

**A COMPREHENSIVE SCOPING AND IMPACT ASSESSMENT
REVIEW OF PLANNING AND MACRO-ECONOMY**

Sector Resource Persons Review

Sector:

PLANNING AND MACRO-ECONOMY

Final Draft Report Submitted To:

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BACKGROUND TO TERMS OF REFERENCE FOR ASSIGNMENT

Although in recent years, attention has gradually shifted to integrating climate change (CC) and its related disasters into Ghana's national development planning and budgeting processes, it is important to consider and address sector specific impacts and their interrelationships as a result of climate change.

Indeed majority of the efforts towards the minimisation of the impacts of climate change in Ghana, however, appear unplanned and reactionary as they are basically driven by emergency. In addition, they are hardly coordinated and do not really consider the rippled impacts of climate change on various sectors of the economy. This may be linked to the fact that the issues of climate change are confined to organisations dealing with environmental issues. Planning at various levels and across sectors hardly considers the potential long-term rippling impacts of climate change.

In the event of extreme climate disasters, such as the 2007 floods in Northern Ghana, Central and Western regions, the impacts are usually overwhelmingly high as relevant agencies are least prepared or hardly put structures in place to absorb the shocks. Such impacts could however be minimised through proper planning and integration of climate change and disaster risk reduction (DRR) measures into all facets of national development planning, particularly across sectors and the district level.

Relevant information and data are therefore vital in determining the desirability of adaptive measures and actions and facilitating their implementation. However, for this to be realised, it is important to do a critical assessment (including interrelationships) of the impacts of Climate Change on the sectors.

OBJECTIVES OF ASSIGNMENT

The objective of this assignment is to undertake an integrative sector-wide assessment review and provide comprehensive and relevant information and data of the impacts (current and potential) of climate change and climate variability in the prioritised sector. The assignment will also identify policy gaps and opportunities that will facilitate the attainment of the goal of ensuring a dynamic long term planning mechanism to cope with the inherent uncertainties of climate change.

- (a) Enhance the understanding of climate change implications for sectors and organisations
- (b) Develop a mechanism for enhancing the integration of the climate Change adaptation into sectoral and national development planning processes

APPROACHES FOR ASSIGNMENT

The envisaged assignment will depend mainly on deskwork study including reviewing existing literature and results from previous research studies and related work and hence will not involve conducting new impact studies, which would require a longer time span. Hence, the envisaged assignment will adopt a participatory approach through awareness raising and particularly with identification of adaptation options. Obviously, this will call for series of meetings, consultations and workshops with the identified stakeholders.

There shall be a lead consultant and a resource person for each of the prioritised organisations or ministry. The lead consultant will work closely with all the resource persons and the Project Management Team. Specific approaches to achieve the goals of this assignment shall be prepared and agreed upon within the first week of the consultancy period with the lead consultant.

As part of capacity enhancement, the Lead consultant and the resource persons will be required to work with the prioritised sectors. Emphasis would be on learning by doing. Hence, each of the prioritised sectors will be encouraged to form a small team, preferably, 3 members. The team members shall be assigned to work closely with the resource person to acquire practical hands on learning.

ROLE OF SECTOR RESOURCE PERSONS

- a. Provide inputs on the assigned sector to the lead consultant to develop specific approaches to achieve the goals of this assignment within the first week of the consultancy period
- b. Propose the methodology to be used for the scoping and impact review study for the Lead Consultant and Project Manager's approval before the in-depth assessment commences
- c. Review background information and data and do an analysis of current trends in climate change as it relates to the assigned prioritised sector
- d. Identify knowledge gaps in existing policies, plans, regulations and implementation to climate change and impacts on the assigned prioritised sector
- e. Assess existing human and institutional capacities for dealing with climate change risks and the opportunities as it relates to the assigned prioritised sector
- f. Assess the potential impacts and opportunities of climate change including current vulnerability and risks of the sector to climate change on the prioritised sector
- g. Participate regularly and actively in meetings, workshops with the PMT, the lead consultants and other major stakeholders

- h. Identify and evaluate current coping and adaptation measures related to the sector and propose a prioritised set of adaptation options
- i. As far as appropriate, involve a wide range of stakeholders from government institutions and civil society in these investigations to ensure that appropriate responses cover a broader range.
- j. Make presentations of the findings of the scoping and impact review assessment during periodic meetings and at the final validation workshop
- k. Incorporate comments and inputs from the validation works
- l. Finalise and submit a report of the assignment to the Lead Consultant and the Project Manager

EXPECTED OUTPUT OF ASSIGNMENT

A comprehensive scoping and impact assessment review study report including;

- current vulnerability and risks of the sector to climate change on the prioritised sector
- the potential impacts and opportunities of climate change on specific assigned sector
- existing human and institutional capacities for dealing with climate change risks and the opportunities as it relates to the assigned prioritised sector
- Recommendations on how to mainstream the findings into national policy planning and budgeting processes

