



Government of Ghana

Ghana Goes for Green Growth

National engagement on climate change

Discussion document





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National Climate Change Committee (NCCC)

This document was produced under the guidance of the National Climate Change Committee (NCCC). The NCCC represents the following organisations: Ministry of Environment, Science and Technology; Ministry of Finance and Economic Planning; National Development Planning Commission; Ministry of Food and Agriculture; Ministry of Foreign Affairs; Ministry of Energy; Energy Commission; Ministry of Health; Environmental Protection Agency; Forestry Commission; Centre for Scientific and Industrial Research - Forestry Research Institute of Ghana; Ghana Health Service; National Disaster Management Organisation; Ghana Meteorological Services; Abantu for Development; ENAPT Centre, Conservation International Ghana; Friends of the Earth Ghana; the Dutch Embassy; the UK Department for International Development.

The Ministry of Environment, Science and Technology (MEST)

The Ministry of Environment, Science and Technology (MEST) exists to: establish a strong national scientific and technological base for accelerated sustainable development of the country to enhance the quality of life for all. The overall objective of MEST is to ensure accelerated socio-economic development of the nation through the formulation of sound policies and a regulatory framework to promote the use of appropriate environmentally friendly, scientific and technological practices and techniques.

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Message from the Vice-President

Climate change has been established as a fact by the leading global science institutes, and the time has come for effective policy responses. In the face of rising temperatures, irregular rainfall patterns both in volume and seasons, and more extreme weather patterns, the Government of Ghana is taking action to ensure that climate change does not derail our national progress. We view climate change as a development challenge, giving it the priority and urgency it deserves.

Ghana's progress has been impressive, with our country outperforming many others to reduce hunger by three-quarters between 1990 and 2004. Our country is expected to achieve the first Millennium Development Goal – on poverty and hunger – before the 2015 deadline. Ghana's economy is in transition. We view climate change as a development challenge, and will give it the priority and urgency it deserves. We cannot allow climate change to pull us back. The only way we can go forward, developmentally, is to address its impact and to seize any opportunities it presents.

The Government is calling for immediate action on climate change across the board to ensure that Ghana remains on course to become a middle-income country of an advanced human society by the year 2020. Climate change is being mainstreamed into our key planning processes at national, regional and district levels – and in particular into our Ghana Shared Growth and Development Agenda. There is, however, much to do. That is why we need the full engagement of colleagues from every sector and every group. To this end, we are working to ensure an equitable balance in national development. This is shown by our action on the development gap and differing climate impacts between North and South (under the new Savannah Accelerated Development Authority – SADA).

We are, through a consultative process, developing the National Climate Change Policy Framework (NCCPF). The NCCPF would be broad enough to address the multiple challenges of climate change and ensure a multi-sectoral response across all stakeholders. This discussion paper is a first step, and aims to spark debate on this crucial issue.

This process is another example of the Government's deep commitment to the 'Better Ghana' agenda and we encourage all to join us as we move ahead.

H. E. John Dramani Mahama
Vice-President of the Republic of Ghana
Chair, Environmental and Natural Resource Advisory Council
November 2010

Foreword

Climate change is affecting Ghana's economic output and livelihoods and is a threat to our development prospects.

Ghana's climate is changing as a result of increased global emissions of greenhouse gases, with rising temperatures, erratic rainfall, floods and more weather extremes. While the country's contribution to the causative factors of global climate change has been negligible, the impact on the Ghanaian economy and on its poorest people, and particularly on women and children, is substantial. Currently, our country is once again assailed by floods that have affected thousands of our citizens. The Government of Ghana has made available \$5 million to respond to the urgent food needs of displaced populations.

This is now everybody's business, and all stakeholders need to be part of the response. That is why we are developing a National Climate Change Policy Framework (NCCPF) to ensure a climate resilient and climate compatible economy while achieving sustainable development and equitable low carbon economic growth for Ghana.

The impact of climate change spans so many sectors, from agriculture to forests, and from health to social protection. Its impact on any or all of these poses a serious threat to our progress on the Millennium Development Goals and to our plans to become a middle income country. That is why we need a harmonised and coordinated climate change response.

The NCCPF aims to ensure coherence and synergies across all sectors, backed by a consultative and participatory process to ensure its eventual integration into the main planning processes at national, regional and district levels.

This discussion paper builds on feedback from consultations with key stakeholders that began earlier this year. We invite robust debate on the issues raised in this document to enable government to develop a comprehensive and an exhaustive response to the effects of climate change.

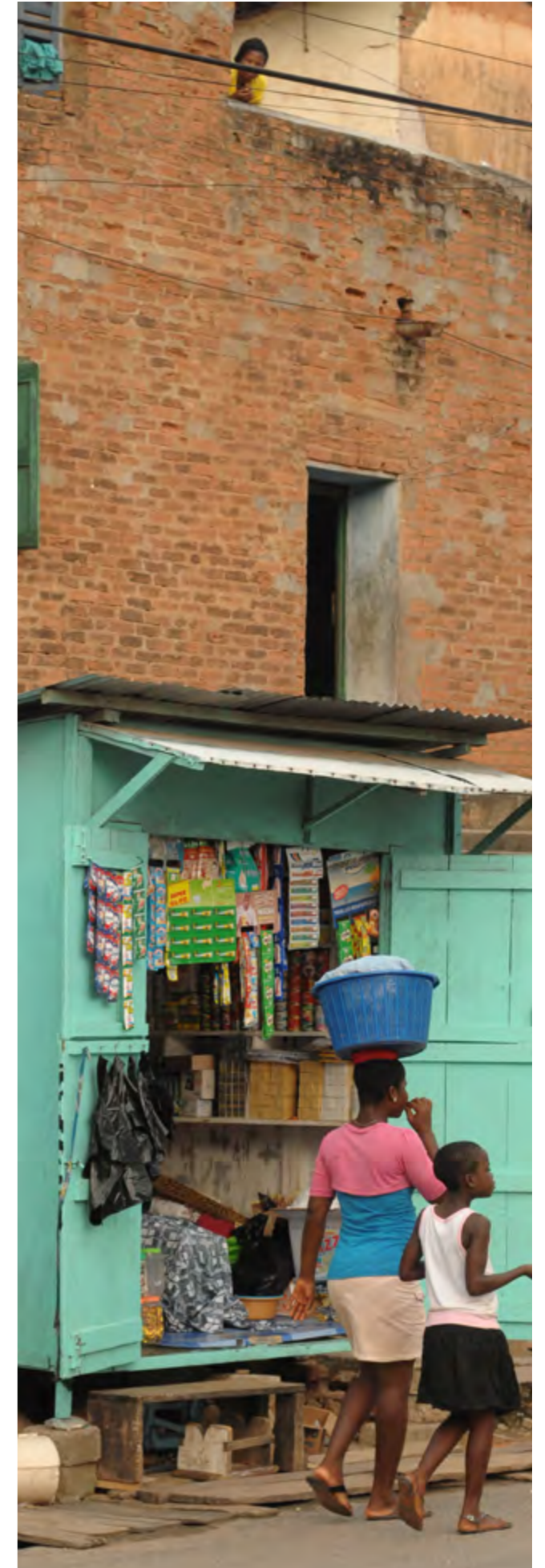
The Ministry and the National Climate Change Committee remain firmly committed to easing the impact of climate change on Ghana's most vulnerable people, while continuing to advance national economic development. We invite all stakeholders, at home and abroad, to support us.

Hon. Sherry Ayithey
Minister of Environment Science Technology
November 2010



List of acronyms

CDM	Clean Development Mechanism
ECOWAS	Economic Community of West African States
ENRAC	Environmental and Natural Resources Advisory Council
GSGDA	Ghana Shared Growth and Development Agenda
GHG	Greenhouse gas
LEAP	Livelihood Empowerment Against Poverty
MEST	Ministry of Environment, Science and Technology
MRV	Monitoring, Reporting and Verification
NADMO	National Disaster Management Organisation
NAMA	Nationally Appropriate Mitigation Action
NCCC	National Climate Change Committee
NCCPF	National Climate Change Policy Framework
REDD	Reducing Emissions from Deforestation and forest Degradation
UNFCCC	United Nations Framework Convention on Climate Change





Government of Ghana

Ghana Goes for Green Growth

Discussion document - Summary

The aim of Ghana's National Climate Change Policy Framework (NCCPF): To ensure a climate resilient and climate compatible economy while achieving sustainable development and equitable low carbon economic growth for Ghana.

Why climate change matters

Climate change is a threat to Ghana's development prospects and to its plans to become a middle income country by 2020. While our own contribution to global climate change has been negligible, the impact of climate change on our economy and on our poorest people is already substantial.

