



Climate change in Africa: The threat to agriculture

Overview

Climate change is emerging as a major challenge to agriculture development in Africa. The increasingly unpredictable and erratic nature of weather systems on the continent have placed an extra burden on food security and rural livelihoods. Widespread destruction of farms and homes in recent record flooding in Burkina Faso and the prolonged drought in Ethiopia, demonstrate the extent of the threat posed by Africa's changing climate.

Agriculture is expected to pay a significant cost of the damage caused by climate change. Progress on rural development has already been hit hard by the combined effect of the global financial downturn and the food crisis, as a result, hunger and malnutrition trends remain stubbornly high. Without extensive adaptation the effects of climate change on agriculture is expected to exacerbate Africa's deepening food crisis, narrowing channels of food access and slowing efforts to expand food productivity.

The impact of climate change on African agriculture

The Intergovernmental Panel on Climate Change 2007 report provides an extensive assessment on the expected effects of climate change on agriculture in the Africa region. It estimates that Africa will be the most vulnerable to climate change globally, due to the multiple stresses of poor infrastructure, poverty and governance. Temperatures are likely to increase by between 1.5-4°C in this century. Projections on yield reduction show a drop of up to 50% and crop revenue is forecast to fall by as much as 90% by 2100.

The agriculture sector is also likely to experience periods of prolonged droughts and /or floods during El-Nino events. Agriculture losses of between 2-7% of GDP is expected by 2100 in parts of the Sahara, 2-4% & 0.4-1.3% in Western and Central Africa and Northern and Southern Africa respectively. Arid and semi arid land could expand in coverage by 60-80M ha. Fisheries will be particularly affected due to changes in sea temperatures that could decrease trends in productivity by 50-60%. According to ODI, productivity in Africa will be further undermined by a reduction in fertile agricultural land available and an expansion in the coverage of low potential land.



World Bank forecasts show that SSA will surpass Asia as the most food insecure region inhabiting 40-50% of undernourished people globally in 2080 compared with 24% today. Levels of viable arable land for production are predicted to decline by 2080, with 9-20% of arable land becoming much less suitable for agriculture.

In response to variations in temperature and precipitation, Africa is predicted to see an increase in crop pests and diseases in addition to altered soil fertility. Declining incomes and rising unemployment are expected to hit agriculture zones in combination to worsening health. A fall in nutrient access is likely to raise susceptibility to diseases such as malaria and HIV/AIDS.

Conversely not all assessments of the impact of climate change in Africa are negative, there are likely to be some positive aspects due to changes in seasons and production cycles. Ethiopia and Southern Africa are expected to have extended growing seasons due to climate change, a consequence of increased temperature and rainfall changes. In addition the livestock sector could be boosted by temperature increases, according to IPCC models, an increase in 5°C could mean a rise in farmer incomes by up to 58%.

Overall climate change presents a substantial challenge to regional agricultural development. From food security, nutrition to sustainable management, climate change is a significant threat to the welfare of millions of the continent's rural poor. Without extensive current strategies on adaptation for agriculture in Africa, the region will remain vulnerable in its exposure to the widespread effects of climate change.

Prospects for adaptation at regional level



Action on regional responses to climate change has gathered speed over the last three years as awareness has grown concerning the environmental impact on Africa. The 8th session of the African Union (AU) in 2006 endorsed the Action Plan for Africa on climate change based on the integration of climate change considerations into development strategies. Subsequently, during the Joint Annual Meeting of AU and ECA March/April 2008 ministers called for AUC, ECA and AfDB to provide further support to the consultative process for African participation in climate change negotiations, with a particular focus on building capacity to access funding from mechanisms such as the Clean Development Mechanism (CDM).

The African Union assembly of Heads of State and Government in Sirte, Libya July 2009 and the Third Special session of the African Ministerial conference on the Environment in Nairobi, Kenya set out the agenda for a regional climate change strategy, calling on full implementation of the United Nations Framework Convention on Climate Change that calls for the stabilization of greenhouse gases to ensure the protection of food production and sustainable economic development.

The capacity of African government to act unilaterally on climate change, has been hampered by the global downturn. Declining government revenue due to falling incomes from exports and remittances has placed added strain on efforts to generate funding for mitigation and adaptation programmes.

Strategies for regional rural development have already been hit hard by the combined effects of the global downturn and the global food crisis 07/08. Although progress on achieving the millennium development goals in Africa has been slow, considerable efforts have been made



to reach regional targets on hunger and poverty reduction. Moreover growing momentum under the Comprehensive Africa Agriculture Development Programme (CAADP) led by NEPAD has contributed to a new lease of life for reform. Advances have been made in agricultural research and commitments secured in reversing decade long under investment in the sector.

Estimates predict economic losses as a result of climate change are up to 14% of GDP if adaptation measures fail to be implemented. If this were to occur significant levels of investment would need to be diverted away from key rural development projects in order to respond to short term emergencies, in particular undermining the achievement of MDG1 and core CAADP pillars.

Generating the necessary funding for climate change responses is proving to be a significant challenge for the majority of African states. Estimates on adaptation requirements and technological investment for Africa range between 5-10% of GDP for coastal countries alone. According to a study by the Grantham Research Institute on Climate Change and the environment, global warming could cost Africa between \$50BN-100BN by 2020.