LIST OF ACRONYMS

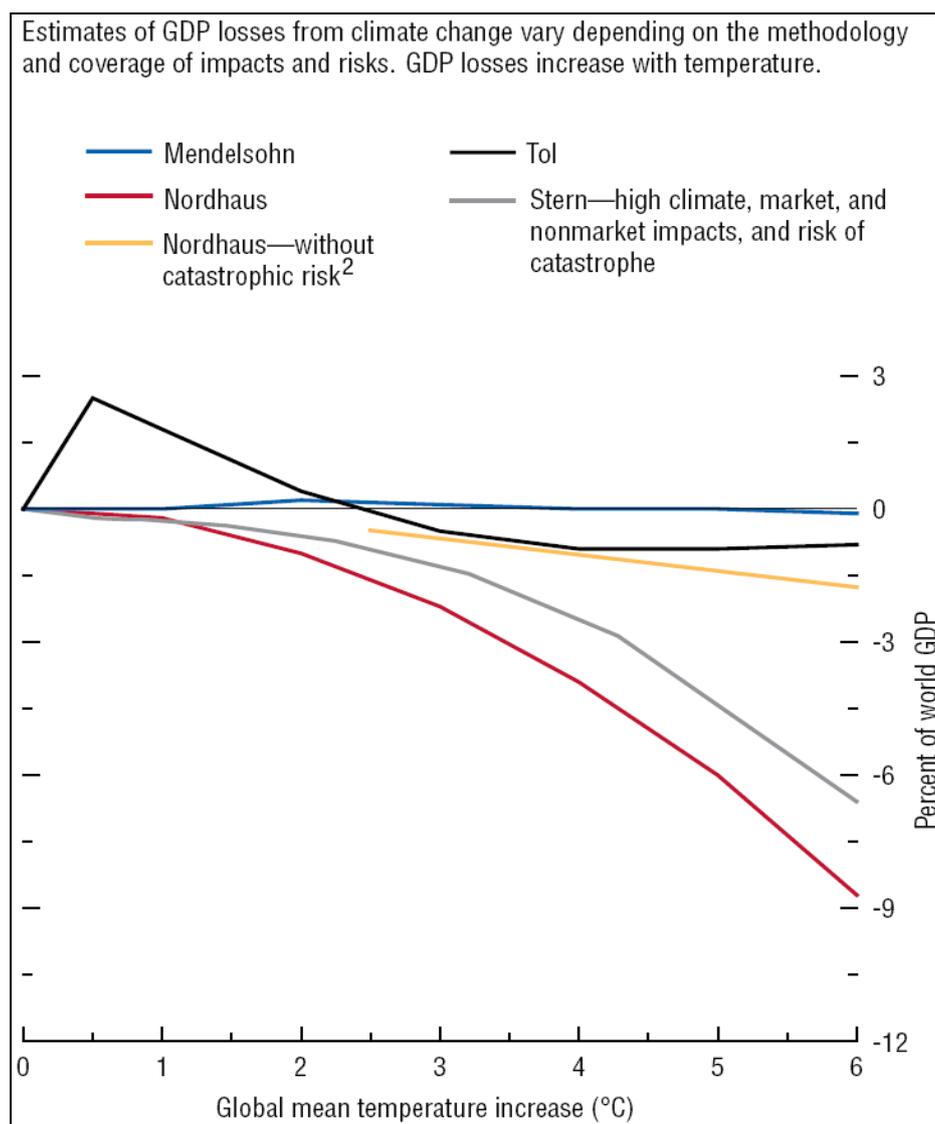
1. INTRODUCTION

Ghana is well endowed with natural resources both renewable and non-renewable contributing well to GDP. Agriculture accounts for roughly one-third of GDP and employs more than half of the workforce, mainly small landholders and the main export commodity being cocoa, and gold similarly for the non-agricultural sector. The services sector accounts for 40% of GDP. Individual remittances are also known to be major sources of foreign exchange earnings. Oil production at Ghana's offshore Jubilee field which began in December 2010 is expected to boost economic growth and improve wealth distribution and equity and thus increase Ghana's macroeconomic fortunes. Subsistence farming is widespread and many livelihoods depend on this as their main source of income coupled with the high dependency on natural resources and thus making large parts of the population vulnerable to several risks including climate variability and change.

The challenges posed by global warming and related climate changes are no longer merely potential threats but inevitable reality (IPCC 2007). As a result of global warming, the climate in Africa is predicted to become more variable, and extreme weather events are expected to be more frequent and severe. These include increasing risks of droughts and flooding (Christensen et al. 2007) and inundation due to sea-level rise in the continent's coastal areas (McMichael et al. 2006) with the potential to reduce economic prospects and national development. Many areas in Africa are therefore recognized as having climates that are among the most variable in the world on seasonal and decadal time scales. Floods and droughts can occur in the same area within months of each other.

The traditional aim of macroeconomic policy traditionally is to stabilize economic systems by avoiding uncontrolled inflation or recession. However, with the advent of environmental challenges, macroeconomics takes into account goals of ecological sustainability and social responsibility including poverty reduction, education and health care. Studies have shown that the economic estimates of the impact of climate change are typically based on "damage functions" that relate GDP losses to increases in temperature, GDP costs covering a variety of climate impacts categorised as market and nonmarket impacts. Climate – sensitive sectors such as agriculture and fisheries, forestry, tourism; coastal destruction from sea-level rise; variable water resources and changes in energy expenditures constitute market impacts.

Nonmarket impacts cover effects of temperature increase on health, ecosystems (e.g. loss of biodiversity), and human settlements. However studies tend to underestimate economic damages from climate change, particularly the risk of worse-than-expected outcomes (IMF 2008). It is also projected that expected GDP losses between 0 percent and 3 percent of world GDP for a 3°C warming (from 1990–2000 levels) could be experienced. However, these estimates of damages are often incomplete because they rarely cover nonmarket damages, climate variability, or the risk of large temperature increases and socially dependent events (IMF 2008).



Nationally, growth and development policies that emphasize poverty reduction are often alienated from environmental hazards amongst which climate change impacts tower and come with a lot of uncertainties. However, it is now known that in Sub Saharan Africa,

poverty is one of the major outcomes of exposure to extreme weather events emerging from global warming (e.g. flooding, droughts). The Interdepartmental Working Group on Climate Change of the United Nations Food and Agricultural Organization estimated that Africa would face a 2 - 9% decrease of GDP from agriculture, attributed to climate change (FAO 2007). This is significant in terms of already ailing economies lacking the capacity to sustain their development.