Ghana's developmental progress over recent decades has been exceptional, and we can be proud of our progress towards the Millennium Development Goals (MDGs). We are on track to achieve MDG1 – on poverty and hunger – before the 2015 deadline. It is not surprising that many see Ghana as a West African 'success story' and may be unaware of the very real threat that climate change poses to decades of careful investment in development.



"We cannot allow climate change to pull us back. The only way we can go forward, developmentally, is to address its impact and to seize any opportunities it presents."

H.E. John Dramani Mahama, Vice-President of the Republic of Ghana
Chair, Environmental and Natural Resource Advisory Council

"Climate change is affecting Ghana's economic output and livelihoods and is a threat to our development prospects. This is now everybody's business, and all stakeholders need to be part of the response."

Honourable Sherry Ayittey, Minister of Environment, Science and Technology

Ghana's response to climate change is important, given our good reputation in so many spheres, from poverty reduction to health. We are unusual: an African country that is high-growth and energy-hungry and, at the same time, vulnerable to climate change and its variability. We are at a point of transition in economic terms and in terms of energy, with emerging oil and gas industries. It is important that we grow our economy in the right way. If we do so, it can only enhance our ability to deliver on our development goals.

The Government recognises that climate change affects every sector, and requires a multi-sectoral response. Climate change is already being mainstreamed into all development strategies, including our Ghana Shared Growth and Development Agenda (GSGDA).

We are now developing a National Climate Change Policy Framework (NCCPF) as part of the work plan of the cross-sectoral National Climate Change Committee, hosted by the Ministry of Environment Science and Technology (MEST). The NCCPF has one aim: to ensure a climate resilient and climate compatible economy while achieving sustainable development and equitable low carbon economic growth for Ghana.

The NCCPF is a key contribution to the strategic objective of the GSGDA: to foster high and equitable levels of growth going towards middle income status. It echoes many of the key themes set out in the Agenda, including the need for equitable development, coordination and harmonisation. The very process of the development of the NCCPF, based on consultation and engagement, is designed to ensure that it is integrated fully into Ghana's main planning processes at national, regional and district levels.

This discussion paper builds on feedback from consultations with key stakeholders that began earlier in 2010 and uses illustrative examples to spark robust debate and active engagement on this critical issue across society and the economy.



Climate change in Ghana

There is widespread debate in Ghana, as in many other countries, about the shape of climate change in the future. However, climate change is, by its very nature, unpredictable. Given this uncertainty, the NCCPF needs to prepare Ghana for a range of possible futures, providing a bulwark against the climate shocks that already confront us, and helping us to seize any opportunities that climate change presents.

Various models and projections have been applied in Ghana and their precise conclusions vary. They do, however, agree on two key issues. First, there are clear signals of warming in all models. Second, there is uncertainty on rainfall – it may increase or decrease.

What we face is not changes in ‘average’ weather patterns, but changes in the frequency, intensity and timings of weather events. In 2007, for example, 112 mm of rain fell in 24 hours in one town in northern Ghana – 20% of the annual average in one day. It is clear that the way in which Ghanaians experience climatic conditions is changing, and changing dramatically. We are also situated in the centre of one of the world’s most complex climate change regions, with tropical storms, the influence of the Sahel and rising ocean temperatures creating a complex mix of influences on climate patterns.

The development of the NCCPF is a recognition that we cannot afford to wait for a certainty that will never come. Given that the only certainty may be uncertainty itself, policy decisions need to be robust enough to withstand many different scenarios and must be backed by effective monitoring, reporting and verification.

Impact

There is clear evidence that many of our key economic assets – the coastal zone, agriculture and water resources – are affected by climate change, which is also affecting our social fabric in terms of poverty reduction, health and women’s livelihoods. The combined impact is an obstacle to our continued development.

Ghana’s coastal zone, for example, is essential to the economy, with five large cities and significant physical infrastructure. It is, at the same time, extremely vulnerable to flooding.

In the north of the country, the 2007 floods demonstrated how climate change undermines development investments, with 317,000 people affected, 1,000 km of roads destroyed, 210 schools and 45 health facilities damaged, and 630 drinking water facilities damaged or contaminated. Direct emergency funding cost around \$25 million. As this discussion document was being prepared, thousands of people were displaced by floods in the north that killed more than 30 people.

Ghana has made major progress on poverty in recent decades. Poverty persists, however, in the north and in urban pockets and it is the poorest people who bear the brunt of climate change. A north-south poverty divide is exacerbated by climatic stress in northern regions where temperatures are already relatively high. Lower agricultural productivity and flooding are only increasing the pressure to migrate to the South.

The way in which people experience climate shocks varies across different social groups, geographic locations and seasons of the year, with men, women and children all experiencing different levels of hardship and opportunity in the face of climate change. People move in and out of poverty as their circumstances change, and this dynamic situation requires policy responses to climate change that look beyond income measurements to capture the full picture of vulnerability.

Towards a policy framework

Ghana stands at a crossroads. We have only recently become a net emitter of greenhouse gases, but our economic growth requires modernisation, particularly in the agricultural sector. This requires investment in infrastructure and will increase demand for energy, which is likely to result in higher emissions. On the one hand, we have persistent poverty in some areas and among particular groups. On the other, we have the immense potential offered by our new oil and gas industries. The development path that we choose at this moment will set the direction for decades, if not generations, to come.

The National Climate Change Policy Framework (NCCPF) has three objectives:

- Low carbon growth
- Effective adaptation to climate change
- Social development

The achievement of these objectives must be built on seven systemic pillars:

- Governance and coordination
- Capacity building
- Research and knowledge management
- Finance
- International cooperation
- Communication
- Monitoring and reporting

Objectives

Low carbon growth

Ghana is poised to take its economic development to a new level, and has an opportunity to choose a low carbon growth path.



The achievement of economic growth and development could, however, be expected to increase emissions of greenhouse gases. Even a development pathway based on low carbon growth would still result in increased emissions, but not on the scale that would be caused by a ‘business as usual’, high carbon pathway. In addition, low carbon economic growth would generate significant development benefits. In the short-term, low carbon alternatives may reveal direct business opportunities and cost reductions.

Low carbon growth would also open up access to international funding through, for example, Reducing Emissions from Deforestation and forest Degradation (REDD). And in the long-term, it would create a more robust economy that is better able to withstand many shocks and stresses.

There could be less reliance on fossil fuels, higher energy efficiency and increased use of renewable energy which could lead to improved international competitiveness. Energy could

be generated from waste, agricultural residues and biomass. It could also mean better city planning and a more modern public transport infrastructure. We have emerging oil and gas industries. There is expected to be enough gas in the Jubilee oil field, for example, to generate around 30% of our current electricity needs.

Ghana aims to generate 10% of its energy from renewable resources by 2020 and is developing a proposal for its own Renewable Energy Fund. It may well be possible to attract international support for low carbon initiatives via our Nationally Appropriate Mitigation Action (NAMA) or through the carbon market.

With adequate financing, strong capacity building and solid data, we could be well placed to become an early mover in West Africa on low carbon growth.

Adaptation

Adaptation to climate change is crucial to help us cope with its impact and is a key objective within our Shared Growth and Development Agenda (GSGDA). Four areas illustrate the wide range of adaptation issues in Ghana, showing why adaptation matters for economic and social development: infrastructure; natural resources; agriculture and food security; and disaster preparedness and response.

The GSGDA sees infrastructure development as important for economic growth and poverty reduction. The challenge is to ensure that our infrastructure is 'climate-proof', meaning that it will keep working to support economic growth, whatever the future weather conditions. What may be needed is a mix of large and small initiatives, from large-scale infrastructure adaptation to small-scale village level initiatives such as rainwater harvesting.

Climate change is a risk to the natural resources that are critical to our economic well-being. The forestry sector, for example, employs approximately 2.5 million people and contributes about 6% to our national GDP. Our natural resources are, however, being depleted at an alarming rate, according to the 2006 Country Environmental Analysis, with fears that we could lose our natural forests in 23 years. Almost 70% of our total land surface is now prone to soil erosion, and hard-pressed farmers are resorting to slash-and-burn practices that have converted more than 50% of our original forest to agricultural land.

On a positive note, our forests remain relatively well managed in regional terms – the result of 40 years of steady development support and government focus, including a new emphasis on plantation development. Ghana is attracting funding for the REDD+ agenda (which includes conservation, sustainable management and the enhancement of forest carbon stocks): it has been selected as a Forest Investment Program pilot country and is set to receive significant funding over four years.

