

# Integrating Climate Change Adaptation and Mitigation in Development Planning: National Science - Policy Dialogue in Ghana

## POST DIALOGUE REPORT



Organized by the Volta Basin Research Project, University of Ghana under the auspices of the National Climate Change Committee, Ministry of Environment, Science and Technology, Government of Ghana



Centre for African Wetlands, University of Ghana, Legon  
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## Introduction

Low levels of awareness and poor understanding of climate change risks, combined with significant knowledge gaps about climate change processes, have hindered effective societal decision making around issues of climate change adaptation and mitigation, particularly in the developing world. As the need for sound science to inform climate change policy development and implementation processes increases, it is essential that better communication occur at the science–policy interface so that policies and measures can be identified that bring greater awareness of how to integrate climate change adaptation and mitigation planning with sustainable development and poverty reduction goals.

The nine national-level science-policy dialogues being organized under the project *Understanding the Findings of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, Climate Change 2007- Integrating Climate Change Adaptation and Mitigation in Development Planning* are designed to address this need for better communication at the science-policy interface on climate change issues. The first of these dialogues was held in Accra, Ghana from the 19<sup>th</sup> to 21<sup>st</sup> October 2009. The two and a half day programme, *Integrating Climate Change Adaptation and Mitigation in Development Planning*, was held at the Centre for African Wetlands at the University of Ghana. The program consisted of an opening session of introductions, six technical sessions, one session each on climate change financing and climate risk communication, and a roundtable discussion. The dialogue was timed to inform specific activities being undertaken by Ghana's National Climate Change Committee in their lead-up to the COP 15 talks in Copenhagen later that year.

The dialogue brought together about 60 participants (see Annex 1) from eight countries. The participants from Ghana consisted of:

- Members of the Ghana Parliamentary Select Committee on Environment and Science,
- Natural Resource Management professionals,
- Senior Management and officials from various Ministries, Departments and Agencies (MDAs),
- Members of the National Climate Change Committee (NCCC),
- The media
- Members of the University and Academic Community, and
- Non Governmental Organizations (NGOs)

This post-dialogue report is intended to provide an overview of the issues covered and to convey how the event helped to meet the objectives of the national science-policy dialogue, i.e., increasing awareness and understanding of climate change risks, and options for mitigation and adaptation; sharing perspectives on policy responses and linkages of climate change adaptation and mitigation to national development goals; and helping to build and promote determination for action.

## Ghana National Policy Dialogue

The official opening ceremony began with an address by Prof. Asomaning, the Operations Director of Centre for African Wetlands, University of Ghana. Prof. Asomaning outlined the meeting objectives of broadening support for the integration of mitigations and adaptation into national strategies for poverty reduction and sustainable development. The keynote address was delivered by the Honorable Minister of Environment, Science and Technology, Ms. Sherry Ayithey, who touched on the importance of this event as a precursor to the UN Copenhagen meeting on climate change. She referred to the reality of climate change and its effects on the national economy and commented on how Ghana's national adaptation plan represents an appropriate national response to the challenges posed by climate change, which will be carried forth at the Copenhagen meeting. Following the keynote address, the Secretary of the National Climate Change Committee, Mr. Rudolph S. Kuuzegh indicated that the meeting was just one of a series of events that the Ministry of Environment, Science and Technology was organizing, or was linked to, in their effort to mainstream climate change issues into development planning in Ghana.

The programme comprised six technical sessions that addressed issues of climate change with regards to scenario modeling, coastal zones, forestry, agriculture, health, and gender and development, as well as session on the economics of adaptation, where the World Bank presented findings of their study on Ghana, and on communicating climate change (Table 1). Technical presentations were given by an IPCC AR4 author and were followed by a 10-minute presentation by a local discussant who elaborated on the key issues of that particular thematic area in the Ghanaian context.

**Table 1: Presentations at the Ghana National Policy Dialogue**

<b>Presenter</b>	<b>Topic</b>	<b>Discussant</b>
Amadou Gaye	<i>Climate Change Projections: Scenarios, GCM outputs</i>	Kojo Owusu
Isabelle Niang	<i>Coastal Zones and Climate Change</i>	Yaa Ntiamoah-Baidu Chris Gordon
Elnour Abdalla Elsiddig	<i>The Role of Forests (LU) in Climate Change Mitigation</i>	Adelina Mensah
Ramadjita Tabo	<i>Impacts of Climate Change on Agriculture and adaptation strategies in Africa</i>	
Andrew Githeko	<i>Climate Change and Human Health</i>	Francis Agyemang- Yeboah
Angelina Mensah	<i>Implications of Climate Change on Gender</i>	Elaine Tweneboah