In Ghana, the challenge of climate variability/change and its impacts are heightened by enormous gaps in scientific and institutional capacity linking vulnerability to adverse impacts of climate change, adaptation and mitigation. The numerous climate variability events occurring in Ghana are potential developmental risks, but are unfortunately considered often by society as “normal”. Nationally, growth and development strategies that emphasize poverty reduction are often alienated from extreme weather events. These perceptions are worsened by the virtually non-existent scientifically tested activities that seek to bring the issue of climate change impacts to the doorsteps of the poor in society and policy planners. Thus the understanding of the potential impacts of climate variability / change will constitute fundamental basis for national development planning especially because of the uncertainties that are associated with the outcomes.

Ghana’s economy relies heavily on climate sensitive sectors mainly in agriculture, energy and forestry. About 70% of the population depends directly or indirectly on agriculture (fisheries, crop and animal farming etc.) and forest sector for both timber and non timber forest products. Therefore the need to build resilience through sharing of relevant information for macroeconomic policy and management planning will be critical. This notwithstanding Ghana like many African countries south of the Sahara may not have the necessary capacity to appropriately respond to the impacts of climate change, and associated risks.

Historical data for Ghana from the year 1961 to 2000 clearly shows a progressive rise in temperature and decrease in mean annual rainfall in all the six agro-ecological zones in the country. Climate change is manifested in Ghana through: (i) rising temperatures, (ii) declining rainfall totals and increased variability, (iii) rising sea levels and (iv) high incidence of weather extremes and disasters (e.g. flash floods). The average annual temperature has increased 1°C in the last 30 years. Based on this data Minia et al. (2004) estimate that temperature will continue to rise, while rainfall is also predicted to decrease in all agro-

ecological zones. Even though there may be variations in model prediction of actual climate at the projected dates, historical trends show that rainfall in the West African sub-region is associated with high variability which climate change would only amplify. Within the same period of the analysis of trends in temperature, average rainfall total had been estimated to decline by between 1.1%, and 20.5% annually there is still much that is not yet understood.

1.1 Ghana's Macroeconomic and Development Planning

A Coordinated Programme of Economic and Social Development Policies with the theme, Ghana: Vision 2020 was in 1995, presented by Government to Parliament. This represented a new approach to Planning and aimed at making Ghana a middle-income country in a period of 25 years. The Vision 2020 was expected to be delivered through Medium-Term Development Plans (MTDP) which sought to address, in broad terms, issues on the transformation of Ghana's Vision 2020 through a series of 5 – year Socio-Economic Policy Frameworks, the first of which was crafted for 1997-2000. It prioritised Human Development, Economic Growth, Rural Development, Urban Development, Infrastructure Development, and an Enabling Environment for investment. The vision 2020 represented a key approach to the new Planning System of Decentralization and Participatory approach to Development Plan Formulation and Implementation.

Following a change of Government in January 2001 after general elections, a new National Development Policy framework, the Ghana Poverty Reduction Strategy (GPRS) an Agenda for Growth and Prosperity, was produced. The GPRS I was as a result of the decision of Government to access limited financial assistance under the Heavily Indebted Poor Countries (HIPC) debt relief initiative in 2002. GPRS I focused on Production and Gainful Employment, Human Resource Development and Basic Services, Special Programmes for the Poor and Vulnerable, and Governance, and implemented over the period 2003 – 2005 (NDPC 2003).

After the implementation of the GPRS I, coupled with relative macroeconomic stability, the Growth and Poverty Reduction Strategy (GPRS II) was prepared to replace the GPRS I and implemented over the period 2006 - 2009. The GPRS-II placed emphasis on growth as the basis for sustained poverty reduction “so that Ghana can achieve middle-income status within a measurable planning period” (NDPC 2005). Continued Macroeconomic Stability, Private

Sector Competitiveness, Human Resource Development, and Good Governance and Civic Responsibility formed the cornerstone of the priority policy interventions and public investment decisions of the strategy.

The assessment of Ghana's economic situation in 2005 and the available development alternatives to accelerate growth and sustainable development consequently resulted in the Growth and Poverty Reduction Strategy (GPRS II). The GPRS represented an Agenda for accelerated Economic Growth and Prosperity to enhance growth and reduce Poverty so that Ghana can achieve Middle Income Status within a measurable planning period (by 2015).

In spite of the GPRS, Ghana's macro economy was found to be vulnerable to severe supply shocks from weather and commodity price developments, and thus having significant impacts on inflation performance in the period of January 2002 to the last quarter of 2007 (averaging 13.5 percent per annum) and outside the stipulated range of 8 to 13 percent per annum for Ghana at the time (CEPA 2009). On assumption of office by different government in 2009, the Ghana Shared Growth and Development Agenda (GSGDA) document was introduced to provide a successor medium - term national development policy framework to the GPRS II (2006 – 2009). The GSGDA is to be implemented over the period 2010 - 2013.

The GSGDA entails improved enabling environment to empower the private sector; active collaboration between the public and private sectors, including public-private partnerships and civil society organizations; active Government interventions where appropriate, transparent and accountable governance and efficiency in public service delivery at all levels; and effective decentralisation for enhanced local economic development. The GSGDA suggests that the transformation of the economy will be anchored on the following thematic areas:

- i. Ensuring and sustaining macroeconomic stability;
- ii. Enhanced competitiveness of Ghana's private sector;
- iii. Accelerated agricultural modernisation and natural resource management;
- iv. Oil and gas development;
- v. Infrastructure, energy and human settlements development;
- vi. Human development, employment and productivity; and
- vii. Transparent and Accountable Governance.

