There are several entry points and opportunities for policy makers, investors, funding agencies and local government to strengthen the adaptation actions of coastal communities in responding to coastal erosion. These include:

- Policy and regulatory frameworks: Policy makers and local government can develop policies and regulations to address coastal erosion. This may include implementing coastal management plans and building codes that consider erosion risks and promote resilient infrastructure and land use practices.

- **Financial support:** Investors and funding agencies can provide financial resources to support adaptation actions in coastal communities. This can involve funding the construction of coastal protection infrastructure as well as supporting nature-based solutions like beach nourishment and mangrove conservation. Financial support can also be directed towards capacity building and training for communities to implement adaptation measures effectively.
- **Community engagement and participation:** Engaging and involving coastal communities in decision-making processes is crucial. Policy makers and local government can create platforms for community participation, ensuring that local knowledge and perspectives are incorporated into adaptation planning. This can foster a sense of ownership and empower communities to take action in response to coastal erosion.
- **Technical expertise and knowledge exchange:** Investors, funding agencies and policy makers can facilitate the transfer of technical expertise and knowledge exchange between experts, researchers and coastal communities. This can include providing access to scientific research, best practices and innovative technologies for coastal erosion management. Capacity-building programmes and workshops can also be organised to enhance local skills in coastal engineering, monitoring and adaptation planning.
- **Integrated coastal management:** Taking an integrated approach to coastal management is essential. Policy makers, local government, investors and funding agencies can support coordinated efforts among different sectors, such as coastal planning, land use management, fisheries, tourism and infrastructure development. This holistic approach ensures that adaptation actions are aligned, minimise conflicts and optimise outcomes for coastal communities.
- **Collaboration and partnerships:** Collaboration between various stakeholders is crucial for effective coastal adaptation. Policy makers, investors, funding agencies and local government can foster partnerships with research institutions, NGOs, community-based organisations and private sector entities. Such collaborations can leverage expertise, resources and funding to implement comprehensive adaptation strategies and projects.

### ***Limitations and challenges***

The various challenges are as follows:

- **Limited access to financial resources:** Many households in the study areas complained of a lack of financial resources needed to implement effective adaptation measures. The various leadership of the study communities also highlighted the inability of communities to mobilise adequate funds or source external funding support, constraining the kind of investments the communities can make into adaptation practices.
- **Limited institutional support, especially from the local authorities and the central government:** Here, stakeholders reported that efforts from the District Assemblies to support the adaptation responses are limited, and much of the government's focus has been on building sea defence walls, which has hindered investments into alternative means that could equally support local adaptation practices.
- **Households argue that the coastal erosion and sea level rise are uncertain and unpredictable,** which makes it difficult for households to plan and implement effective adaptation measures.

- Communities continue to experience destruction of trees (coconut trees) and mangroves along the coast.
- Limited livelihood options available to the residents: The interviews and stakeholder engagement showed that the coastal erosion and sea level rise have had significant negative impacts on fishing stocks, the mainstay of coastal communities. Some respondents further noted that some fish species were moving deeper into the sea due to pollution. This has made it more difficult to sustain livelihoods.
- Non-adherence to by-laws developed and implemented by the community against sand winning and other practices that exacerbate the impact of coastal erosion on the people.<sup>34</sup>

**Box 8: Respondent statement**

'We don't know what will happen next year or the year after. It's hard to plan for the future when we don't know what to expect' (Kil, Male, Salakope).

## Synthesis, analysis and summary of key messages emerging from the case studies

Due to a combination of factors such as erratic rainfall, floods and droughts, the impacts of climate change were evident and experienced by local communities across all the case study sites. For example, in the Northern ecological zone, climate change impacts such as unpredictable rainfall patterns, prolonged droughts and water scarcity have led to crop failures and loss of livestock, leaving communities vulnerable to food insecurity and poverty. The communities continue to face threats to their livelihoods as well as constrained productive capacity and loss of income. These impacts provide an opportunity and a strong entry point for Ghana to deepen its effort to reduce vulnerability and build community resilience and adaptive capacity to support life and livelihood needs and environmental protection efforts.