Agriculture remains the backbone of the Ghanaian economy. Small-scale farmers, most of them reliant on rainfall for their crops, account for about 80% of domestic agricultural production and are vulnerable to the impacts of climate change. The Government aims to modernise the sector – a crucial step on the road to middle income status – which will require a transformation of current agricultural practices, as well as more energy and water to support large-scale irrigation and mechanisation. The improvement of land management practices could ensure the greatest benefits for the poorest smallholders, removing the incentives for deforestation and improving household food security.

Ghana reduced hunger by nearly 75% between 1990 and 2004, but food security remains a crucial issue, with 18% of our children under five still underweight. The potential impact of climate change on the agricultural sector is a major cause for concern for a country that needs a well-nourished and productive population to achieve middle income status.

More than 80% of the disasters in Ghana are thought to be the result of climate-related impacts: flooding, drought, pests, disease outbreaks, wind storms and extreme weather events that contribute to climate-induced migration. Climate change means less predictable weather, and a shift in both the intensity and frequency of weather events. As a result, knowledge of previous extreme weather patterns may no longer be a reliable guide to the future. The ambition, therefore, is to build a climate-resilient society – a society that can rely on effective early warning systems, where every citizen understands climate hazards, and where the emphasis is on preparedness and prevention, rather than traditional disaster response.

Social development

The Government of Ghana aims to create a more coherent, equitable and integrated society – crucial for the achievement of middle income status by 2020 – and climate change is a threat to this process. The human impact of climate change falls, for the most part, on the poorest: the urban poor living in low-lying and flood-prone areas, the rural poor who rely on groundwater for water supplies supply, and – very often – women and children. While poverty has fallen dramatically in recent years, rural poverty has deepened and the gap between the rich and poor has widened, with implications for poverty, equity and gender issues.

Whatever the eventual shape of climate change, it is clear that it can only magnify existing social pressures, such as the pressure to leave rural areas and migrate to towns and cities. Ghana's rain-fed agriculture is likely to become more fragile and, without alternative forms of income, the rural-urban drift will increase. The impact on women is of particular concern.



What happens to women matters to our economy, as they produce 70% of our subsistence crops, account for 52% of our labour force and contribute 46% of our total GDP. They tend to be responsible for household water, fuel and food, and dependent on local natural resources for their livelihoods – all areas at risk as a result of climate change. At the same time, they have difficulties in accessing land, formal financial services and collateral. Attempts to address gender concerns in relation to climate change must look beyond the immediate impact to address underlying gender inequities.

Measures such as social protection to smooth out inequities and build a more cohesive society are vital for climate resilience and, therefore, for our national development.

Supporting pillars

Governance and coordination

Governance and coordination are central to a future NCCPF, which will aim to enhance coordination, with clear mandates and roles for different stakeholders, including the policy oversight role of the Ministry of Environment, Science and Technology, the coordination of climate finance by the Ministry of Finance and Economic Planning, and measures to support small farmers and safeguard food security by the Ministries of Agriculture and Health.

There is also a need to synchronise the current approaches and initiatives on climate change. The establishment of a statutory coordination unit, in the form of a dedicated National Climate Change body, would help to reduce duplication and draw out synergies, overseeing climate-related policy areas and coordinating activities.

Governance mechanisms are needed to ensure coherent, cross-sectoral action for three key reasons. First, to ensure that local level priorities are addressed. Second, to ensure the transparency and openness of the responsible agencies. And third, to allow public participation and access to information. As a result, climate change actions would benefit from the lessons learned in other areas, incorporate important coordination actions and, very importantly, reflect the critical needs of the most vulnerable people. The NCCPF process aims to create a broad constituency that goes beyond government to include the private sector, non-governmental organisations (NGOs), Parliamentarians and other key stakeholders.

Capacity building

Climate change poses new challenges to Ghana's existing capacity, and it is clear that people and institutions need to respond in new ways. Ghana is taking action to address national capacity gaps, but faces continued challenges related to institutional capacity and interaction. Given the wide impact of climate change, capacity building needs to be rolled out across many sectors, including the private sector, the media, non-governmental organisations and communities. We also need highly skilled climate science capacity to inform development planning.

Research and knowledge management

Ghana has many climate-related research needs, not least the pressing need for better projections on the possible impact, backed by effective knowledge systems to guide strategy, planning and practice. In addition to research on climatology and meteorology, we need more information on what works for people, and have a wealth of traditional knowledge that needs to be tapped and documented. There is a proposal to establish a Research Centre on Climate Change to fill a number of these research and knowledge gaps.

Finance

Ghana needs substantial additional resources to respond effectively to climate change. While exact estimates vary, it is clear that resources need to flow faster and on a large scale if development is to be safeguarded in the context of climate change. Ghana is well placed to make good use of climate finance, given its credible Public Financial Management system and its experience on blending support from donors with national resources to address national priorities. We already set our development agenda, and climate finance should be treated in the same way.

International cooperation

Ghana is part of the international response to climate change and has helped to structure the new adaptation finance mechanism. We have a respected role within the Africa Group in climate change negotiations and our track record on forest governance is now linking us to global REDD+ processes. We are already engaged in South-South interaction with, for example, Brazil, China and India. Equally, we welcome, and make good use of, international support to address the impacts of climate change.

Communication

Communication is vital to ensure that all stakeholders are truly engaged on climate change. Communication 'business as usual' is not enough – raising our efforts to a new level of innovation around climate change means developing a more comprehensive approach to communication to ensure that we reach the right people, with the right messages, in the right way.

Monitoring and reporting

Monitoring and reporting are essential to ensure effectiveness and accountability of climate change actions. Three aspects stand out: the monitoring and evaluation of resource use by existing initiatives; the monitoring of climate change and its impacts to plan and track targeted intervention; and the concept of 'Measurement, Reporting and Verification'. MRV is emerging from international climate negotiations and is relevant for Ghana, which receives international support for its voluntary contributions to tackle climate change. The concept includes tracking whether the promised international support is being provided, and monitoring climate change interventions and their impact on emissions.

Next steps

We know that climate change is here, now, and a threat to our development. We know that 'business as usual' is no response. The crucial next step in the development of our NCCPF is the full engagement of decision makers and stakeholders across Ghana. Climate change touches every part of Ghanaian society, and every part of society must be engaged in a comprehensive and effective response. As well as engagement at national level, we are actively seeking international support on climate change to safeguard and accelerate our development progress.



Why climate change matters to Ghana

Ghana aims to become a middle income country by 2020, but climate change is a serious threat to this ambition. It is already affecting our economic output and our livelihoods and, therefore, our long-term development prospects, even though Ghana's own contribution to global climate change has been negligible.

Our reliance on sectors that are sensitive to climate change, such as agriculture, forestry and energy production makes our nation particularly vulnerable to climate change and variability. Evidence already shows the impact of climate change on our national economy, with clear signs that the coastal zone, agriculture and water resources are all affected, as well as poverty, health and women's livelihoods.

We also recognise that climate change can present new opportunities. New international mechanisms of support are emerging to safeguard the delivery of national development objectives in the face of climate change. We need to seize these opportunities to enhance our economic and social progress.

We are unusual: an African country that is high-growth and energy-hungry and, at the same time, vulnerable to climate change and its variability. Given the uncertainty around climate change, this is about preparing for a range of possible futures.

The development of a National Climate Change Policy Framework (NCCPF) is a recognition that we cannot afford to wait for a certainty that will never come. Policy decisions need to be robust enough to withstand many different climate change scenarios. These must be backed by effective governance and implementation, and supported by monitoring and reporting systems.

The concerns on the potential impact of climate change include:

- increased pressure on water, reducing the potential for hydropower
- the impact on agriculture, with reduced yields leading to more poverty and food insecurity, and the loss of national revenue from cash crops such as cocoa
- increased migration, that will add to the pressure on urban services
- deteriorating health as a result of increased disease and reduced access to water and food compounded by the disruption to the delivery of health services, e.g., flooding of health facilities, and the loss of transport infrastructure
- severe impacts on land use, leading to loss of biodiversity and soil fertility, land degradation and increased deforestation
- the impact on women, who are particularly vulnerable to the impact of climate change, given their higher levels of poverty and their responsibilities for household water, food and fuel.

Vision

The vision of the NCCPF is to:

Ensure a climate resilient and climate compatible economy while achieving sustainable development and equitable low carbon economic growth for Ghana

This complements and enhances the strategic objective of the Ghana Shared Growth and Development Agenda (GSGDA) 2011–2014: to foster high and equitable levels of growth going towards middle income status. The GSGDA sets the direction of travel for any other medium-term frameworks and plans, and the NCCPF echoes many of its themes.