Peter Kristensen	<i>Economics of Adaptation to Climate Change</i>
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Saadia Bobtoya	<i>Communicating Climate Change in Ghana</i>
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## Session 1: Climate change projections and scenarios

*Presenter: Amadou Gaye*

This presentation covered global-scale issues of temperature rise and precipitation changes, and projections of potential climate conditions in Africa in 2080, which included expansion of arid and semi-arid lands, increased flooding in central southern Africa, and reduced length of the agricultural growing season throughout the continent. Prof. Gaye expressed the need to better resolve accuracy issues around General Circulation Models and regional climate models, and of the need to improve understanding of dynamic processes.

*Respondent: Kwadwo Owusu*

In his response, Dr. Owusu noted recent precipitation trends in Ghana indicating that the forest region is experiencing a 20-30% decline in rainfall, and the semi-arid north a 10-20% reduction compared with the historical mean. In addition, there have been changes in timing of rainfall in that the short dry spell between the major and minor rainy seasons has received more rainfall (making food storage difficult) and the short rainy season is getting shorter, thus increasing risks to climate sensitive sectors. He noted there are significant knowledge gaps at national and regional levels in Ghana and surrounding countries, and thus there is a strong need for more atmospheric scientists in Ghana who have the skills and knowledge to interpret GCM output in a national context.

*Discussion*

Participants expressed the need to sensitize vulnerable communities about climate change risks and about changing risky behaviors such as charcoal production, and of the need for more investments in science. (Ghana currently invests 0.3% of its budget to science.)

## Session 2: Coastal zones and climate change

*Presenter: Isabelle Niang*

The presentation discussed how sea level has varied over geological time but how the rate of current sea level rise is unprecedented and is very likely linked to anthropogenic warming. Prof. Niang discussed a number of factors that leave coastal areas vulnerable, including degradation of mangroves, coastal erosion, and pressure from high settlement. Adaptation measures that were put forth included developing an Integrated Coastal Zone Management (ICZM) framework for integrating short-term and long-term planning, strengthening or creating observation networks, improving governance for coastal planning, and developing practices for integrated coastal zone management that reduce pressures from unplanned development. The need to sensitize and educate was viewed as critically important.

*Respondent: Yaa Ntiamoah-Baidu*

The respondent discussed the high vulnerability of Ghana's coastline, noting that four out of Ghana's six major cities are located along the coast. Coastal zone fisheries represent both a significant component of national GDP and of animal protein intake. Moreover, coastal wetlands ecosystems in Ghana contain several endemic species—11 internationally important species of water birds, three turtle species and six mangrove species. Adaptation must take into account those factors that increase vulnerability, such as degradation of critical coastal wetlands habitat, pesticide misuse, habitat loss, overexploitation, inappropriate siting of settlements, invasive species, solid waste pollution, and soil and water pollution. The speaker emphasized that adaptation needs to be informed by good science, and that this will involve investments in country-specific research that addresses major data gaps. Such investments require transcending a reliance on project-driven scientific research because of its lack of continuity, and greater resources allocated for material support, basic equipment, and transport to field sites.

*Discussion*

The discussion dwelt on the vulnerability of the coastal zone to climate change. For example the coastline of Ghana, which is about 530km, is at risk due to sea erosion/sea level rise. The need for a massive mangrove ecosystem rehabilitation exercise along this stretch of coastline could act as an effective buffer against sea level rise. The need to factor this vulnerability especially into city planning was also highlighted.

### **Session 3: Agriculture and climate change**

*Presenter: Ramadjita Tabo*

The speaker focused on global implications of climate change on food production, noting the sensitivity of the low latitude zones to climate change and how the semi-arid tropics could expand with an increase in temperature. The implications of this on food security in Sub-Saharan Africa were highlighted. For adaptation, strategies must firstly focus on better adapting agriculture to current climate variability, and to approach agriculture in terms of integrated resources management rather than just that of productivity. In the medium to long-term significant support will be needed for developing more suitable farming systems for changing climatic conditions.

*Discussion*

The discussion focused on implications of climate change on Ghana's agriculture, particularly as related to the semi-arid north and to cocoa production, which would be quite sensitive to temperature rise in its current production zone. Cocoa is a critically important source of foreign exchange for Ghana. The issue of biofuels was also raised, and it was noted that conversion of agricultural lands for Jatropha biofuels production in northern Ghana was displacing female farmers. The need for a multidisciplinary approach involving climatologists, agronomists, entomologists, economists, and others in developing and promoting adaptation strategies in agronomic practices, and soil and nutrient management strategies was also raised in the discussion.