The LLA practices in Northern Ghana highlight the importance of community-based approaches, particularly those involving women, in building resilience and adapting to the changing climate. Similarly, in the Upper East, climate-smart agriculture practices in response to climate change impacts have shown the potential for sustainable farming methods to improve agricultural productivity, while also promoting climate adaptation and mitigation. For example, as the impacts of climate change on the frequency and intensity of floods in Aboabo have become increasingly evident in recent years, communities have responded through the adoption of LLA practices and early warning systems to reduce the vulnerability of slum households to floods.

In the Keta-Ada coastal stretch of Southern Ghana, climate change is exacerbating the rate of coastal erosion by causing sea level rise and increasing the frequency and intensity of storms and other weather events, leading to loss of income, food insecurity, displacement and contaminated water sources for fishers. Beyond the need to adapt to climate impacts, the research further revealed various economic, socio-cultural and behavioural motivations for LLA, such as the need to ensure food security, reduce poverty, protect lives and property, and sustain livelihoods. Additionally, local communities are motivated by a sense of ownership, self-determination and pride in taking action to address the impacts of climate change and protect their lives and livelihoods.

However, these LLA initiatives face challenges such as: lack of technical knowledge and inadequate access to credit; lack of financial resources and limited access to markets; limited resources for maintenance and operation, especially for early warning systems; and lack of institutional support, which hinders the success, effectiveness and scaling up of adaptation strategies and practices.

Insights from these cases reveal several lessons for Ghana's adaptation actions. The first relates to the importance of community engagement and participation in pursuing LLA strategies. In all three cases, community participation and engagement were crucial in developing and implementing LLA practices.

Second, the three cases also bring to the fore the importance of local knowledge and traditional practices. For example, in implementing the VSLA and organic shea processing project, the community's expertise in shea processing and the value of their indigenous knowledge in producing high-quality organic shea products was recognised. Additionally, the community's knowledge of local markets and traditional marketing strategies was utilised to promote the organic shea products.

Moreover, the local fishermen and community members continue to share their traditional knowledge of coastal erosion patterns, the behaviour of tides and the movement of sand along the shoreline. Traditional practices such as sand filling and the construction of fences were combined with modern engineering techniques (e.g. sea defence walls) to create coastal defences. In the Upper East region, community members shared their indigenous knowledge of crop varieties that are resilient to drought, and further identified local plant species and traditional farming practices such as intercropping techniques to enhance soil fertility, prevent erosion and improve water retention. Thus, local knowledge and traditional practices played a critical role in developing and implementing LLA practices. Communities were able to draw on their knowledge of the local environment and their experiences in dealing with climate variability and change to develop appropriate adaptation solutions that helped them to strengthen their resilience to the impacts of climate change.

A third lesson from the deep dive cases involves the role and importance of multi-stakeholder partnerships. It emerges from the cases that partnerships between communities, local government, NGOs and other stakeholders could provide a better, healthier framework to help build capacity and leverage expertise to develop effective and sustainable adaptation solutions.

A fourth lesson that emerges from the cases is that LLA practices were most effective when they were flexible and adaptable. This allowed communities to adjust their strategies in response to changing circumstances and available resources, and to learn from their experiences. In all three cases, the project team continuously engaged with the community through regular feedback sessions and meetings to gather insights and assess the effectiveness of the project interventions. This enabled them to make necessary adjustments to address emerging issues, such as providing additional training on quality control or exploring new market opportunities for organic shea products. In Kassena-Nankana, for example, the project team recognised that different farming households had varying levels of resources, knowledge and capacity to adopt climate-smart practices, which informed further training and capacity-building efforts to tailor the interventions to their individual contexts.