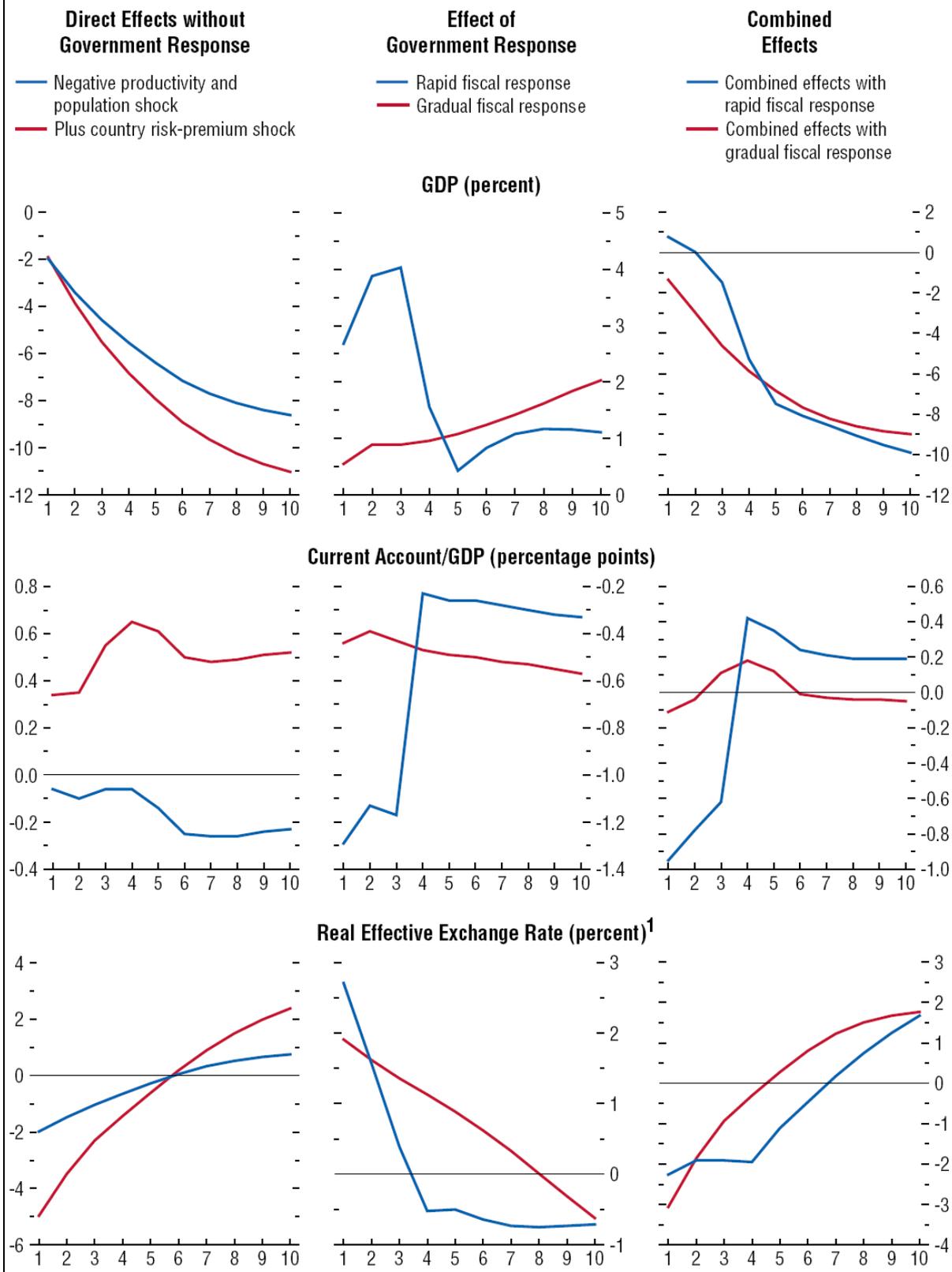
2. CURRENT VULNERABILITY AND RISKS OF THE SECTOR TO CLIMATE CHANGE ON THE PRIORITISED SECTOR

It has been argued that current global economic performance should form basis for ascertaining an early warning of climate change impact on the economy. For example, uncertainty in financial markets and world trade, slow economic growth, and spiralling inflation and high unemployment rates may directly or indirectly implicate the impact of global climate change. In some quarters, as in 2007 / 2008 increased food commodity prices that undermined the global economy and also the impacts of weather events such as flooding were indicators of the impacts of climate change. It is now globally accepted after several studies that the global economy may face a downturn from the additional challenge and increasing pressure stemming from global climate change (Goeltom 2008, IMF 2008). It has been argued the higher fiscal deficit correspond to the climate change plausibly emerge from the effort to mitigate carbon emission, including higher energy prices and increased investment, as well as the measures to lessen the impact of the climate change both direct and indirect to the poor (IMF 2007).

“The impact of climate change on the macro economy can be felt through both the supply and demand sides, however the supply side is the trigger of the overall impact. IMF (2008) argues that climate change can be categorized as a series of persistent and potentially abrupt sector-specific supply shocks. These negative supply shocks relate to decreasing economic productivity, higher temperatures, changing rain patterns and air pressure. Such conditions will directly influence agriculture, plantations and forestry as well as tourism. Under such circumstances that climate change precipitates natural disasters, productivity will also decline. The effect will be compounded further if intangible issues, such as health and nutritional quality suffer due to the calamity. The contribution of climate change from the supply side could be bigger, if concomitantly, there is population migration to avoid the risks of climate change. Migration could also have significant impacts on overall economic productivity” (adopted from IMF 2008).

Illustrative Impact of Climate Change

(Deviations from control; x-axis in years)



Source: IMF staff calculations.

¹A positive value represents an appreciation relative to the baseline.

2.1. Strategic Planning

Sub-Saharan African countries are known to be least prepared for extreme events from unexpected impacts of global environmental change (GEC) and mostly climate change impacts. This is because policies on economic development and poverty reduction hardly consider broader impacts of networks of events and environmental shocks. Food systems are a significant role player of these networks and largely under the influence of GEC. Ghana's sector policies to implement poverty reduction strategies and the Millennium Development Goals (MDGs) are silent on potential linkages with impacts of changing environmental factors (e.g. climate change and variability) that tend to drive production. The outcomes of climate variability on the macro economy are often either unknown or poorly understood due to data impoverishment on ex-ante risk and growth indicators, and the history of the events. Additionally, the restricted use of historical events, and silence on data to create scenarios for future occurrences of extreme weather events and linkages with growth and development indicators undermines reliable assessments. These and others such as the individually insignificant, yet unaccounted cumulatively important numerous climate variability events occurring in our society are potential developmental risks.