The Government of Ghana sees climate change as part of the development agenda, recognising that climate change must be mainstreamed into policies and into our daily lives, if we are to achieve our development targets.

The NCCPF needs to ensure the necessary actions on adaptation and social development that are needed for national development, to support Ghana in harnessing the opportunities from low carbon growth, and integrate climate change into the main planning processes at national, regional and district levels.

Objectives

The National Climate Change Committee (NCCC), hosted by the Ministry of Environment, Science and Technology, has been mandated by the Government to develop the NCCPF. The NCCPF aims to enhance the understanding of climate change issues among policy makers and implementers across all sectors at various levels.

This will help to integrate the climate change agenda into policies and interventions at all levels and across the high risk sectors. The Government wants every part of the economy to be part of a national solution to the challenges of climate change, recognising that climate change is not solely an environmental issue.

The NCCPF is being developed to support the delivery of Ghana's vision of a climate resilient and climate compatible economy – an economy that takes advantage of the opportunities presented by addressing climate change and, at the same time, reduces the impact of climate change on the people of Ghana.

Specifically, it aims to:

- raise the awareness of decision-makers on the management of climate change impacts, backed by timely and relevant information
- create a policy framework for climate resilient and low carbon economic growth that is compatible with, and integrated into, the GSGDA and the National Budget setting process
- link and harmonise existing climate change existing initiatives and opportunities
- provide a policy framework and mechanisms for implementation and financing that allows the building of detailed implementation plans, and that fulfil Ghana's international obligations.

This discussion document distils commentary and feedback from the ongoing stakeholder consultation process around the NCCPF. It encapsulates and illustrates a range of key areas for discussion and aims to stimulate continued debate and engagement.



Background

Ghana is situated in one of the world's most complex climate change regions, affected by tropical storms, and the climatic influence of the Sahel and two oceans. Here, as in many other countries, there is debate on likely climate change scenarios, and various models and projections have been applied. Their conclusions vary enormously, creating real uncertainty about the future scale and impact of climate change, and there is a pressing need for more reliable and current data. Nevertheless, they show clear signs of climate change, and confirm Ghana's vulnerability.



While their precise conclusions vary, they agree on two key issues. First, there are clear signals of warming in all models. An increase of 1°C has been seen over the past 30 years. One recent projection estimates temperature increases of 1.7°C to 2.04°C by 2030 in the northern Savannah regions, with average temperatures rising as high as 41°C. Second, there is uncertainty on rainfall – it may increase, or it may decrease.

What we face is not changes in 'average' weather patterns, but changes in the frequency, intensity and timings of weather events. In 2007 for example, 112 mm of rain fell in 24 hours in one town in northern Ghana – 20% of the annual average in one day. In addition, the potential rise in sea levels could add to existing trends of coastal erosion, particularly on the east coast. What this means, overall, is that the way in which Ghanaians experience climatic conditions is shifting in both intensity and impact.

Ghana's climate is already unpredictable and the country can expect more intense weather events, such as torrential rains, excessive heat and severe dry winds as a result of climate change. Each one represents a setback to national development. Flooding, for example is an obvious and immediate threat to economic growth, energy supply, roads and transport, food and agriculture, education, health, water and sanitation and social protection.

Impact

The 2008 national sectoral climate change vulnerability and adaptation assessments revealed the substantial impact of climate change on the national economy, with clear evidence that many of our key economic assets – the coastal zone, agriculture and water resources -- are affected, as well as our social development in terms of poverty reduction, health and women's livelihoods.

The National Disaster Management Organisation (NADMO) responds to flooding disasters every year. The northern floods in 2007 demonstrated how climate change can reverse development investments, with a total of 317,000 people affected, 1,000 km of roads destroyed, 210 schools affected, 45 healthcare facilities damaged and 630 drinking water facilities damaged or contaminated. Direct emergency funding cost around \$25 million. As this discussion document was being prepared, thousands of people were displaced by floods in the north of the country that killed more than 30 people.

Ghana's coastal zone is central to the economy, with five large cities and significant physical infrastructure situated here. It is, at the same time, extremely vulnerable to flooding and erosion.

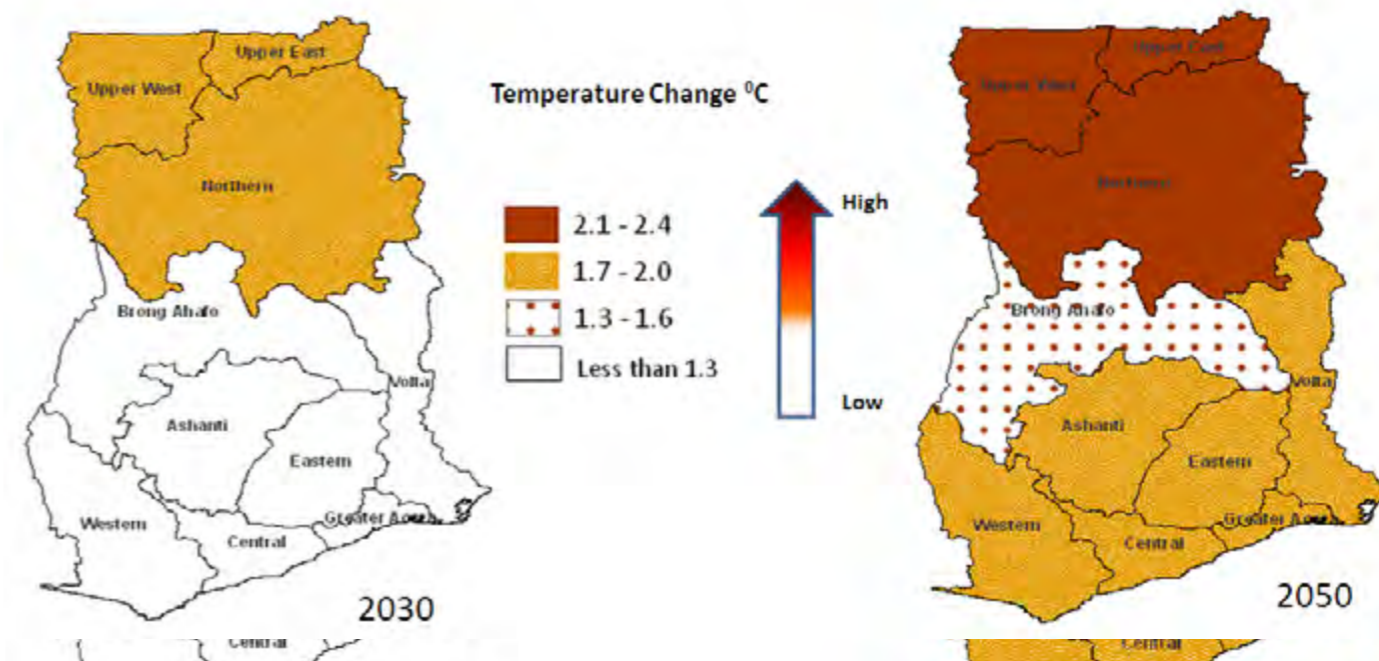
The Keta area, for example, is already experiencing an annual coastal erosion rate of three metres and other areas at risk include the west coast and some sandy beaches on the central coast. One quarter of Ghana's population lives less than 30 metres above sea level, and a projected global sea level rise of 1 metre by 2100 could put hundreds of thousands of people at risk and inundate 1,120 square kilometres of land.

Ghana has made significant progress on poverty in recent decades. However, poverty persists in the north and in urban slums and it is the poorest and most vulnerable groups who bear the brunt of climate change.

Across models, temperatures are projected to rise in the coming 20-40 years. Source: Economics of Adaptation to Climate Change – draft for consultation (World Bank, 2010)

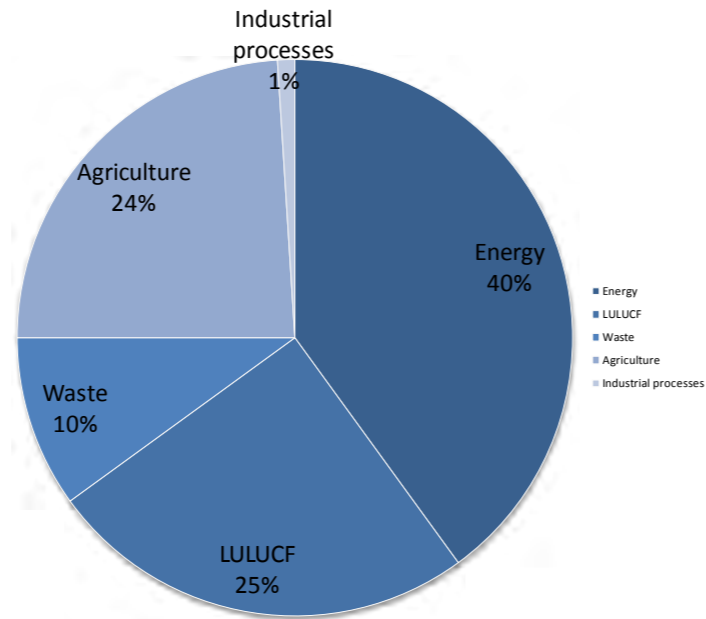
The north-south divide in terms of assets and vulnerability is exacerbated by climatic stress in northern regions where temperatures are already relatively high. Lower agricultural productivity and flooding are only increasing the pressure to migrate to the South. Migrants arriving in the cities, many of them young women who make a precarious living as porters, are exposed to new vulnerabilities on the streets and add to the pressure on existing services.