Fifth, the evidence reveals that financing and resource mobilisation were critical for the successful implementation of LLA practices in each of the cases. Communities often lacked the financial resources to implement their adaptation strategies, and so external funding and resource mobilisation were necessary.

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Finally, the cases reveal that knowledge sharing and learning were essential for the successful implementation of LLA practices. Communities were able to learn from each other and share their experiences, which helped to build capacity and improve the effectiveness of adaptation strategies.

### ***Emerging messages from case studies***

First, there is a growing need for climate adaptation action at the local and community level. As the cases have shown, climate change impacts are place- and context-specific. Thus, to inform the development of appropriate responses to climate change, it is important that the unique attributes of places are carefully evaluated, understood and considered in the design of both policies and implementation strategies.

Second, community adaptation practices provide a bedrock for further support. For this, there is an opportunity in the government's recent effort to promote district-specific vulnerability assessments. This remains an essential step that will help uncover a district-specific place-based understanding of the vulnerabilities and impacts of climate change. It will also be an entry point for identifying measures to build and strengthen communities' resilience and adaptive capacities.

Overall, insights from the case studies demonstrate that locally led climate adaptation is important because it empowers local communities to influence adaptation efforts. Ghana's adaptation effort should therefore intentionally build on community efforts, entrusting finances and delegating authority and power to local communities to use resources to protect themselves and build resilience. Allowing local actors to lead climate adaptation efforts is not only beneficial in environmental terms but can also deliver effective, democratic, equitable and context-relevant solutions.

## **SECTION FOUR**

General analysis  
and discussion

## What constitutes LLA?

LLA implies 'climate adaptation in which local communities, community-based organisations, citizen groups, local government and local private sector entities at the lowest administrative structure are included as decision makers in the interventions that affect them'.<sup>35</sup> Such an approach is focused on ensuring that local people have individual and collective agency over the adaptation process.<sup>36</sup> LLA further seeks to empower local stakeholders and gives communities on the frontline of climate impacts a voice in decisions that directly affect their lives and livelihoods. LLA involves working closely with local communities to understand their needs and priorities, and to co-design adaptation measures that are appropriate and effective in their specific context.

Globally, interest in LLA is growing. This is because the strategy offers a new framework for international and national actors to support adaptation processes: it links global and national actors and sources of finance with sub-national actors and structures that can take charge of delivering adaptation initiatives based on the needs, priorities and expectations of local people. Such close proximity to local stakeholders enables policy makers to access knowledge about exposure and sensitivity to climate risks and to inform the design of targeted strategies that better respond to community needs.<sup>37</sup> Policy makers and stakeholders facilitating climate adaptation actions are increasingly encouraged to go beyond traditional stakeholder engagement with local communities and ensure that local actors have agency over adaptation and development paths.<sup>38</sup> It is argued that this promotes democratic, equitable and context-specific solutions that better respond to local needs.<sup>39</sup> LLA therefore emphasises a type of adaptation approach that ensures that local people have individual and collective agency over the adaptation process. Such an approach is driven by local communities, considering their leadership, needs, knowledge and priorities. These strategies, pursued in response to climate change, involve the active participation of community members in identifying, designing, planning and implementing measures to adapt to the impacts of climate change. Long before LLA began to gain traction, communities were already responding and initiating interventions to tackle the impacts of climate change, although many of these remain outside the mainstream literature.

## LLA in Ghana

In Ghana, stakeholders in climate action, including government agencies, local representatives, development practitioners and the research community, share a common vision of adaptation that should moderate or avoid harm and exploit beneficial opportunities. Stakeholders engaged further emphasise three central goals of adaptation: i) increase the adaptive capacity of people and communities so that they can adjust to climate change, respond effectively to changing stresses and shocks and manage or reduce risk;<sup>40</sup> ii) increase resilience to enable people and communities to bounce back after experiencing shocks; and iii) reduce vulnerability to external threats such as floods or droughts.<sup>41</sup> Stakeholders further converge on the need for adaptation actions to give prominence to local needs, strategies and actions.