For example, Ghana's policy on food security has been driven by the agricultural sector policy under Vision 2020 and the GPRS. The policy has been underlain by five key objectives. Thus (i) ensuring food security and adequate nutrition for the population, (ii) promoting the supply of raw materials for other sectors of the economy, (iii) contributing to export earnings, (iv) increasing employment opportunities and incomes of the rural population, and (v) generating resources for general economic development. The policy formed part of Ghana's visionary strategies to propel Ghana from a poor low income country to a prosperous middle income country by the year 2015 (GoG 1997, NDPC 2003, 2005). Most of these objectives are also being supported by the Millennium Challenge Account (MCA) to assist Ghana to realise the sector MDGs. However, it has been observed that although these policies which are guided by the objective of promoting food security do change, the strategies for achieving them have remained the same as the previous strategies that undermined Ghana's progress on the food security front (Asante 2004).

2.2 Policy Challenges

If indeed agriculture was the pillar of the GPRS, then one would have for instance, expected that the GPRS, like the Vision 2020 addressed environmental risk factors influencing the sector (e.g. climate, disasters, and pestilence). This is because hardly can there be increased production and wealth, hence reduction in poverty if plans to mitigate agriculture – linked disasters are sketchy. Questions around what challenging environmental risks including disasters faced at the farm gate and their mitigation are basic and primary issues that should have been properly addressed. The emphasis of risk analysis in the GPRS was mainly on the fiscal economy especially agricultural credits, and silent on measures that will provide insurance and protection for the producer at the household and farm levels. The skewed nature of risk management in the GPRS reinforced the perception that it was in to benefit the rich, and therefore has the potential to undermine sustainable agrarian reform which previous strategies failed to address.

Thus Climate variability and change was only cursory mentioned in the GPRS in relation to agriculture and environment, in GPRS II compared to the GSGDA. It has been generally thought that the NDPC could improve its mainstreaming of climate change issues. The lead role of the NDPC to prepare the National Climate Change Adaptation Strategy (NCCAS) was an improvement on previous planning. However, because the role of NDPC is to support sector ministries with information and to help plan and prepare background information, the whole mainstreaming will involve the integrated planning by all sectors working towards clearly stated common goals related to climate variability and change.

The role of the NDPC has evolved over the years as exhibited in the current development planning process. Thus the GSGDA recognises that the overall growth strategy will have implications for the environment and therefore there was the need to plan towards the future making special references to climate change as opposed to previous similar documents.

Thus “Special attention shall therefore be paid to environmental sustainability as well as determine the impact pathways of climate change and the areas of national vulnerability for appropriate policy interventions” (NDPC 2010 page 5). The document specifies that there was the need to turn climate change and variability impacts and challenges into an

opportunity to expand national output and productivity and capacity to contribute to national development, in areas of:

- i. Natural Disasters, Risks and Vulnerability
- ii. Recreational infrastructure
- iii. Energy Supply to Support Industries and Households
- iv. Settlement Disaster Prevention

Whilst the GSGDA has outlined the framework to mainstream climate variability / change into development, weak Sector planning and coordination may render the plan ineffective. The playing down of the vulnerability of the macro economy to environmental risks has contributed to lack of awareness and that climate variability and extreme weather events are often considered by a number of households as “normal”. Is it because people have developed strategies locally to respond immediately to these events because they occur frequently and coming with no external interventions, or for lack of information? Either way, inappropriate coping and adaptation planning can increase vulnerability to the impacts of climate variability and change, and subsequently human and environmental insecurity and thus diminishing macroeconomic resilience. However, the extent to which development planning and macro level policy has intervened remains either unknown or not quantified. This is because the corresponding responses of humans to either cope with or adapt to the ensuing change could further be undermined by inappropriate policy environments hence the need to consciously plan for climate change challenges in national level planning.

2.3 Competing Resources

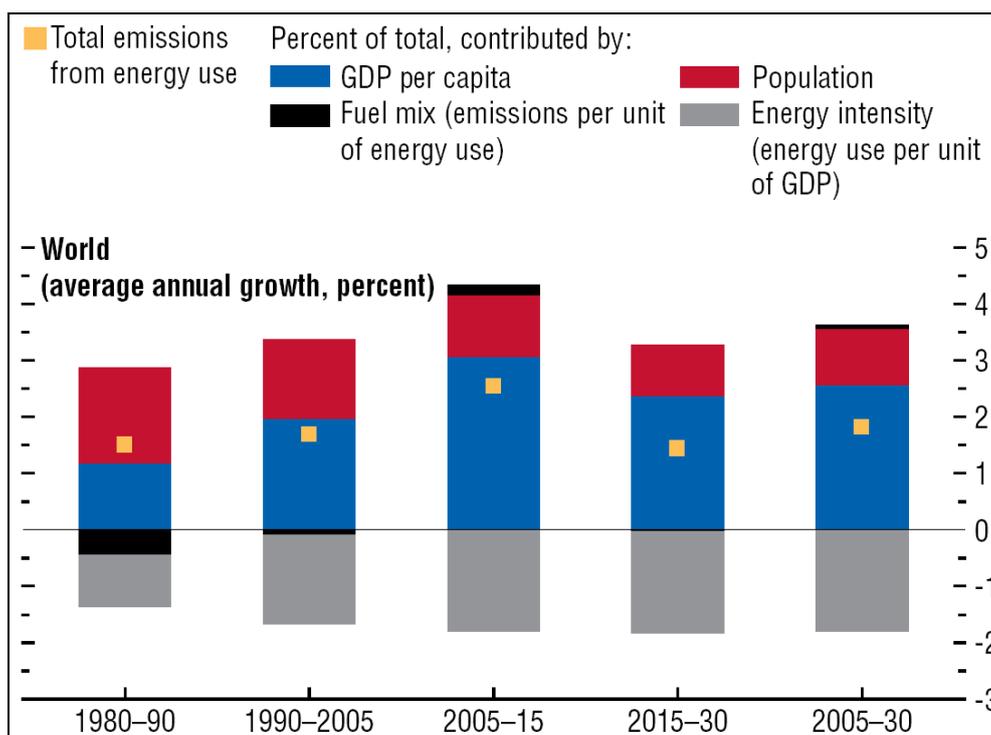
The adaptation to extreme weather events takes such generic forms as, diversifying household production and consumption, social networks, migration and institutionalisation. The reallocation and diversification of resources by society to counteract the effects and impacts of climate change could for instance lead initially to increased dependencies on the natural capital (e.g., agroecosystems, forestry and water resources), a component of livelihoods that supports biodiversity. These increased dependencies would result in changes in the ecosystem with further implications for the resources (e.g., vegetation and water) that are supported by it. Similarly, several productive economic activities also depend on the same resources base that is often affected by the extreme change events.