The way in which people experience climate shocks varies across different social groups, geographic locations and seasons of the year, with men, women and children all experiencing different levels of hardship and opportunity in the face of climate change. This is a dynamic situation, with some people moving up and down a poverty 'ladder' as their circumstances change. As a result, policy responses to climate change need to look beyond income measurements to capture the full picture of vulnerability which includes, for example, children being pulled out of school when times are hard.



Background continued

Ghana now stands at a transition point. We have only recently become a net emitter of greenhouse gases, but our economic growth requires modernisation, particularly in the agricultural sector. This requires huge investment in infrastructure and will increase demand for energy, which is likely to result in higher emissions. On the one hand, we have persistent poverty in some areas and among particular groups. On the other, we have the substantial potential offered by our emerging oil and gas industries. The development path that we choose at this moment will set the direction for decades, if not generations, to come.



2006 greenhouse gas emissions break down per sector. Source: 2010 National Inventory (EPA, 2010)

Ghana's greenhouse gas emissions profile:

According to its latest greenhouse gas (GHG) inventory, Ghana was a carbon sink until the mid 1990s, with carbon absorbed by the country's forests. As a result of a growing population and economy, GHG emissions have increased. In 2006, Ghana is estimated to have emitted about 24 mega-tonnes CO₂-eq – the equivalent of about 1.1 tCO₂-eq. per person, which is comparatively low globally. Emissions from the energy sector represent the fastest growing source of greenhouse gas emissions.

Towards a policy framework

What would an effective National Climate Change Policy Framework (NCCPF) look like?

The NCCPF has three objectives:

- Low carbon growth
- Effective adaptation to climate change
- Social development

The desired objectives can only be reached if systems are in place to ensure that the job is done, and done well. Therefore, progress towards the objectives must rest on seven firm, systemic pillars:

- Governance and coordination
- Capacity building
- Research and knowledge management
- Finance
- International cooperation
- Communication
- Monitoring and reporting

Climate change, social development and gender

The proposed NCCPF looks beyond what may be seen as the 'traditional' policy areas of low carbon growth and adaptation. It emphasises the social development that is vital for, and cuts across, both of these areas. Gender issues, in particular, are of critical importance. Women are often responsible for the very areas that are most vulnerable to climate change, including household water, food and fuel supplies. The NCCPF must, therefore, recognise their particular vulnerability to climate change and ensure that they are part of the response.



Low carbon growth

Ghana is poised to take its economic development to an entirely new level and has an opportunity to choose a low carbon path.

Its priorities – economic growth and development – could be expected to lead to increased emissions of greenhouse gases. In a low carbon scenario, emissions would still rise. However, the increase would not be on the scale caused by a ‘business as usual’, high carbon pathway.

In addition, low carbon economic growth would generate significant development benefits. In the short-term, low carbon alternatives may reveal direct business opportunities and cost reductions. Low carbon growth would also open up access to international funding through, for example REDD+. And in the long-term, it would create a more robust economy, better able to withstand many shocks and stresses. This would contribute to the creation of a more equitable and integrated society.

Ghana’s energy has, historically, been based on low carbon hydro-power, which is now vulnerable to climate change, threatening Ghana’s energy security. Ongoing power sector reform, however, could lead to a stronger involvement by the private sector in building new low carbon electricity generation capacity and investing in energy efficiency. We have emerging oil and gas industries, and there is expected to be enough gas in the Jubilee oil field to generate around 30% of Ghana’s current electricity needs. Our largest industrial energy user, the gold mining sector is already adopting major energy efficiency initiatives as a result of changing industrial costs, including the cost of power. There is an opportunity here to build on such private sector initiatives and to forge closer partnerships.

Energy efficiency measures, such as the very successful programme to introduce compact fluorescent lamps, tend to reduce energy costs and leave more electricity available for other purposes.

Low carbon growth can mean, for example, less reliance on fossil fuels, higher energy efficiency and increased use of renewable energy, which could lead to improved international competitiveness, as well as new jobs related to the application of modern technologies. Waste, agricultural residues and biomass could be used to generate energy. A low carbon future can also mean improved city planning, a more modern public transport infrastructure and more efficient use of private and public transport. Ghana’s transport system is road-based, with increasing congestion and pollution, particularly in the cities. An urban transport project, using high occupancy buses running in dedicated lanes, is already underway to resolve these problems. An inter-city rail service between Accra and Tema has also been inaugurated.

Ghana aims to derive 10% of its energy from renewable resources other than large-scale hydro-power by 2020 and is developing a proposal to establish its own Renewable Energy Fund under the Renewable Energy Law. It may well be possible to attract international support for low carbon initiatives via our Nationally Appropriate Mitigation Action (NAMA) or through the carbon market. An initiative on improved cook stoves, for example, could be taken to scale.

With adequate financing, strong capacity building and solid data, Ghana could be well placed to become an early mover on low carbon growth within West Africa.

REDD+ and agricultural carbon

Forests have fuelled much of Ghana’s development, but agricultural expansion, over-exploitation and demand for fuel wood have reduced forest cover. Ghana was the first country to make a voluntary agreement to ensure legal timber trade with the European Union and the strong engagement by civil society, industry and the Government has helped to guide similar efforts in other countries.

Measures to reduce deforestation and degradation and ensure sustainable forest management (so called REDD plus) present a major new opportunity. There is strong interest from the international community and the private sector to invest, and Ghana has been selected to pilot work on a large scale, building on its existing initiative on forest governance and trade.

REDD+ also demonstrates the cross-sectoral nature of low carbon development in Ghana.

It encompasses the use of firewood and charcoal for energy, afforestation programmes and the interaction with increasing yields in the agricultural sector.

Key questions include how benefits are to be shared between different levels of government, local communities and others with a right to forest resources, and the creation of an efficient system to measure and monitor the carbon stocks of Ghana’s forests, including a baseline against which to measure progress (see box on mapping carbon biomass).

There are also opportunities for new revenues in agriculture from the carbon stock in bushes and trees in cocoa growing areas. Partnerships between large companies and small-scale farmers are being explored. Others are exploring ways to manage carbon through different crop and livestock practices and pay farmers to provide essential environmental services such as protecting watercourses.



Tree stumps have been transported from the Suhuma forest reserve in Western Ghana, to be displayed during the 2009 COP15 Climate Change Conference in Copenhagen. Source: Angela Palmer/Ghost Forest

Adaptation

Adaptation to climate change is crucial to help communities and nations cope with its impact and is a key objective within the GSGDA. Four areas illustrate the wide spread of adaptation issues in Ghana, demonstrating why adaptation matters for our continued economic and social development:

- Infrastructure
- Natural resources
- Agriculture and food security
- Disaster preparedness and response

Infrastructure

The GSGDA indicates the importance of infrastructure development for economic growth and poverty reduction. The task ahead is to ensure that our infrastructure is 'climate-proof'. In other words, it has to keep working, whatever the future weather conditions, if it is to support economic growth. Infrastructure that is well adapted to the impacts of current climate change variability is more likely to withstand any future impacts.

Ghana's infrastructure, however, is under pressure from climate change and is struggling to cope. Houses are damaged or destroyed at any time of year, particularly in poor areas. And climate change affects not only remote rural areas, but the major economic centres.

One of Accra's major roads, for example, was heavily damaged by one rainstorm in 2009. Storms and floods increase the risk of damage to dams, reservoirs and the national electricity grid system.

The development impacts are evident. Recent droughts and flooding have affected export earnings through crop losses, as well as causing widespread human suffering. They also highlight challenges for the nation's continued dependence on hydro-power. The VALCO aluminium smelter, for example, which relies on hydro-power, has been closed since a drought in 2007.