Ghana has opportunities to enhance its climate change policies and actions. As the various policy documents recognise, local communities are the epicentre of climate impacts, experiencing first-hand the adverse effects of changing weather patterns, sea level rise and environmental degradation. As such, positioning these communities at the forefront of adaptation and resilience-building efforts is crucial for effective and sustained actions.

By embracing a locally led approach, Ghana can tap into the wealth of local knowledge, resources and community networks that exist within these communities. This approach recognises that community members are best positioned to understand their vulnerabilities, adapt to local conditions and develop context-specific solutions that address their unique challenges. Empowering local communities in Ghana to take the lead in adaptation and resilience building ensures that interventions are aligned with their needs, priorities and aspirations. It fosters ownership, participation and buy-in, leading to more sustainable and impactful outcomes. Moreover, local communities have deep-rooted connections to their environment and possess traditional knowledge that can inform adaptation strategies and practices. To fully embrace this approach, it is essential to create an enabling policy and institutional framework that supports and promotes LLA. This includes providing financial resources, technical support and capacity-building opportunities to communities, while also fostering partnerships and collaboration between government agencies, CSOs and local communities. By positioning local communities as the epicentre of climate impact and LLA, Ghana can harness the resilience, creativity and innovation that exists within these communities. This approach not only builds climate resilience but also enhances community well-being, fosters social cohesion and contributes to the sustainable development of Ghana as a whole.

Findings from this research further reveal that LLA strategies exhibit unique characteristics, vulnerability-reducing actions and resilience-enhancing strategies and delivery mechanisms that can be distinguished from the traditional business-as-usual approaches (see Figure 13). In view of the insights from the deep dives, LLA in Ghana can be defined as a process of climate change adaptation that is initiated, owned and controlled by local stakeholders, and one that is based on the principle that local communities are best placed to understand the challenges they face and to develop solutions that are appropriate to their needs. The word 'local' in LLA emphasises the importance of community participation, ownership and empowerment in developing and implementing adaptation strategies.

In terms of characteristics, the study showed, firstly, that LLAs are place-based and context-specific, which implies that they are tailored to the specific needs and circumstances of the community in question. This can include factors such as geographic location, livelihoods and social and cultural norms.

Secondly, LLA practices are participatory, meaning that community members are actively involved in the planning and implementation of the adaptation measures, and that interventions are intentionally aimed at impacting positively on the communities. Critical to the departure of LLA from cognate concepts such as community-based adaptation or community-driven development, is its intention to go beyond just integrating views of communities in decision making by taking active steps to put local communities in a leadership position within the process of adaptation over the long term.

Thirdly, LLA strategies often involve a range of different combinations of measures, rather than relying on a single solution. These can include diversifying livelihoods, implementing new agricultural practices, improving water management and strengthening social safety nets.

Fourthly, local strategies often involve the use of traditional knowledge and practices, which can be critical in ensuring that the measures are appropriate and effective. LLA strategies also often prioritise the most vulnerable members of the community, such as women, children and the elderly. These include measures such as improving food security and strengthening social networks and community resilience.