Changes in socioeconomic and political conditions may also affect livelihood strategies and subsequently the biophysical environment. Therefore, the singular or the combined actions of extreme weather events and human imposed activities on the environment could lead to changes in the earth's resources that could no longer sustain livelihoods, development and human security.

3. THE POTENTIAL IMPACTS AND OPPORTUNITIES OF CLIMATE CHANGE ON SPECIFIC ASSIGNED SECTOR

It has been observed that unexpected external shocks to economy such as extreme weather events (e.g. flooding of commercial assets) or unexpected volatility in exchange rates and commodity prices can upset forecasts and targets of the economy from the planned scenario. In this case, it's possible that the Government might confuse the impact of an economic shock with the impacts of the environment and therefore apply the precautionary principle in its policy response and which can end up with severe consequences. Hence the need to make use of trade-offs between external shocks looking at the origin for which climate change needs to be factored into such decision making process.

The IMF establishes from various studies that GHG emissions will continue to surge following the impact of GDP per capita growth and increased population growth despite greater energy intensity actually reducing GHG emissions slightly (Fig below), but with differing results, across sectors, countries and regions.



3.1 Planning Impacts of Climate Change

Although Ghana's economy is seen as one of the most stable in West Africa and having experienced impressive per capita GDP growth and enjoyed lower inflationary rates, in recent times, its heavy dependence on the agricultural sector represents a developmental risk. If climate conditions change as have been predicted through various studies, small subsistence farmers, particularly in the North, are likely to be more exposed and negatively impacted. Other scenarios also suggest that important export products, such as cocoa may be affected and benefits dwindling with severe implications for the entire economy. Whilst poverty levels may be found to be on the decline, poor planning and macroeconomic policy could increase poverty incidence especially in rural areas because poor people often settle in climate unfriendly environments which are mostly disaster prone areas or in degraded environments. Climate change could increase migration with a broad range of accompanying problems related to health, social conflicts and deterioration of public infrastructure.

3.2 Industry Impacts of Climate Change

Ghana's economic development highly depends on climatic sensitive sectors, particularly energy production and use, agricultural production and forestry. Most of these sectors are also linked to emissions of Green House Gases (GHGs). Some GHGs produced and emitted are CO₂, Methane and N₂O. Studies on the economic assessment of impacts of climate have yielded several scenarios. One of such is the World Bank study (2009) that suggests significant adverse economy-wide effects of climate change. The scenarios recognise that although there is considerable variation in real GDP growth over the simulation period, the overall trend is clearly downward, and thus the adverse impacts of climate on GDP become stronger towards 2050. The projected decline in real GDP ranges from negative 5.4 percent per annum (Global Dry) to negative 2.1 percent per annum (Ghana Wet) by 2050. There is an accompanying decline in real household consumption levels, with rural households suffering greater reductions compared to urban households (World Bank 2009).

“The output of the agricultural sector is estimated to decline by between 6.4 percent (Global Dry) and 0.8 percent (Ghana Wet) by 2050. There will be a significant impact on the cocoa sub-sector, with output falling by 26-39 percent relative to base for the Global Wet and Dry scenarios and Ghana Dry scenarios. However, in the Ghana Wet scenario, annual cocoa

output is projected to increase by about 18 percent relative to base by the 2020s, slowing to about by 7 percent by the 2050s due to the offsetting effect of increased warming. The projections for cocoa pose serious socio-economic implications in view of cocoa's significant contribution to national income and farmers' livelihoods. There is a need to give consideration to diversification of livelihoods" (World Bank 2009).

Whilst the response to climate variability and change may be drawn from the livelihoods point of view, it is important that macro level policy and planning also diversifies in addition to potential institutional changes. This is to ensure that planning process does not remain business as usual but also considers the additional pressures that climate change brings with it. Climate change / variability are therefore expected to change the content and direction of planning for economic development.

Some Possible Growth Outcomes and Impacts of Reduced Emissions

We can conceive of different ways in which the necessity of a rapid reduction in carbon emissions could affect economic growth

1. If technologies, investment, and consumption patterns remain similar to those of the present day, limiting carbon emissions could imply a drastic constraint on economic growth, leading to widespread recession and unemployment, and consigning much of the developing world to a state of stagnation.
2. A rapid change in energy technology and industrial patterns could permit a continuation of economic growth, but oriented strongly towards energy efficiency and non-carbon-based energy sources. This would require the transformation of much of the world's energy, industrial, and building infrastructure.
3. Growth could be moderated, but less painfully than in the first option, through demand-side reductions in consumption. This would involve population stabilization and modification of consumption patterns towards greater use of services provided primarily by human capital, including education and health care. In addition, leisure time and household production would be emphasized instead of increased goods production.
4. Growth as a goal could be replaced entirely for richer nations, with an orientation instead to sustainable but moderate consumption levels and greater equity. ("Moderate consumption levels" would probably imply a reduction from today's levels, at least for certain kinds of consumption – more on this below), For developing nations, the goal would be the attainment of these "global middle class" consumption levels, but no more. The focus of economic progress could then be on improved social and cultural life.