At the Second Pan Africa Parliamentary Network on climate Change summit held in October this year, African leaders demanded that developed countries commit at least 1.5% of GDP to provide the required resource to support adaptation actions in Africa.

Democratic Republic of Congo: Generating knowledge to face climate change

The FAO "Communication for Sustainable Development Initiative" (CSDI) in the Democratic Republic of Congo (DRC).is testing, communication for development (ComDev) approaches to be used in response to climate change The project aims at reducing the gap of knowledge and information between research institutions and farmers using ComDev tools and methodologies. A communication plan is being designed for the dissemination of technology innovation identified by national agriculture and forestry research and extension systems.

The project works through rural radios and extension agencies using communication tools such as farmer field schools and multimedia materials.

DRC has also been selected as a pilot country as part of the UN REDD* initiative following assistance from FAO in collaboration with UNEP and UNDP

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Despite increasing industrialization and urbanization, the continent produces a tiny proportion of total carbon emissions. Contrarily, developed countries contribute significantly more in total global emissions in comparison to the developing south. On average Africa emits less than one ton per capita compared to over 10 tons per capita in Europe and North



America (Unasylva 2009) As such, African governments in alliance with civil society organisations (CSO) have pressed on developed nations to do more to support the developing world in order to minimize the negative effects of climate change and variability, highlighting the need for the reform of global climate change financing and governance.

US and EU proposals on climate change reform have provided only vague assurances in funding for African adaptation. UN Economic Commission for Africa (ECA) reports that resources for implementation of national adaptation plans prepared at country level are still forthcoming whereas the Kyoto Protocol Adaptation fund is currently non-operational. Renewed US engagement at the Copenhagen summit could provide a major boost to African access to climate finance. Yet, despite early enthusiasm, the US has failed to present detailed plans on future funding contributions to Africa.

Food Production in Ethiopia

Agriculture in Ethiopia is dominated by subsistence farming, the primary source of livelihoods for the majority of the country. The level of rainfall has a critical impact on the rate of crop yields, reducing levels of food productivity.

Ethiopian farmers have adopted the range of adaptation measures, including altering crop varieties, adopting soil and water conservation and changing planting and harvesting periods.

A survey of 48 crops grow in the Nile River basin of Ethiopia showed that farmers who took up adaptation methods produce between 93kg-300kg per ha than those who did not alter their farming techniques, reflecting a 10-29% difference in output.

Factors that increased farmers' capacity to adapt included:

- Availability of information on local climate forecasts
- Access to formal and informal institutions e.g. agriculture extension services
- Access to inputs; seeds, fertiliser

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Considering the vast majority of actions on climate change are funded by developed countries, the slow release of funding for adaptation projects is a significant cause for alarm. Regrettably, the principle of common but differentiated responsibilities and respective capabilities (emphasized in the Kyoto treaty) has not been consistently applied in relation to funding for climate change programmes in Africa.

The EU has established the Advancing Capacity to Support Climate Change Adaptation project (ACCCA) that aims to build partnerships between stakeholders and scientific communities in Africa to identify adaptation initiatives in order to reduce climate change vulnerability. Low capacity of African research and development organisations is a major challenge in accelerating climate change responses, scaling up such initiatives could prove to be a significant contribution in strengthening adaptation efforts at regional level.

The road ahead: Recommendations for reform



Progress in delivering food security for Africa will be significantly compromised by the negative effects of climate change.

Critically, the window of opportunity for investment in agriculture is restrained due to the potential impact of climate change in minimizing viable options for rural development. For example investment in productivity can be optimized in conditions where natural and labour resources are undamaged by the disruption to crop cycles caused by climate change. This would mean government and key stakeholders would be required to accelerate their efforts on expanding production capacity to maximize results. FAO calls for strategies for agricultural intensification and resilience of food production systems to be strengthened through the formation of key synergies between mitigation and food security. Achieving this would largely depend on successfully leveraging finance from mitigation in order to support climate smart agricultural development strategies.

Moreover redoubling and consolidating existing projects and programme activities (including greater integration of social protection strategies) will make a significant contribution in reducing climbing trends on hunger and malnutrition at regional level.

Enhancing the low visibility of climate change policy in the African context is vital to achieving greater political recognition for Africa in international negotiations on climate change. How successful African leaders are in presenting their case for climate change reform on behalf of the region at the Copenhagen summit, will substantially influence the direction and scope for agriculture adaptation and mitigation programmes in the medium term.

Extensive adaptation measures to reduce the threat of climate change to agriculture development in Africa are a long way from implementation. Much more needs to be done to ensure that adequate insurance is in place to protect the rural poor against the dangers posed to food security, sustainable development and rural livelihoods. Expanding knowledge and capacity development by strengthening the ability of national and regional institutions to carry out forecasts and resource monitoring is increasingly critical to delivering effective responses to climate change at local level.

Fortifying progress made on food security and agriculture investment is reliant on the continued alliance between African governments, international development organisations and CSOs in the face of climate change. Additionally, mitigating the risk posed to agriculture development is likely to be dependent on the scale of investments in adaptation and diversification initiatives at national and regional level.

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