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## Strategies for LLA

- **Strengthening local knowledge and institutions:** LLA strategies often begin with strengthening the knowledge and capacity of local communities and institutions to understand and address the impacts of climate change. This is critical since local actors may not fully comprehend the breadth of climate risks and may encounter difficulties in accessing and handling adaptation funding. Strengthening local knowledge may involve building the capacity of local organisations, traditional leaders and other community members to develop and implement adaptation strategies that are based on their own needs and priorities. It also includes patient institutional support to communities over long timeframes.
- **Enhancing natural resource management:** Many LLA strategies involve enhancing the management of natural resources such as land, water, forests and biodiversity to improve the resilience of local communities to the impacts of climate change. This may involve activities such as reforestation, sustainable agriculture and the protection of natural habitats.
- **Developing climate-resilient infrastructure:** LLA strategies may involve the development of infrastructure that is resilient to the impacts of climate change, such as flood-resistant housing, water supply systems and transportation infrastructure.
- **Promoting sustainable livelihoods:** LLA strategies may focus on promoting sustainable livelihoods that are resilient to the impacts of climate change. This may involve diversifying livelihoods, promoting alternative income-generating activities and supporting the development of local markets and value chains.
- **Improving early warning and response systems:** LLA strategies may involve improving early warning and response systems that can help communities to prepare for and respond to the impacts of climate change. This may involve the development of community-based early warning systems, the establishment of emergency response teams and the provision of training and equipment for disaster response.
- **Local adaptation planning:** This involves a community-driven process to identify and prioritise their vulnerabilities to climate change impacts, as well as the development of specific adaptation actions to address those vulnerabilities. LLA strategies involve developing a local adaptation plan, a process led by the community members themselves with support and guidance from relevant stakeholders, such as local government officials, NGOs and technical experts. This ensures that the adaptation actions identified in the plan are context-specific and take into account the unique social, cultural, economic and environmental conditions of the community.
- **Options for deploying LLA on the ground:** LLA might be best supported by government-led national financing mechanisms, whereas mechanisms that rely on CSOs or constituent-based organisations might be more appropriate in fragile contexts. Thus, although LLA can take many forms, in summary it involves giving prominence to: local participation (active participation of local stakeholders in all stages of the adaptation process); local knowledge (drawing on local knowledge and understanding of the climate and its impacts); local resources (leveraging local resources and strategies to reduce the cost of adaptation); and local institutions (building on existing local institutions, such as community-based organisations and governments, to implement and sustain adaptation solutions).

**Figure 13: Summary of unique characteristics of LLA actions, strategies and delivery mechanisms in Ghana**

Characteristics	Adaptation actions and strategies	Structures and Delivery mechanisms
Place-based and Context-specific	Strengthening local knowledge and institutions	Local government planning systems
Recognizes the agency and leadership of local actors	Enhancing natural resource management	Communities self-initiated projects
Participatory and impactful for communities	Developing climate-resilient infrastructure	Grants and funding mechanisms
Combine different measures	Promoting sustainable livelihoods	CSOs/Network-based organisations-facilitated actions
Build on local knowledge	Improving early warning and response systems	Public-led projects
Build on local capacities and practices	Local adaptation planning	Consortium of public, private and NGOs
	Increasing access to credits and finance	

Source: Authors (2023)

## Alignment and coherence of NDCs and national policies and local adaptation actions, practices and strategies

As a signatory to the Paris Agreement, Ghana has developed and communicated its NDCs to mitigate greenhouse gas emissions and adapt to climate change. They outline the climate action targets and policies the country plans to implement to address climate change. The NDCs provide an opportunity to align and incorporate LLA practices to address the challenges of climate change. This research has revealed an appreciable level of alignment and coherence of Ghana's NDCs with national policies and local adaptation actions, practices and strategies.

First, the NCCP serves as the overarching framework for climate change action in the country. The NCCP aims to mainstream climate change considerations into development planning and establish institutional frameworks for climate change action. Ghana's NDCs are aligned with the NCCP, with the NDCs explicitly referencing the NCCP and stating that they will be implemented in accordance with the policy. The various adaptation practices also align with policies such as the Climate Change Master Plan, the Climate-Smart Agriculture Investment Plan and the national REDD+ Strategy.

The various adaptation practices gathered during this research have strong alignment with the NDC and the NCCP. Ghana is also taking steps to integrate climate change considerations into sectoral policies and planning processes, for example through the National Health Policy and the Agricultural Investment Plan. The integration of climate change considerations into sectoral policies helps to ensure that climate change is addressed in a coordinated manner, with the necessary resources and institutional frameworks in place to achieve the goals set out in the NDCs.

