



C l i m a t e C h a n g e

1. Why is climate change important?

The average temperature of the Earth is increasing, rainfall patterns are shifting and the sea level is rising. Irrespective of the scale of mitigation measures taken to reduce greenhouse gas emissions, adaption to cope with the impact of climate change is a necessity.

Africa has contributed very little to climate change¹. But Africa is one of the most vulnerable continents to climate change and climate variability (IPCC). It is expected that only very few areas of Africa will benefit from climate change. Many countries will suffer from drier climates with increased rainfall variability and more frequent and severe floods, droughts and storms. Economic growth, food production and employment are highly dependent on agriculture, livestock, fisheries and other activities which are sensitive to climate change and in particular to water availability.

Africa already faces considerable challenges arising through economic, demographic and environmental stresses; including climate related stress in the form of droughts, floods and water scarcity. Further global warming will make these development challenges more complex and more difficult to resolve.

Climate change is likely to undermine economic growth. At the same time, economic growth is needed to generate incomes and reduce the vulnerability and invest in adaptation.

Climate change may undermine the livelihood of tens of millions who live in fragile ecosystems with increased migratory pressures.

African farmers and herders have significant knowledge about adaptation to climatic variability and to periods with water scarcity. However, Africa's capacity and resources to adapt to climate change and to benefit from modern climate friendly technologies are low. This is due to low income levels, limited access to capital, poorly equipped governance systems, degraded ecosystems, conflict or post-conflict difficulties.

¹ According to Investing in Africa's Future (AfDB 2008), green house gas emissions from fossil fuel use in Africa are only around 3 per cent of total emissions.

2. Emerging evidence on climate change in Africa

It is predicted that the African climate will generally become warmer and drier (IPCC, the fourth assessment report, 2007) with more extreme events: droughts, storms and floods.

However, there are considerable differences across the continent. The models of climate change predict that northern and southern Africa will become drier. The eastern and western regions of the continent are expected to experience more rainfall and higher temperatures. There is some uncertainty about whether additional rainfall will lead to greater availability of water resources for consumption and production. There is less doubt that sea level rise and increased intensity and frequency of cyclones will cause problems for coastal cities and major river delta areas.

There are few reliable, long-term data series for rainfall and run-off patterns in Africa. Furthermore there is considerable uncertainty about what will happen in specific localities. There is an urgent need for developing capacity to collect better data and to make analyses that can underpin policies and strategies.

Climate change constitutes a serious constraint to economic development. Cost of adaptation could be 5-10 per cent of GDP.² Other studies indicate that, for example, improving African water infrastructure to adapt to climate change would cost between 1 and 3 billion USD annually. There is considerable uncertainty related to available estimates of adaptation costs. But what is generally recognized is that the poorest people in the least developed countries are likely to be hardest hit – and have contributed the least.

The World Bank has estimated that 20-40 percent of overseas development assistance financed investments are at risk from climate change, including infrastructure investment as well as investment in productive sectors (notably agriculture). Thus climate “proofing” of development assistance is on the agenda.

Water stress

Most of the important climate change impacts in Africa are associated with rainfall and water availability. Changes in climate will be particularly in evidence around lakes, river basins and waterways due to the impact of temperature on evaporation and increased variability of rainfall. The IPCC has noted that: “by 2020 an additional 75 to 250 million people are projected to suffer increased water stress.”

The increased likelihood of extreme events in combination with high vulnerability at all levels will multiply the risk of impacts leading to disasters with negative impact on economic growth. There is a need for investing in flood protection systems and water storage for water supply, irrigation and other productive uses, as well as the need for more disaster preparedness and for integrated water resource management.

² According to Investing in Africa's Future, AfDB 2008.