(Adapted from Harris 2008)

3.3 Development Opportunities and Potentials

Ghana signed the United Nation's Framework Convention on Climate Change (UNFCCC) in 1992 and ratified it in 1995. Following this commitment various projects and programmes especially in respect of clean development mechanisms (CDM) can be executed within Ghana's obligation under the Montreal Protocol, and captured in national planning framework. Accessing technology and capacity building are major components of the CDM. Example, the refrigeration sector has undergone a number of transformation including good practices in refrigeration; recovery and recycling of refrigerants; and training and awareness programmes on ozone depleting phenomenon (EPA 2007).

Data on the assessment of the level of greenhouse gas emission and other pollutants by vehicles will help in drawing up guidelines and development of standards for vehicular emissions in the country thus allowing for inclusion in planning frameworks. This will also improve on data collection for reporting on emission levels.

The known state of the vulnerability of climate change sensitive sectors such as water resources, coastal zone and agriculture, land management, human health, poverty alleviation and fishery among others, add a new face and subject to development planning and mainstreaming the need of other sectors. The need for integrating climate in order to ensure long-term achievement of the development goals, particularly in the GSGDA is therefore appropriate.

National Climate Change Adaptation Strategy (NCCAS): The National Climate Change Adaptation Strategy (NCCAS) emerged from the need to properly plan and carefully adopt a development path that ensures climate resilience and integrate adaptation measures into all facets of national development planning, particularly at the local level (EPA 2010). Whilst the NCCAS looks at the overall strategy to confront climate change it does not examine specific actions that may be required and thus offering the individual sectors the opportunity to scale up the guidelines as set in the NCCAS.

Ghana Shared Growth and Development Agenda (GSGDA): Need to foster dialogue, leading to development and testing of growth and development policies in the context of climate change adaptation and mitigation, offering opportunities that deal with the issues of scale in

the localisation of global and regional action plans (e.g. MDGs, Agenda 21, NEPAD Action Plan, CAADP).

Regional sharing of best practices, experiences and technologies from African adaptation initiatives and result exchanged among countries implementing climate – resilient policies in priority sectors to raise awareness, engage stakeholders, inform decision-makers, and promote cooperation between relevant institutions, and countries. Thus, leading to the development and strengthening of resilience and adaptability of policies and planning horizons including strategies and action plans in the context of climate risk factors.

Promoting pro-poor and broad-based business sector development policy that will be of support to commercial farmers and agribusiness in areas which are highly vulnerable to the impacts of climate change such droughts, heavy precipitation, changed rainfall patterns, and flooding.

A financial policy that aims at enhancing financial sector deepening and investments in SMEs that is at high risk of being vulnerable to climate change. This may also involve conducting extension service capacity building and training on how climate risks can be mainstreamed in agribusiness planning, and in the business sector finance through risk diversification options, risk sharing measures (e.g. insurance), microfinance, and other options.

4. EXISTING HUMAN AND INSTITUTIONAL CAPACITIES FOR DEALING WITH CLIMATE CHANGE RISKS AND THE OPPORTUNITIES AS IT RELATES TO THE ASSIGNED PRIORITISED SECTOR

- i. There is still a lot of human resources capacity to be harnessed for mainstreaming climate change issues at the macro economy level and this need in itself represents climate risks in relation to the targeted activities the policy frameworks and the responsible sectors. Climate change impacts are mostly felt at the grassroots levels which are more of micro than macro levels and often translating into risk diversification options, insurance, and microfinance rather than GDP measurements. This partly portrays that the role of the micro-based economy for poverty reduction has been played down, which can further widen the gap between the rich and the poor because they are highly vulnerable to the impacts of climate change.
- ii. Hence there is the need to consider a thorough review of macroeconomic policies, tailored to problem specific and “factual” issues. As part of this, one needs to revisit the few formal sources of data that inform such documents and policies. It will be hard to accept that this level of welfare and economic indicators alone can lead to strategies that help to build and strengthen resilience, which is far beyond providing a favourable investment atmosphere for the rich to benefit the more. For example, if indeed agriculture was the pillar of Ghana’s development agenda, then one would have for instance, expected that macroeconomic level policies addressed environmental risk factors influencing the sector (e.g. climate, disasters, and pestilence). This is because hardly can there be increased production and wealth, if plans to mitigate agriculture-linked disasters are sketchy. Yet capacities to do this kind of analysis hardly exist.
- iii. Questions around what challenging environmental risks including disasters faced at the farm gate and their mitigation are basic and primary issues that should have been addressed yet are missing. The emphasis of risk analysis in macroeconomic level policy and planning emphasise fiscal economy especially agricultural credits, and silent on measures that will provide insurance and protection for the producer at the household and farm levels. The skewed nature of climate risk management only reinforces the perception that the policy is in to benefit the rich, and therefore has the potential to undermine sustainable agrarian reform.