However, despite the alignment between Ghana's NDCs and national policies, there are some challenges to achieving coherence between NDCs and local adaptation actions, practices and strategies. One major challenge is the limited resources available at the local level to implement adaptation actions. Local assemblies and communities often lack the technical and financial resources to implement adaptation actions effectively. This can result in adaptation actions that do not sufficiently empower communities to tackle climate change in line with national priorities and may not have the desired impact on climate change. Another challenge is the lack of coordination and communication between different levels of governance. This can result in fragmented approaches to addressing climate change, where national policies are not aligned with local adaptation actions, practices and strategies. This can also lead to the duplication of efforts and the inefficient use of resources.

## Importance of LLA to national/international climate actions

Findings emerging from this research show that LLA is crucial to international climate change actions as it recognises the need to involve local communities and their knowledge, needs and aspirations in the development and implementation of climate change adaptation policies and strategies. It acknowledges that local communities are often the most vulnerable to climate change impacts and that they therefore possess valuable knowledge and experience of their local environment. Moreover, LLA ensures that adaptation strategies are tailored to the specific needs of local communities and are culturally appropriate, socially acceptable and economically feasible.

Thus, LLA is crucial to the current debates and discussions on international climate change actions because it provides an entry point for empowering local communities to take ownership of their adaptation strategies and become active participants in climate change actions. LLA also fosters community ownership and empowerment, and ensures that the people most affected by climate change have a say in how their communities respond. LLA further recognises that local communities have the best understanding of their environment and are well positioned to identify and implement effective adaptation strategies. LLA actions can therefore enhance the effectiveness of climate change actions by ensuring that adaptation strategies are targeted, needs-responsive and efficient. This approach ensures that the adaptation measures are tailored to the specific needs of local communities, increasing their chances of success. Furthermore, LLA ensures that adaptation strategies are sustainable by aligning them with the social, economic and cultural needs of local communities. This approach increases the likelihood that adaptation measures will be adopted and maintained over the long term. Lastly, LLA stands a better chance to strengthen the resilience of local communities by enabling them to identify and address their vulnerabilities to climate change impacts. This approach helps to build resilience at the local level, which is essential for achieving resilience at the national and international levels.

## Gaps, challenges and barriers

Ghana faces several institutional, governance, technological, socio-economic and financial barriers to implementing its climate change adaptation strategies, priorities and actions. This research has revealed several gaps, challenges and barriers, as outlined below:

- Despite the efforts by the government and other stakeholders to mobilise funding for climate change adaptation, there is still a huge gap in funding. This includes limited access to international climate finance, as well as limited domestic resources for climate change adaptation.
- There is limited institutional support to communities to adapt to climate change. The study showed that the capacity of local institutions to design and implement LLA strategies is a significant challenge, which has been attributed to a lack of technical expertise, inadequate funding and weak institutional structures. Governments and other institutions often have limited local-level interventions and capacity to effectively support LLA, which can hinder the efforts of local communities. This lack of support could hinder the spread of adaptation technologies and actions across the country.
- Effective coordination is critical in ensuring the successful implementation of LLA strategies. However, in Ghana, there is a lack of effective coordination among the different stakeholders involved in climate change adaptation. This lack of coordination has led to duplication of efforts, fragmentation of initiatives and inefficient use of resources.
- Communities are the ultimate beneficiaries of LLA strategies. However, the research recorded limited awareness and participation of communities in the design and implementation of adaptation strategies. This lack of awareness and participation has led to limited ownership of the adaptation projects, which affects their sustainability.
- While there are multiple national, sub-national and sectoral strategies addressing climate change, these structures are not well aligned, resulting in limited coordination.
- Limited capacity and skills among local communities, as well as socio-cultural and economic barriers.