As our economy expands, the pressures on water supplies for power and for irrigation are likely to increase. Studies have shown that Ghana will become water stressed by 2025, even without climate change. Basic water and sanitation services are also at risk. More intense floods can damage infrastructure and lead to the contamination of water sources, with obvious risks to health, while more frequent droughts can affect the reliability of sources. Ghana's coastal areas are another concern, given rising sea levels, with so much important infrastructure situated along the coastal belt.

Not a drop to drink?

People can face severe water shortages in the middle of a flood. Major flooding can pollute wells and boreholes with sewage, leaving vital water supplies unusable. And the risks to health are, of course, enormous

The Government recognises that infrastructure challenges require a long term perspective and greater coordination. Current evidence suggests that a mixture of initiatives is needed: large-scale initiatives such as dams, reservoirs, and measures to protect the quality of the water supply; and small-scale initiatives at village level to manage and store water.

Ghana's rural communities, for example, may play an important role on practical technology in such areas as rainwater capture and the effective use of forest reserves for water catchment.

Good projections matter, but infrastructure investment plans should be 'uncertainty robust'. Infrastructure is a long-term asset. Failure to ensure that it can cope with changing climate pressures places a heavy and repeated burden on Ghana's resources.

Natural resources

Ghana's economy is based on the use of natural capital, which makes the sustainable management of its natural resources crucial for economic growth and sustainable development.

Climate change threatens the natural resources that provide around half of our GDP. The forestry sector alone accounts for around 6% of our GDP and employs approximately 2.5 million people.

The GSGDA cites adaptation as a key policy objective to cope with the threats of climate change to Ghana's environment and natural resources. These are not only sensitive to the ecological impact of climate change, they are vulnerable to the human pressures cause by climate change that lead to environmental degradation, such as deforestation land degradation, aquatic and air pollution, soil erosion, and the loss of wetlands, coastal/marine habitats and biodiversity.

According to the 2006 Country Environmental Analysis, our natural resources are being depleted at an alarming rate and there are fears that we could lose our natural forests in 23 years.

Almost 70% of our total land surface is now prone to soil erosion, and hard-pressed farmers are resorting to slash-and-burn practices that have converted more than 50% of our original forest to agricultural land. Fish, timber, and non-timber forest product stocks have decreased. Ghana is losing its wildlife and biodiversity, with many species facing extinction.

Ghana has not one, but three forestry stories: plantations, natural forests and savannah. All are affected by climate change, but they have different needs. For plantations, the future includes an adaptation strategy. For natural forests, the future is REDD+. Savannah woodland experiences heavy pressure for charcoal and needs to be safeguarded. These different development paths have implications for the related institutions.

The good news is that our forests remain relatively well managed in regional terms – the result of 40 years of steady development support and government focus, including a new emphasis on plantation development. There could be a 'triple win' from Ghana's forests, with villagers managing plantation resources, increasing Ghana's carbon credit revenues and protecting the watershed – all at the same time.



Adaptation continued

Agriculture and food security

Ghana's economy is still heavily based on agriculture. The sector remains dependent on rainfall, rather than irrigation systems. The small-scale farmers who account for about 80% of domestic agricultural production have few resources to invest, and farming remains 'low tech'. As a result, the sector is very vulnerable to climate change.

Climate change is disrupting rural livelihoods through increased temperature, moisture deficit, land degradation, water shortage and increased incidence of alien diseases and pests. Changes in rainfall patterns also make it hard for farmers to plan their growing seasons with accuracy.

Food security is a crucial issue. Ghana reduced hunger by nearly three-quarters between 1990 and 2004, but food security disparities affect the delivery of the country's development objectives. In general, those whose livelihoods are most dependent on agriculture are also the most food insecure. Analysis in the poorest regions that are also most vulnerable to climate change found that 34% of households in the Upper West region were experiencing food insecurity, compared with 2% in greater Accra. Food insecurity also peaks during the country's marked 'hungry season'.

In 2008, about 28% of Ghanaian children were found to be stunted, with the northern and central regions worst-affected. About 18% of Ghanaians who fall below the extreme poverty line are chronically food insecure. This confirms the importance of policy responses to climate change that look beyond the environment to the broader social issues faced by specific social groups.

The GSGDA stresses the modernisation of agriculture as a way to increase yields. This requires a transformation of current agricultural practices and, for example, the development and application of new crop varieties that are better suited to the changing climate conditions. This will need higher energy and water inputs to support large-

scale irrigation and mechanisation. The improvement of land management practices, however, could ensure the greatest benefits for the poorest smallholders, removing the incentives for deforestation and improving household food security.

Cocoa

Cocoa is a major earner for Ghana, which is second only to Côte d'Ivoire in the production of cocoa beans. The crop accounts for 63% of foreign export earnings from the agricultural sector. More than 800,000 smallholder families grow cocoa beans on farms that tend to be small but that manage to provide between 70% and 100% of their annual household income. Cocoa cultivation is, however, a low input venture that is not yet producing to its full potential.

The cocoa sector is at a crucial point. There is a desire to modernise and improve yields. At the same time, however, the sector is predisposed to vulnerability in the face of climate change. Some projections suggest falling production from 2020 to 2080, and some even suggest that the cocoa sector will not survive.

Though cocoa production has increased in recent years, three key factors still limit productivity: lack of access to extension services; limited adoption of quality germplasm; and very limited access to credit.

Few cocoa farmers can adopt practices that might ease the impact of climate change on their crop, such as planting enough shade trees or better use of fertilizers and pesticides, given their low incomes and lack of formal credit.

The cocoa sector requires intense investment to preserve one of Ghana's most important commodities, and the livelihoods of those who produce such a key asset.

Disaster preparedness and response

More than 80% of the disasters in Ghana are thought to be related to climate. Flooding, drought, pests, disease outbreaks, wind storms and extreme weather events all contribute to climate-induced migration.

Because climate change means less predictable weather, knowledge of previous extreme weather patterns is no longer a reliable guide to what will happen in the future, but we expect the frequency and intensity of disasters to increase.

Our goal, therefore, is to build a climate-resilient society – a society that can rely on effective early warning and response systems, where everyone has a broad understanding of climate hazards, and where the emphasis is on disaster preparedness and prevention, rather than disaster response.

The Government is moving the emphasis from disaster risk management that deals with the immediate aftermath of a disaster, to long-term disaster resilience. The challenges, however, include a lack of dependable finance, weak coordination and the continuation of a number of reactive approaches. These challenges are exacerbated by weak institutional capacity, low public awareness, and the lack of detailed disaster risk profiles on earlier disasters that would equip Ghana to address similar problems in the future.

Measures are needed to build capacity, enhance early warning systems and improve, as well as to improve the protective infrastructure, such as sea defence walls. Such measures need to be backed by effective international cooperation and by reliable and regular funding.

Small-scale repeated disasters are every bit as devastating for those affected as the major disasters, wiping out livelihoods and assets and destroying homes. Systems need to ensure that such disasters receive as much attention, and as much response, as the disasters that hit the headlines.



Social development

"I have seven children... The floods collapsed our three rooms and washed away our crops... Hunger stared us straight in the face... Getting firewood is now very difficult and most times I have to climb trees for dried branches... Sometimes I do this with my baby on my back..." (45 year old woman, Bawku West District interviewed by CEN-SUDI)

The Government of Ghana is working to create a more coherent, equitable and integrated society – crucial for the achievement of middle income status by 2020. We are aware that the human impact of climate change falls, for the most part, on the poorest: the urban poor who live in low-lying and flood-prone areas and the rural poor who rely on groundwater for their water supply, and – very often – women and children. It is clear that, whatever the eventual shape of climate change, it can only magnify existing social pressures, such as the pressure to leave rural areas and migrate to towns and cities. Ghana's rain-fed agriculture is likely to become more fragile and, without alternative forms of income, the rural-urban drift will increase.

Social protection to smooth out inequities and build a more cohesive society is vital for climate resilience and, therefore, for our national development. While poverty has fallen dramatically in recent years, rural poverty has deepened and the gap between the rich and poor has widened, with implications for poverty, equity and gender issues.



Women and climate change

What happens to women matters to our economy. Women produce 70% of Ghana's subsistence crops, account for 52% of our labour force and contribute 46% of our total GDP. They tend to be responsible for household water supplies and energy for cooking, and for food security and are highly dependent on local natural resources for their livelihoods – all of which makes them particularly vulnerable to the impact of climate change. Evidence supports this, suggesting that women are disproportionately vulnerable to climate change.

A study on the impact of climate change on women in three districts has confirmed that, although women undertake 85% of Ghana's food distribution, they have difficulties in accessing land, in accessing land and formal financial services.

Attempts to address gender concerns in climate change must first address gender inequities and recognise that the effects of climate change are likely to affect men and women differently. By exacerbating inequality overall, climate change slows progress towards gender equality, impeding our progress on poverty reduction and sustainable development.