## Session 4: Climate change and human health

*Presenter: Andrew Githeko*

The presentation covered a wide range of human health risks associated with climate change, including a shortage of safe drinking water resulting from increased incidence of flooding and prolonged drought, effects of food shortages on under-nutrition and malnutrition, food, water and vector-borne diseases, heat-related illnesses and loss of productivity and human potential from high temperatures. The speaker suggested that policies and measures for adaptation should focus on an expansion of irrigation, improved food storage, investment in simple clean drinking water technologies and hygiene, improved prediction of extreme events, treated bed nets (for malaria control), and vaccinations.

*Respondent: Francis Agyemang-Yeboah*

The respondent focused mostly on malaria, which is a major risk for Ghana. He noted that the cost of malaria treatment for the poor in Ghana is about 34% of their income, and that interventions, such as treated bednets and other means of vector control can reduce malaria incidence by 80%. The respondent spoke of the need for better climate risk management through recasting climate as a development issue, encouraging institutional innovation, and strengthening research in support of climate risk management. Specific needs include strengthening public health systems, reinforcing disaster risk reduction, promoting increased surveillance and integrated vector management, improving access to primary care, addressing environmental risk factors, such as poor sanitation, and strengthening role of women.

*Discussion*

Issues raised in the discussion included the need to pursue prevention rather than simply spending money on treatment, the need for better education and awareness raising, and more front-line interventions. The media was viewed as playing a potentially important advocacy role in this regard. The need for better environmental management to deal with diseases, and external financing of malaria initiatives like the President's Initiative on Malaria and the Rollback Malaria campaign was emphasized. Parliamentarians participating in the dialogue noted that it was not enough for policy makers to be informed about the new dimensions of climate change and its impacts on health but rather they have to be involved as partners with the scientific community working on this issue, and be informed at all stages of the climate change discussions. This approach will ensure that policy makers are less hesitant in making decisions to match a new initiative with resources.

## Session 5: Climate change and gender

*Presenter: Angelina Mensah*

The presentation focused on how gender encompasses issues of morality, equity, and justice, and noted the significant lack of country-specific data on gender equality and climate change. Women and children suffer disproportionately from shortages of food and economic resources during disaster recovery than do men. Bringing a gender component to adaptation and mitigation requires a consideration of the different interactions of men and women with their environment, the need for different strategies and different sources of knowledge, and differences in access to resources and information. Women generally lack of access to extension facilities and, due to

illiteracy, are unfamiliar with land administration processes. It was suggested that Ghana's National Climate Change Committee advocate for research on gender. To mainstream gender in national policies and action plans, there is the need for systematic gender analyses and consultation with and participation and strengthening of women's groups in climate change initiatives.

*Respondent: Elaine Tweneboah*

Dr. Tweneboah discussed gender-differentiated risks and needs, e.g. women produce 70 percent of subsistence crops, men produce cash crops and livestock; with fisheries men participate in the harvest and women in the processing and marketing. Criteria to consider in bringing a gender dimension to adaptation planning include livelihoods assets, control of land, money, credit, health, household entitlements, and the fact that women are powerful agents of change.

*Discussion:* Much of the discussion centered around gender, climate change, and culture. Questions that were raised and the responses given included:

- What are the legal annotations of gender in terms of their rights and certain cultural practices (taboos) vis-à-vis climate change issues? The scope of research needs to be broadened to address this issue.
- Gender could be a product of culture. Will changes in culture lead to improved gender balance in society? Will climate change alter our culture? Climate change has the potential to alter culture through migration and the death of knowledge, including that which is gender specific.
- As a country, are we addressing youth vulnerabilities in the gender related matters resulting from climate change? More needs to be done in this regard.
- What are we doing to address the data deficit on gender across sectors to enhance mainstreaming of gender in sectoral policies and programmes? Significant knowledge gaps exist that need to be addressed.

## **Session 6: Role of forests and land use in climate change mitigation**

*Presenter: ElNour Elsidig*

The presenter discussed the concept of carbon sinks and sources in the context of land use change. He noted that Africa is losing its forests and that the quality of remaining forests is generally declining as evidenced by a shift from older to younger trees and a reduction in the density of timber. A significant portion of the deforestation is linked to agriculture, as well as to population growth and land use, poor governance, illegal logging, and dam and road construction. Mitigation and adaptation significantly overlap in considering issues of land use change, particularly in Africa. Priorities for realizing synergies between the two include improving agricultural productivity in order to take pressure off of forested lands, awareness raising and capacity building that enhances community based management systems, and improved cooking stoves to reduce pressure on forest resources.