5. HOW TO MAINSTREAM THE FINDINGS INTO NATIONAL POLICY PLANNING AND BUDGETING PROCESSES

The two broad response categories by society to an environmental stress or shock (e.g., drought or flood) are *internal* and *external* which will ultimately lead to adaptation. Climate change / variability are one of such sources of risks that can disrupt targeted economic indicators through impacts on climate related sectors. The internal responses represent how the exposure unit or those confronted with the event engage their own resources, and the external being the institutions, and interventions outside of the exposure unit's own resources. Because these involve risk management, there is therefore the need to understand the proactive and reactive management strategies from the two response categories at the macroeconomic level and implications for macroeconomic indicators (e.g. GDP, inflation). 'Social Risk Management' (SRM) has been used in the late 1990s to describe such risk management strategies by society through formal and informal means. SRM together with the "vulnerability" concept suggests ways to manage known and unknown probability occurrence and distribution of risky events such as of climate origin. However society needs to appropriately identify with an event, and timely for appropriate vulnerability assessments.

Whilst SRM has been adopted by nations and several development partners in the past few years to manage risk including climate change impacts, it is not convincing that those practicing SRM are themselves adapted to such events. Post-risk management conflicts are not uncommon in Ghana just because institutions have failed in their adaptation and, or not knowing how to help the exposure units (e.g., society) to adapt. Although it is not possible to cater for individual needs in expectation of, or in times of an extreme weather event, it is important not to homogenize society based on previous experiences in some other societies.

5.1 Risk management

A change to proactive management of environmental risks and disasters requires an identification of the risk, the development of strategies to reduce that risk, and the creation of policies and programmes to put these strategies into effect. Risk management therefore should become a fundamental activity geared to the macroeconomic evaluation of schemes for reducing but not necessarily eliminating the overall risk, as in many cases risk cannot be entirely eliminated

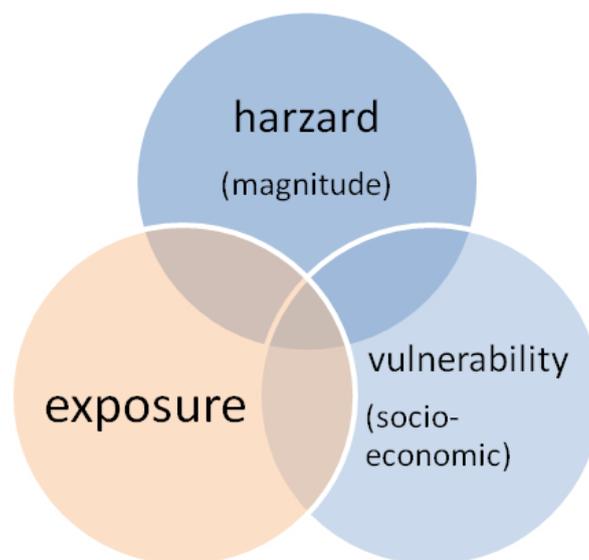
5.2 Steps associated with risk assessment and management

- (i) Assessing the potential for a hazard to occur
- (ii) Vulnerability analysis to provide an understanding of the consequences should an event of a certain magnitude and frequency occur
- (iii) Various mitigation measures evaluated to assess their ability for reducing risk exposure
- (iv) Disaster management plans and specific mitigation measures can be identified
- (v) Efforts then made to implement the selected mitigation measures

5.3 Managing risk and vulnerability

Management plan has to start with assessing the present and future risks and incorporate into targets set for macroeconomic indicators. Risks are a function of;

- (i) magnitude of the hazard,
- (ii) degree of exposure to the hazard and
- (iii) vulnerability of society against damage due to the hazard.



Risks and vulnerability analysis framework

5.4 Policy and governance as an essential element for risk management and political commitment

- (i) Risk identification, impact assessment, and early warning, which includes hazard monitoring and analysis, vulnerability and capability analysis, assessments of possible impacts, and the development of early warning and communication systems.
- (ii) Awareness and knowledge management to create the basis for a culture of risk reduction and resilient communities.
- (iii) Effective mitigation and preparedness measures to move from policies to practices in order to reduce the potential negative effects of interventions on the environment and society.

5. CONCLUSION

The macroeconomic sector is already tied to other productive sector activities and events, and which on their own are responding to the impacts of climate change. It is important that the macroeconomic sector indicators are examined in the context of managing expected risks of climate change / variability origin and adopt appropriate instruments for managing such risks. Yet the sector planning should clearly understand such risks and determine in advance how they are managed such that macroeconomic indicators are not destabilised. That is why the need for quantifying the elements of climate risks becomes inevitable. Policy specific interventions should capture the direct linkages of climate change with the following variables according to Goeltom 2008 (pages 14-18):

Policy in Banking and Financial Sector: In the banking sector, Bank Indonesia (BI) aims its policy towards supporting the protection of the environment by encouraging banks to invest in businesses that serve to protect the environment. BI has the capacity to encourage banks to finance projects aimed at safeguarding the environment such as finding alternatives to fossil fuel energy, recycling waste, reforestation/afforestation, and the preservation of nature.

Monetary Policy: High inflation due to rising food and oil prices has caused dilemmatic condition for economic growth in Indonesia. On one side, efforts to overcome inflation in the short term can curb economic growth. However, on the other side, economic growth is required to increase the population's income to guarantee purchasing power.

Fiscal policy: On the fiscal front, economic and institutional development is perhaps the best means of improving climate-related adaptive capacity. Thus, to be effective in fostering adaptation, development strategies need to take climate change vulnerabilities into account. In this regard, the Government should be affirmed that fiscal spending should be aimed to guide long term goals, especially alleviating supply bottlenecks, particularly related to infrastructure that have contributed to inflation pressures.

Policy in the Real Sector: Meanwhile, considering inflation in the past few years has stemmed from the demand side, the treatment of this problem has to focus on improvements in goods and services world supply. Any trade restrictions that could induce a more limited

world food supply amidst persistent strong demand should be short term in nature and applicable only for good reason.

However, these elements need strong political commitment, community participation, and consideration of local realities. The international and regional communities also play an important role in coordinating activities, transferring knowledge, supporting project implementation, and facilitating effective and affordable practices, and can contribute to understanding such elements towards planning for reducing the impacts of climate variability and change on the macro economy.

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