There are many shared river basins and water bodies in Africa. With less water and more variability, the challenge of sharing and jointly managing these resources will increase. Over the past 100 years water availability in the Niger, Lake Chad and Senegal basins has decreased by 40-60 percent. More frequent floods also increase the need for effective joint management as shown in 2007 when flooding affected the Volta River.³

Agriculture and food security

Declining rainfall and water scarcity will have significant negative impact on agricultural production and on food security. Women and children may be at particular risk. Many African farmers already face challenging conditions, notably in the drought-prone semi-arid areas. Higher temperatures reduce crop yields due to greater stress and increasing evaporation from the soil. There will be greater risks of crop failure, even where rainfall is projected to increase, if this falls in heavy storms that destroy crops and cause soil erosion. Some projections reported by the IPCC indicate declining yields from rainfed agriculture by as much as 50 percent by 2020. Livestock farming in the drier rangelands of the continent will also be affected by climate change. Water scarcity, reduced size of lakes and intrusion of salt water in coastal areas will have significant impacts on fisheries. The livelihoods of millions of livestock farmers and fishing communities are threatened by climate change and can contribute to migratory pressures.

Ecosystems

Disruption of a wide range of different ecosystems is reported as a result of climate change; including coastal areas (where coral reefs and mangroves are affected), with declining biological diversity in terrestrial ecosystems. Deteriorating ecosystems will have a significant negative impact on tourism, an important source of revenue and employment in many African countries, and lower the level of services from eco systems. Strengthening the diversity of plant and animal life will be an important means of reducing vulnerability to climate change.

Human settlements, urbanization, health

Global warming also affects human settlements, industrial activities and infrastructure. Three of the five global regions most at risk from flooding are located in Africa: the Nile delta, the Gulf of Guinea and the Maputo-Beira region of East Africa. Tens of million people will be at risk. The costs of adaptation in these areas are significant; in terms of improved and more resilient transport infrastructure, better flood protection, etc. There is also a toxic and dangerous combination of more flooding, inadequate sanitation, insufficient health care and rapidly growing large-scale, concentrated, informal settlements in many African countries. Urban slums are affected by water-borne diseases and cholera outbreaks. The combination of climate change and rapid urbanization is a major challenge for city planning, infrastructure development and service delivery.

³ Despite giving a two week warning for the release of excess water from Burkina Faso, there was widespread flooding and damage in Northern Ghana. Migration flows will also be intensified as a result of climate change, as people seek opportunities in the urban areas or overseas.

There is already some evidence of changes in the distribution (geographical spread) of disease vectors such as mosquitoes causing malaria. Climate variability will also interact with other vulnerabilities including HIV/AIDS and poor access to water, resulting in greater susceptibility to diseases and further malnutrition. Heat stress caused by increasing temperatures is also a serious health problem.

Mitigation, carbon market, bio-fuel, “carbon footprint” conscious consumers

Africa is also affected by the impacts of global responses to climate change, including the emergence of carbon markets, the growing demand for bio-fuels and rising prices of agricultural products.

Crop based, bio-fuel production may generate increased rural incomes and export revenues. But, there are also negative effects due to loss of arable land, rising food prices as bio-fuels are grown instead of food crops. Increases in agricultural product prices will also increase the value of land and possibly make marginal land productive, which raise issues related to equal access to land. There seems to be an urgent need to explore ways of developing bio-fuel production as a means of meeting energy requirements and improving rural livelihoods.

Other opportunities are emerging in the energy sector, where the Clean Development Mechanism (CDM) and technology transfer arrangements constitute means of accessing development capital.

Access to energy is very low in Africa. As the economies continue to grow at increasing rate, access to energy will – and should – increase and emissions will increase. It will thus be important to support Africa’s access to modern climate friendly technologies.

Systems designed to transfer payments for avoided deforestation and the increasing “carbon-footprint” consciousness among consumers also affect production and livelihoods in Africa.⁴

Emerging good practices

For most African countries the principal and urgent challenge is adaptation in the short to medium term to manage climate change impacts and maximize development outcomes (i.e. to minimize negative impacts and seize opportunities to maximize the positive impacts).

Mitigation in African countries is not an urgent priority from a global mitigation perspective.⁵ Nonetheless, the emergence of a global carbon market (and carbon purchasing through the CDM) may provide opportunities to accelerate investments in developing the low-carbon energy sector and development pathways, as mentioned above.