*Respondent: Adelina Mensah*

The respondent, Dr. Mensah discussed how land tenure presents a potential hindrance to implementing improved land management practices, the need to better understand the drivers of

land use change in the Ghana context, and better management of organic waste, a large percentage of which is currently not returned to the land. An active Climate Change unit in the Forestry Department, which collaborates with other organizations and units, has developed operational steps for mitigation in Ghana. However, factors such as access to land and security of land, patterns of farming and land-use as influenced by roads, communication, markets, prices, etc., and social characteristics all influence how these objectives will be implemented.

### *Discussion*

Issues were raised about how the Clean Development Mechanism (CDM) and the Reducing Emissions from Degradation and Deforestation (REDD) was too restrictive and did not consider potential gender inequalities. Also discussed was the need to be careful to avoid unintended outcomes from CDM such as introducing fast growing tree species that become invasive, as has been the case with teak, and to not allow a REDD agenda to overemphasize the mitigative properties of forests at the expense of non-market values that forests provide such as biodiversity. Better policies are needed to ensure better governance in addressing illegal logging.

## **Session 7: Economics of climate change**

*Presenter: Peter Kristensen*

The presenter, from the World Bank explained that Ghana is one of seven countries for which the World Bank has analyzed under its Economics of Adaptation to Climate Change study. According to their study, adapting to a 2° C warmer world could cost many billions of dollars. As economic growth is the most powerful form of adaptation, development strategies must maximize flexibility to incorporate climate knowledge as it is gained.

On the final day of the programme, two short presentations on communicating climate change were given as a preamble to the working session. A presentation on *Communication work in Africa* by British Council was followed by *Communicating Climate Change in Ghana* by Saadia Bobtoya, also from the World Bank.

## **Roundtable discussion**

Two groups were formed to provide input into four main areas of concern of relevance to communicating climate change, strengthening science-policy linkages and mainstreaming climate change into development planning. The following section summarizes the key points/concerns that were discussed under each area.

### **1. Increase awareness and understanding of climate change risks and options for mitigation and adaptation**

To increase awareness and understanding, it is important to identify key stakeholders and assess their needs (e.g. children, policy makers, media practitioners, private sector, research institutions, bankers, local communities) in order to properly evaluate knowledge gaps and communicate climate change risks. Mainstreaming climate change into curriculum, from primary to tertiary education, and developing programs for informal education on climate change that include local outreach programmes to the grassroots level were viewed as very important. Specific recommendations were:

- Build on recommendations from policy briefs to communicate to rural communities.
- Review education systems at all levels (primary, secondary and tertiary) for mainstreaming climate change into curriculum
- Educate communities at rural areas, such as through Mobile vans to show movies
- Identify agents of change, such as religious leaders, assemblymen, chiefs, members of parliament etc., who have direct contact with or stature within communities.
- Promote informal education for all sectors, districts
- Begin pilot programs on how to involve the community in dialogues and planning, and for them to understand their role in contributing to climate change (e.g. charcoal burning)
- Develop stronger outreach to media

## ***2. Share perspectives on policy responses and linkages of climate change adaptation and mitigation to development goals and strategies***

There is the need for appropriate information on climate change and the linkage with development to reach policy makers. Climate change issues should be mainstreamed in all sectors and not considered only an environmental issue, especially in the implementation of development plans. To do this, development goals must be upgraded from not only short-term plans as is current, but to include medium and long term objectives. These development strategies must be holistic to include available resources for relevant or low technology options. Implementation of development plans must be enforced by legislation, regulation and effective monitoring and evaluation.

Specific recommendations were:

- Urgent need to build national expertise on climate change, retrain people.
- National forum on climate change needed. Establishment of a national council on climate change was suggested.
- Better governance, enforcement of laws
- Gap analysis of the current short-term development goals and strategies to mainstream climate change issues which are long-term.
- Amend constitution on issues that deal with exploitation of natural resources (need a specific legal framework rather than vague regulations)
- Examine and enhance systems already in place, such as water storage
- Consider development strategies holistically, to include relevant, low-tech options
- Obtain external support

## ***3. Strengthen science-policy interfaces***

To strengthen the science-policy interfaces, a national science culture must be promoted and supported with funding. These linkages need to be identified and can be supported by the establishment of regular dialogue or forum between the research community, policy makers and end users. Available funding from politicians/government/industries for research should be countered by simple reports and thorough briefings on researchers' results/findings. Scientific initiatives should be marketable and clearly communicated to policy makers/politicians.