It is clear that climate change can only magnify existing social pressures, such as the pressure to leave rural areas and migrate to towns and cities. Many young women, for example, are leaving northern Ghana for the south, fuelling the growing phenomenon of Kaayayei (head-porters) on the streets of Accra and other cities.

Women produce 70% of Ghana's subsistence crops, account for 52% of Ghana's labour force and contribute 46% of our total GDP. They are also, for the most part, responsible for household water supplies, food security and child care. What happens to women matters to our economy, and evidence shows that climate change may hit them harder than men because of existing gender inequalities.



"Women do not own land – even their own children who are boys have more inheritance rights than their mothers in the northern region". (Respondent to survey by Participatory Development Associates Ghana. World Bank: Social Dimensions of Climate Change)

Some studies suggest that most of those migrating within Ghana are young women and girls, who are migrating at an earlier age than men. Most are from rural areas, and migrate to towns and cities. Many work as head-load porters in the cities, where they may face new vulnerabilities, including exploitation and lack of shelter and services. Many adult men, however, migrate to work in the cocoa sector in rural areas – a sector that may be at risk as a result of climate change. These separations place further pressure on families. The varied types of migration, and of the migrants themselves, have implications for the targeting of, for example, social protection and education programmes.

Migration

Migration is commonplace in Ghana, and is a traditional response to hard times, with migration rising during the 'hungry' season between March and September before the harvest. What we are now seeing is increasing internal migration that is driven, in part, by climate change, and that goes beyond the traditional rural to urban or north to south shift. Complex patterns of migration are playing out across the country.

In a study of internal migrants from north-west Ghana, most respondents mentioned environmental reasons for leaving their homes. However, migration was higher from districts with scarce natural resources and did not increase in times of environmental stress. Other work clearly indicates that climate pressures are increasing the pressure to migrate. It is not a simple story of distress migration in the face of environmental disaster, but of the interaction between climate change and other development challenges.

Ghana still faces disparities in access to health care between urban and rural communities and between rich and poor, and climate change is likely to increase the disease burden. The three main 'ingredients' for the transmission of malaria, for example, are all climate-related: rainfall, temperature and humidity. Malaria care would, on average cost around 30% of the income of poor people, and any increase in its incidence will put pressure on household incomes and the health budget.

Governance and coordination

Governance and coordination lie at the heart of the future NCCPF. One of its functions is to enhance coordination, establishing clear mandates and roles for different stakeholders, including the policy oversight role of the Ministry of Environment, Science and Technology, the coordination of climate finance by the Ministry of Finance and Economic Planning, and measures to support small farmers and safeguard food security by the Ministries of Agriculture and Health.

The Government has established structures related to climate change, including national cross-sectoral committees for climate change, REDD+ and disaster risk management. The new national Environmental and Natural Resource Advisory Council, chaired by the Vice-President, will have a strong oversight role.

We recognise the need to institutionalise and integrate climate change actions into mainstream development policies, plans and programmes at the national level. Priority areas for action have now been established by the National Climate Change Adaptation Strategy, and there has been progress in planning processes that look beyond the short-term to the need for medium-term strategies.

There is however, a need to synchronise the current approaches. The establishment of a statutory coordination unit, potentially in the form of a National Climate Change body, would minimise duplication and maximise synergies, overseeing all climate-related policy areas and coordinating activities.

It is important that governance mechanisms are in place to: ensure coherent, cross-sectoral action; to address local level priorities; to ensure the transparency and openness of the responsible agencies; and to allow public participation and access to information.

In this way, climate change actions would not only benefit from lessons learnt across the board, but would also incorporate important coordination

actions and the critical needs of the most vulnerable populations.

The NCCPF process aims to create a broad constituency, however, that goes beyond government to include the private sector, non-governmental organisations, Parliamentarians, communities and other key stakeholders.



The Cocoa Farmers' Forum provides a platform for cocoa farmers to discuss issues related to cocoa production, and enables them to find solutions to the challenges facing them. Source: Cadbury Cocoa Partnership

Capacity building

Climate change poses entirely new challenges to Ghana's existing capacity, and it is clear that people and institutions need to respond in new ways. Ghana has taken steps to address national capacity gaps, but still faces challenges around institutional capacity, strengths and interaction. We need skilled climate science capacity to inform development planning, and capacity building at district level to implement local initiatives. To engage internationally requires negotiation skills and resource mobilisation, while also building national capacity to absorb and use such resources.

While the Government and civil society have supported capacity building on climate change with parliamentarians and the media, much of the work carried out to date has targeted those already working in climate-related sectors. Given the wider impact of climate change, capacity building needs to be rolled out to include wider society. This would include the private sector, the media, non-governmental organisations and, above all, communities.

The private sector, for example, accounts for a huge amount of climate activity internationally. Ghana's private sector needs to know how climate change affects profits, how energy efficiency reduces the costs of doing business and how best to engage with complex concepts for carbon markets.

Current capacity building gaps include the challenge of translating complex climate science into messages that will resonate with the wider public. Here, the media has a crucial role to play in conveying "why climate change matters to me". The Government is taking initial steps for capacity building at the district level, but needs support for capacity building within the local communities where policy implementation take place.

Ghana can draw on a wealth of traditional knowledge that can be a real asset in the face of climate change. However, many traditional responses may inadvertently increase vulnerability, such as

the sale of livestock and other assets during hard times, with no guarantee of being able to restore those assets before the next climate shock.

Finally, strong internal systems and incentives are needed to retain institutional memory and continuity to ensure that Ghana does not lose its brightest and its best to the so-called 'brain drain'.



In August 2008, Ghana hosted the UNFCCC climate talks in the Accra International Conference Center (AICC).

Research and knowledge management

Ghana faces major challenges with information and data flow on climate change, including the quality of data, access to data and the sharing and translation of that data. The research needs on climate change are significant, starting with the pressing need for better projections on possible impacts, backed by effective knowledge systems to inform strategy, planning and practice.

Research on climate change in Ghana is often project driven, short-term and uncoordinated. An ongoing survey of research activities reveals a lack of research in climatology and meteorology as well as the down-scaling of models and scenarios. In addition, we need more information on what works for local people, based on research that is informed by their views and, if possible, participatory.

Climate change cannot be understood in terms of simple cause and effect or considered in isolation. Its impacts interact with each other in ways that are difficult to describe and predict. This presents serious challenges for research.

Another challenge is how best to establish meaningful dialogues between climate scientists and the users of knowledge and offer accessible and relevant resources to stakeholders – particularly those concerned with sustainable development. This is particularly important for Ghana, which requires first-class science to map the interactions and feedbacks between its complex climate systems in order to provide policy makers with the evidence they need to formulate valid policies and to guide implementation.

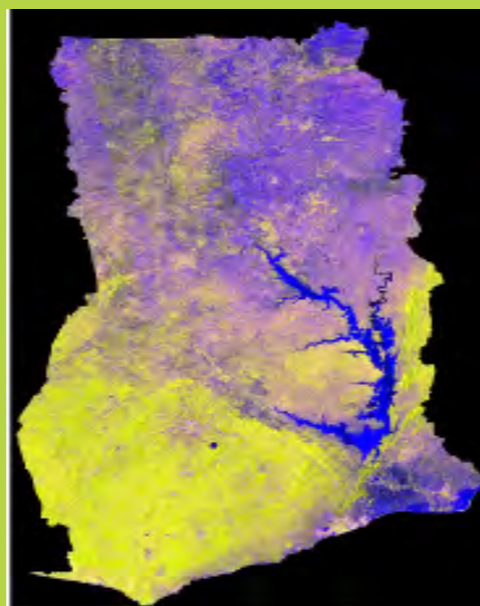
A proposed Climate Change Research Centre would help to fill research and knowledge gaps. Meanwhile, there are several initiatives by universities and research and development institutes and within ministries, departments and agencies that focus on specific areas such as climate change and health, but these need strengthening and better coordination. In addition, Ghana has a vast body of traditional knowledge on how

to cushion the impacts of an adverse climate – knowledge that needs to be tapped, documented and analysed.

Mapping carbon biomass

Basic information is needed to guide REDD+ efforts, including information on different land uses, the extent of land use change, and the measurement and monitoring of carbon stock density and changes.

A carbon biomass map for Ghana is being developed, and is now being reviewed. The map is the result of collaboration between civil society, researchers, the private sector and government. Based on ground survey of vegetation and state-of-the-art satellite analyses, it reveals wide differences in biomass carbon stocks across the country, and between different vegetation types. This pioneering map will provide solid information for REDD+ and Measuring, Reporting and Verification efforts in Ghana. It is attracting interest from the private sector involved in developing carbon markets in Ghana and aims to build capacity to apply this technique more widely across West Africa. The image below shows initial work on the above ground biomass, from which carbon stocks could be derived.