## Opportunities and entry points for strengthening LLA in Ghana

Ghana, like many developing countries, faces numerous challenges and barriers in implementing effective LLA strategies. However, there are also several opportunities that can be harnessed to deepen and enable LLA. By capitalising on these opportunities, policy makers can help to build climate resilience and ensure sustainable development. The case studies reveal that there are significant opportunities for promoting and advancing LLA practices as part of NDC implementation in Ghana:

- Ghana has made some efforts to mainstream climate change adaptation into its national, sectoral and development plans at the national and sub-national levels. The NDC, NCCP, National Adaptation Plan and other policies and strategies outline areas that the country has prioritised for investment to promote adaptation on the ground. These policies and strategies emphasise the importance of community participation and recognise the role of traditional knowledge and practices in adaptation.



- Communities are already actively participating in different actions to adapt to the changing climate and its impact on their lives and livelihoods. Initial results from the three case studies show that local communities are using local knowledge and practices related to their local ecosystems, natural resources and weather patterns to engage in climate-smart agriculture, community-based conservation and land management actions, community-led irrigation systems, energy-efficient cooking stoves, recycling of waste and local home elevation. These diverse strategies provide opportunities for the Ghanaian government to learn from and build consciously on the wealth of local practices to develop and implement adaptation actions in various sectors. Tapping into these opportunities will ensure that local communities' priorities, resources and needs are centred in adaptation policies and implementation efforts across all levels of government. The study also noted that the local communities are developing community-led social institutions and practices to promote collective action and decision making.
- Communities engaged as part of this research showed eagerness to be involved in the planning and implementation of adaptation strategies. Thus, there are opportunities for Ghana's NDC to recognise the agency of communities and effectively engage them to ensure that strategies are appropriate, relevant and effective. Community participation can also help to build trust and enhance social cohesion, which are important factors in resilience-building. The National Adaptation Policy Framework and the recent interest in promoting district-based vulnerability analyses can provide important opportunities for strengthening community participation.
- The availability of local institutions presents further opportunities for advancing LLA in Ghana. Availability of local institutions such as VSLA groups, other informal associations and local by-laws, as well as the presence of community-based organisations and NGOs in several communities, can also facilitate LLA. These institutions can provide technical assistance, mobilise resources and help to build the capacity of local communities. For example, organisations such as MORE Women, ORGIIS and the Keta Ramsar Centre work with communities to train, disseminate and enhance traditional knowledge and practices, supporting LLA.
- Financing is critical to the implementation of LLA-scale farmers and marginalised communities. However, there are opportunities and local practices such as VSLA and microfinance institutions to leverage financing mechanisms to support LLA. Deepening LLA in Ghana would therefore require a combination of several approaches that take into account the unique social, economic and political contexts of the country.
- A key opportunity lies in harnessing the potential of local knowledge and traditional practices. Local communities in Ghana have a wealth of indigenous knowledge and adaptive strategies that have been developed and refined over generations. Integrating this knowledge into adaptation planning and implementation can lead to context-specific and culturally appropriate solutions.
- The availability of international climate finance presents an opportunity to support LLA efforts. Global climate funds and initiatives provide funding for adaptation projects, and Ghana can access these resources to support local communities in implementing adaptation measures. This can include capacity building, infrastructure development, livelihood diversification and other initiatives that enhance local resilience.

- Collaboration and partnerships between different stakeholders are also essential opportunities. By fostering partnerships between government agencies, NGOs, academic institutions and local communities, knowledge sharing, resource mobilisation and joint action can be facilitated. Collaboration can leverage the strengths and expertise of different actors, leading to more integrated and comprehensive adaptation approaches.
- The advancement of technology and innovation can support LLA. Access to climate information, early warning systems and innovative tools can enhance the capacity of local communities to anticipate and respond to climate risks. Technological solutions, such as climate-smart agriculture practices, renewable energy systems and nature-based solutions can contribute to building resilience at the local level.

Seizing these opportunities requires a policy and institutional environment that supports and promotes LLA. It involves providing frameworks, financial resources, capacity-building and knowledge-sharing platforms. Ghana can capitalise on these opportunities to enhance the effectiveness, sustainability and impact of LLA initiatives, ultimately strengthening the resilience of its communities in the face of climate change.