There is a very considerable overlap between climate change adaptation and “conventional”, sustainable development practices. In this sense, much of what will be needed as a result of

⁴ For example, there is concern about the impact of air-freighted flowers, fruits and vegetables on greenhouse gas emissions. These “niches” are important sources of earnings for farming communities in a number of countries. Often the same concern is not raised with respect to heated greenhouses in Europe that also causes emission.

⁵ Green house gas emissions in Africa are insignificant. Emissions per capita in Chad are equivalent to one thousandth (1/1000) of those from the USA.

climate change was also needed before global warming shot to the top of the agenda. For example, in a recent survey the World Resources Institute has identified a continuum of responses ranging from those where the overlap is almost complete to those that are CCA specific:

- Addressing drivers of vulnerability (reducing poverty, addressing capability shortages, etc.);
- Building response capacity (by improving weather and water resource information systems, natural resource management practices, etc.);
- Managing climate risk (through disaster risk reduction, climate-proofing of investment schemes and programmes, introducing drought resistant crops, etc.);
- Confronting climate change (through actions that focus exclusively on addressing specific impacts, such as relocating communities and fields, building dykes to counter rising sea levels and so on).

Consequently, adaptation should generally be mainstreamed into existing development policies, poverty reduction strategies, sector policies and development programmes at national and local levels. In key areas (infrastructure, water resource management, agriculture, disaster preparedness etc.) the costs of adaptation must therefore be factored into investment strategies.

Adaptation requires economy-wide planning and measures at different scales:

- Continent-wide, through the African Union/NEPAD African Partnership Forum, thereby creating political commitment;
- At regional level (e.g. trans-boundary river basin organizations) promoting joint management, research, knowledge and information, common early warning systems;
- At national level, mainstreaming climate change into policies, plans and budgets;
- At local level, by integrating adaptation in rural and urban planning, disaster preparedness, etc.; and
- At individual household level, in order to increase resilience.

A critical consideration for improved adaptation to climate change is to ensure effective governance and decision-making under conditions of uncertainty. Thus it is important to invest in good governance institutions and decision-making processes that can provide a solid foundation for action, including priority setting, making trade-offs, resolving conflicts, and building resilience. Access to reliable information and knowledge is important in order to be able to make good decisions and to foster accountability: to improve weather and climate data and forecasts, investigate crop options, develop technologies for water storage and flood protection etc.

Donors play an important role in developing climate change adaptation measures in Africa. So far, much of the effort has focused on the preparation of National Adaptation Programmes of Action in the least developed countries. But there are increasing concerns about the need to coordinate responses to climate change, to fall in line with national strategies defined in

conjunction with the UNFCCC and to harmonise climate change adaptation efforts. This will entail integrating consideration of climate change adaptation and disaster risk reduction in development programmes, not by funding a series of new “climate change projects.”⁶

3. Key issues

How can Africa’s needs for adaptation best be supported? How can Africa benefit from mitigation? (*Recognize good aid delivery practices on effective aid; mainstream adaptation and mitigation in national strategies and budgets; limit special aid to special situations; ensure access to energy and to sustainable energy technology; mechanisms to account for increased aid for adaptation and mitigation*)

How can support be provided to strengthen African voice and access to adaptation and mitigation funds? (*African engagement in the UNFCCC process, carbon market funds (reforestation) and technology transfers; accelerate sustainable energy sector development.*)

Is bio-fuel an opportunity or a threat? Is there a need for support to good regulation of bio-fuel production? (*increasing prices for agricultural produce, risks related to governance and equitable access to land, negative environmental impacts, food security of the poor and landless; system of certification of sustainably produced bio-fuels.*)

How can development cooperation support improved transboundary water resources management? (*The role of regional organizations*).

Should support to develop capacity to improve data and research capacity at country and regional level be given high priority? How should it be organized? (*sub-regional/continent-wide collaboration to reach critical mass; research in sustainable energy*)

How should international development co-operation support Africa in strengthening the mechanisms and arrangements for early warning and disaster preparedness? (*Reducing the vulnerability of the poor is a key development objective in Africa.*)

⁶ Many donors have formulated action plans in this regard, e.g. Danida’s Climate and Development Action Programme, 2005.

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