Specific recommendations were:

- Identify linkages between natural, social science, policy makers and endusers
- Need national, regional, and district-level collation of information; the development of ‘collation centers’ was suggested.
- Mobilize funds for regularizing contact between research and policy community, such as a monthly forum, to also involve private sector
- Research initiatives must take policy needs into consideration
- Scientific information must be digestible and packaged so that end users can act on information. ‘Science Days’ regular fairs to the general public that demystify the science were also suggested.

**4. *Help build and promote political determination for climate change actions***

To promote political determinations for climate change actions, political parties should include climate change protocols, conventions etc. in their manifestoes, with an establishment of a national council on climate change to be chaired by the Executive. There should be capacity building for politicians who have backgrounds from different disciplines – to generate interest. In addition, science research institutions should present initiatives to their mother ministry who are responsible for developing strategic plans and not only target Parliament as the only route to implement issues.

Specific recommendations were:

- Educate politicians about climate change
- Build permanent lobby group in parliament for science and climate change issues
- Proper use of climate change communications
- Budget affects political will, therefore government should consider alternative resources to fund climate change
- Strengthen inter-sectoral communication
- Science research institutions should push initiatives to their mother ministries rather than going through parliament

## **The contribution of Ghana’s science-policy dialogue to planning on climate change**

The science-policy dialogue helped to support the efforts of Ghana’s National Climate Change Committee (NCCC), which was established to prepare, present, report, implement, and evaluate national and international policies on climate change. In addition, the Committee initiates and develops relevant policy recommendations for government and ensures and coordinates climate change related education, training and awareness creation. Some of the challenges the committee faces include ineffectual national programmes on public education that lack the means for training and awareness raising about climate change, limited media coverage on climate change issues, and the lack of efficient systems for disseminating information on the work, results, and achievements in the various fields of climate change. The National Science Policy Dialogue presented a platform not only for scientists and policy makers to interact, but it also contributed to filling gaps by providing a multi-layered analysis of the science–policy interface in developing countries and making available much needed information on climate change. The dates of the Ghana science-policy dialogue (19-21 October) were chosen to coincide with other ongoing programmes of the National Climate Change Committee to ensure optimal stakeholder and public participation, particularly the attendance of policy makers. It engaged researchers (both

international and local, including the AR4 authors), civil society groups, development partners and the technical level of government ministries in a public forum.

Ghana's national Science Policy Dialogue thus helped to establish stronger communication between international and national experts and key decision-making constituencies on climate change issues relevant to Ghana. The workshop revealed the limited understanding of climate change amongst key stakeholders, the general lack of intermediaries at the national level who can communicate climate change to the public, and the limited empirical experiences and data to draw on for decision support. Hence, there is a strong need to develop the technical capacity of intermediaries such as the NCCC, which can play a greater role at strengthening interactions between science and policy on climate change. It is also recommended that in future workshops such as this, more "non scientific" ministries, such as the Ministry of Education and the Ministry of Youth and Sports, actively participate. Interaction between the scientific and the policymaking communities must be done in a more consistent and reinforcing manner in order to effectively integrate climate change mitigation and adaptation knowledge into Ghana's development strategies. One concrete follow up action would be to replicate a tailored version this dialogue in other regions of the country, and to make communications and syntheses from the dialogues easily accessible to relevant stakeholders.

A consistent theme that ran throughout the Dialogue involved the need to improve the capacity of policymakers to debate climate change issues both in and out of Parliament. The policymakers who were present at the Dialogue contended that climate change education should begin even before they assumed political offices; indeed, there was consensus that climate change education should begin in primary school and continue through secondary and tertiary education. Also, the policymakers noted that in order to create more consistent interaction between researchers and policymakers, researchers must regularly lobby the governance process on climate change issues. The identification or development of a national collation centre on climate change was suggested, which should also be replicated in the regions, districts and communities where feasible. Ideally, a national strategic plan must be in place such that successive governments can follow.

As was emphasized in the final presentation on communicating climate change issues, action is required at all levels to reduce climate risk- national, sectoral, regional, district, community, household, and individual levels. Although the primary audiences of the science-policy dialogues are researchers, policy makers and implementers, the key messages should also be made available to Ministries, Departments, Agencies (MDAs), civil society, private sector, the media, traditional authorities, and opinion leaders. Communications could include the broadcast media, use of policy briefs, fact sheets, and posters, workshops, seminars, and conferences, press releases and press conferences, and the internet, such as through a blog.

In conclusion, the Science Policy Dialogue was very educational for the participants as evidenced by the post meeting assessment and more importantly generated a significant amount of understanding and goodwill between scientists and the policymakers, which needs to be acted upon.

## Annex 1: List of participants and institutional affiliations

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