## Importance of the project

Adaptation measures have a higher likelihood of success when tailored to local conditions and needs, as acknowledged by the IPCC.<sup>42</sup> However, in Ghana there is a need for more research to better comprehend the existing national and regional adaptation policies and strategies, as well as their execution at the community level. The current understanding of the drivers, practices, obstacles and limitations linked to community-based adaptation approaches is insufficient. Moreover, despite the existence of various initiatives, there is a lack of documentation on their effectiveness in building adaptive capacity and resilience. Consequently, the success and limitations of climate adaptation initiatives remain poorly understood.

This research project has provided valuable insights into these matters, drawing important lessons and implications for the Ghanaian government and other African nations, as well as other international actors interested in and willing to support Ghana to adapt to the impacts of climate change. The research has also identified the enabling and constraining factors that impact LLA in Ghana. The case studies highlight the importance of projects in accelerating climate change actions. However, more research and resources are needed to examine progress, practices, challenges and opportunities for adaptation at the local level.

## **SECTION FIVE**

Conclusion and  
main messages

This research explored climate change adaptation policies, strategies and local actions in Ghana, West Africa. It highlighted LLA strategies, practices and lessons that can inform and guide the implementation of the NDCs and climate actions in the country.

Although climate change is a global issue, its impacts are experienced locally. However, adaptation initiatives are typically not led by local communities. Local people and organisations that are most affected by climate change are often excluded from decision-making processes that address its impacts, resulting in top-down approaches driven by more powerful actors such as funders, large intermediaries, international organisations and central governments. As a result, smaller, local organisations and communities are unable to access the necessary funding and resources to recover from and build resilience to the effects of climate change. This not only disempowers communities but can also be ineffective. LLA strategies are essential to ensure that the most vulnerable communities are not left behind and have a say in decisions that affect their lives. It is therefore crucial to shift towards locally led approaches to ensure effective and sustainable adaptation to the impacts of climate change.

This research highlights the critical importance of LLA in Ghana as a means of enhancing climate change resilience, reducing vulnerability and promoting sustainable development. While Ghana has made significant progress in developing climate policies, strategies and initiatives, there is a need to enhance the coherence and alignment of these efforts with LLA practices across the different ecological zones of the country. Furthermore, the research identified a range of challenges, barriers and opportunities for promoting LLA in Ghana. These include the need to address institutional and governance challenges, enhance access to financial resources, and leverage the socio-cultural and economic motivations of communities to support LLA efforts.

The research further highlights that greater attention to LLA could strengthen Ghana's climate action by ensuring that such efforts incorporate traditional knowledge, practices and systems which have been developed over generations and have proven to be sustainable. As such, an intentional approach to learning from context-specific vulnerabilities and adaptation responses would help the Ghanaian government to capture innovative and indigenous practices led by communities. These solutions often speak to the needs and priorities of communities and are therefore likely to be more effective and sustainable in meeting life and livelihood needs and building resilient communities. In sum, the research underscores the critical importance of engaging with local communities and promoting their active participation in the design and implementation of climate change policies and strategies. By empowering communities to lead their adaptation efforts, Ghana can develop more effective, inclusive and sustainable climate policies that respond to the needs and priorities of the country's most vulnerable populations.

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The Ghana Climate Innovation Center (GCIC) is a national business incubator in Accra, Ghana. The Center supports Ghanaian entrepreneurs and new ventures involved in developing profitable solutions to climate change mitigation and adaptation. GCIC's vision and values are committed to the transition to a prosperous, inclusive low-carbon economy. The Center is affiliated with Ashesi University. Its mission is to develop and support an exceptional set of transformational ventures and entrepreneurs who are pioneering and adaptive, and mitigating solutions for climate change issues in Ghana. It achieves its aims notably through the School of Sustainable Entrepreneurship, Policy alternatives for a Green Economy (PAGE-GHANA), and STAGE Story Telling.



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