The ongoing carbon map project is supported by the Moore and Rockefeller Foundations.

Finance

Ghana will require substantial additional resources to respond effectively to climate change. Estimates of funding needs vary widely. However, it is very clear that scaled-up resources need to flow faster and on a large scale if development is to proceed in the context of climate change.

Ghana is well placed to make good use of climate finance, given its credible Public Financial Management system and its experience on how best to blend support from donors with national resources to address national priorities.

In international negotiations, developed countries have committed to providing scaled-up funds, while also seeking to increase the size and accessibility of carbon markets. Rules and arrangements are still being established and are complex and changing rapidly, with many different initiatives being established or piloted. On the Adaptation Fund Board, Ghana has helped set rules in place that allow direct access to funding for countries that can demonstrate their ability to manage fiduciary risk to international standards. In other cases, resources are directly controlled by intermediaries and allocated to countries or to specific projects and programmes. These may not always fit with national processes and calendars.

Ghana will need to call on a mix of public and private, international and domestic sources, and the Government is keen to ensure a coordinated approach that reinforces existing practices in national planning and public financial management. This is in line with the principles of Ghana's Aid Policy for development. Key roles for Government include mobilisation and allocation of funding, and tracking of progress to ensure proper accounting and cost-effective use of resource in an efficient manner.

Major opportunities are also emerging within the private sector and the Government is considering how to promote the stronger involvement of the private sector in climate change responses. The Government is also considering the potential for

a national financing mechanism or facility that can meet the needs of different themes, such as renewable energy or gender, without having a proliferation of funds and procedures. Key to this will be the strengthening of the ability of different parties to secure and use funding well – their absorptive capacity.

International cooperation

Ghana has a respected role on the international stage. In recent years, Ghana has become a world leader on progress towards the Millennium Development Goals (MDGs), particularly in relation to MDG1 on poverty and hunger.

The country has been at the forefront of the global climate change debate, contributing at both technical and political levels over the past decade. We have a respected role within the Africa Group in climate change negotiations. We are also active in dialogue on the African common position on Climate Change. This year, for example, we have hosted the Economic Community of West African States (ECOWAS) meeting on sub regional adaptation and mitigation strategies. We contribute actively to many other international negotiation processes, and hosted the 2007 UNFCCC meeting in Accra. We also support many formal and informal international meetings on specific issues with Ministers and technical experts, and our track record on forest governance is now linking us to global REDD+ processes.

Ghana has helped to structure the new adaptation finance mechanism and was one of the first to submit its programme under the Copenhagen Accord.

We see clear potential for improved South-South collaboration and are already working closely with counterparts in Brazil, China and India. Equally, we welcome, and make effective use of, support from the international community to address the impacts of climate change.

Sector working groups, led by the Government, already provide a platform for the coordination of development assistance and the alignment of that assistance to national priorities. The aim is to ensure that international support for climate finance, programmes and projects work in the same way, to preserve Ghana's strong relationship with donors.

Our needs include developing a critical mass of trained experts to help ensure the successful im-

plementation of our international obligations, and an independent evaluation of the wealth of reports on our compliance with international treaties.

While there has been progress on raising public awareness of international legal instruments and their objectives, there is still space for programmes that will expand this awareness still further.



Legally logged tree stumps from Ghana raised awareness of the scale of forest carbon when they were displayed in Copenhagen. Source: Angela Palmer/Ghost Forest

Communication

Communication is critical to engage all stakeholders on climate change. However, communication 'business as usual' is not enough. It is important to develop a more comprehensive approach to communication in its broadest sense, to ensure that key messages are shared and understood, and encourage real engagement on this issue.

Climate change is everybody's business. If people are to address climate change, or seize the opportunities it may present, they need to be aware of climate change and how it relates to them.

Good communication, education and awareness raising around climate change are all essential to deliver the objectives described earlier in this discussion document. They are crucial for the success of climate change adaptation and low carbon strategies and to ensure good governance and transparency in progress towards sustainable national development.

At the international level, Ghana is actively communicating on climate change. A display of legally logged tree stumps from Ghana, for example, powerfully conveyed the importance of forests to the international climate negotiations in Copenhagen in 2009

The GSGDA highlights the need to mainstream communications into national development planning, engage citizens, create dialogue and monitor success. In addition to these broad aims, very focused communication is needed to raise public awareness of the new energy labels for appliances, energy efficiency in the private sector and the benefits of improved cook stoves. A campaign on disaster preparedness is underway.

Ghana aims to:

- increase general understanding of climate change amongst stakeholders and stimulate debate on this issue
- build a coalition of stakeholders to create more awareness
- initiate public campaigns and debate on the

realities of climate change for Ghanaians, addressing the critical question: 'What does climate change mean for me?'

- facilitate inter-sectoral coordination and collaboration through effective information flow and communications.



Climate change education

Climate change education may need to happen at a number of levels simultaneously, e.g.:

- internal communications programme for national and regional public servants
- the integration of climate change into the school curriculum, which requires, in turn...
- ways to brief teachers or other professionals who might act as a formal or informal distribution networks for messages about climate change or disaster preparedness.

Ghana could integrate and scale up its education efforts on climate change by drawing on its successful tactics in other sectors, such as health education.

Monitoring and reporting

Monitoring and reporting are essential to ensure effectiveness and accountability of climate change actions for development in Ghana. Three key aspects of monitoring and reporting are of particular relevance.

First, planning, implementation and decision-making on effective use of resources all require monitoring and evaluation, with baselines and indicators. In general, a set of tools is used before the intervention takes place, or after the intervention, tracking expected or realised outcomes. This helps to ensure that resources for development are well spent, and that the results are communicated back to decision makers and stakeholders for future action.

The GSGDA states that monitoring and evaluation (M&E) is an integral part of policy formulation and implementation in Ghana. The expectation is that the development of the climate change policy, its institutions and implementation will fall under the existing M&E systems. Climate change interventions need to be linked to the delivery of sectoral development objectives and be consistent with national priorities. However, monitoring and reporting on these interventions will require the strengthening of existing systems.

Secondly, given Ghana's physical location within the complex West African climate system, where especially future rainfall patterns are hard to predict, the adequate monitoring of climatic changes and their impacts is crucial. This is needed in order to plan targeted adaptation interventions and track their appropriateness and cost-effectiveness in a changing climate. For example, the National Disaster Management Organisation (NADMO), does not yet have a central system to record disaster impacts at national level, which reduces the ability to prepare well. There is also a need for systematic observation systems, e.g. weather stations to target insurance or disaster response.

Thirdly, the concept of 'Measurement, Reporting and Verification' (MRV) which emerged from

international climate negotiations, is relevant for Ghana, when receiving international support for its voluntary contributions to tackle climate change. The concept includes a registry to keep track of whether the international support promised is really being provided, as well as monitoring whether climate change interventions are in operation, how successful they are and to what extent they reduce emissions and create effective adaptation.

An effective MRV system for Ghana's REDD+ activities would, for example, enable the country to access larger scale international support, but needs international support for building the required institutional and technical capacity. In addition, a REDD+ system needs to link to a wider national system for MRV to avoid duplication and increase coherence, especially with changes in reporting needs for all stakeholders.

The area around a decommissioned mine now gives room for an afforestation project. (image on the right)



Next steps

Our country is particularly affected by the adverse effects of climate change and these effects will intensify and become more extensive in the future. Climate change can seriously undermine the investments we have made over past decades to become a middle income country. However, we do have the potential to respond to this threat and, with the support of our development partners, reduce its impact on our society.

A key element is the ownership of the climate change agenda at the highest levels of government. Ghana has started to integrate climate change issues into national development plans. This has involved senior leadership from within the government and active involvement of finance, planning and energy as well as other key ministries departments and agencies. The development of the National Climate Change Policy Framework will be another milestone.

We know that it takes years to fully develop and ratify strategies and policy packages, but some key sectors and policy principles have been already identified and are being used to inform immediate actions and the selection of international partnerships. Prioritising the policy options requires the involvement of multiple stakeholders, including the public and private sectors and civil society.

The development of climate change policy will not be a linear journey. Policy development in any sphere is a highly complex process, with overlapping pathways and occasional roadblocks to be overcome.

Our next steps need to be discussed and debated, to ensure general consensus on where we are heading, and what we need for the journey. We invite all stakeholders to join the ongoing process and contribute their thoughts, suggestions and commitment.





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