

Adapting African agriculture to climate change

Climate change is one of the major threats to the development of rural Africa, and without wide-ranging adaptation strategies the challenge it presents cannot be met. Although appropriate measures have been identified, international funding for adaptation has not materialised at the rate that was pledged. This is irresponsibly delaying the implementation of adaptation measures.

The impact of climate change represents a major challenge to sustainable development, food security and poverty reduction in Africa. This is partly because the climatic changes that have already occurred and which are still expected are more pronounced in Africa than in other regions of the world. It is also due to the economic and social importance of agriculture in many African countries. Yet the agricultural sector in the majority of sub-Saharan countries is already unable to provide a sustainable livelihood for the growing rural population, let alone to ensure national food security.

■ Sharp falls in agricultural productivity

The Food and Agriculture Organization of the United Nations (FAO) divides the effects of climate change on African agriculture into two categories – biophysical and socio-economic. Biophysical effects include changes in

crop-growing conditions and animal productivity as a result of rising temperatures and highly variable precipitation. Among the socio-economic effects are falling incomes from agriculture, higher risks and greater vulnerability for the rural population due to changes in their cultural and economic livelihoods, and the risk of rural areas sliding ever deeper into poverty. The prevailing smallholder systems respond particularly sensitively to changes and shocks, such as crop failures due to drought or heavy rains. Weather extremes have always occurred periodically in rural areas south of the Sahara, but it is generally agreed that climate change will cause farming conditions to deteriorate further throughout large parts of Africa. Experts at the Intergovernmental Panel on Climate Change estimate that as a result of climate change the vegetation period in

parts of western and southern Africa will shorten by an average of 20 percent by 2050. Without appropriate adaptation measures, cereal yields in these regions could decrease by up to 40 percent. In addition, population pressure on land pushes farming activities to ever more fragile ecosystems, which increases the pressure on already strained natural resources. The poor who depend on living in such rural areas are particularly vulnerable to the risks of crop failures and will therefore be hardest hit by the consequences of climate change.

■ Adapting to uncertainty

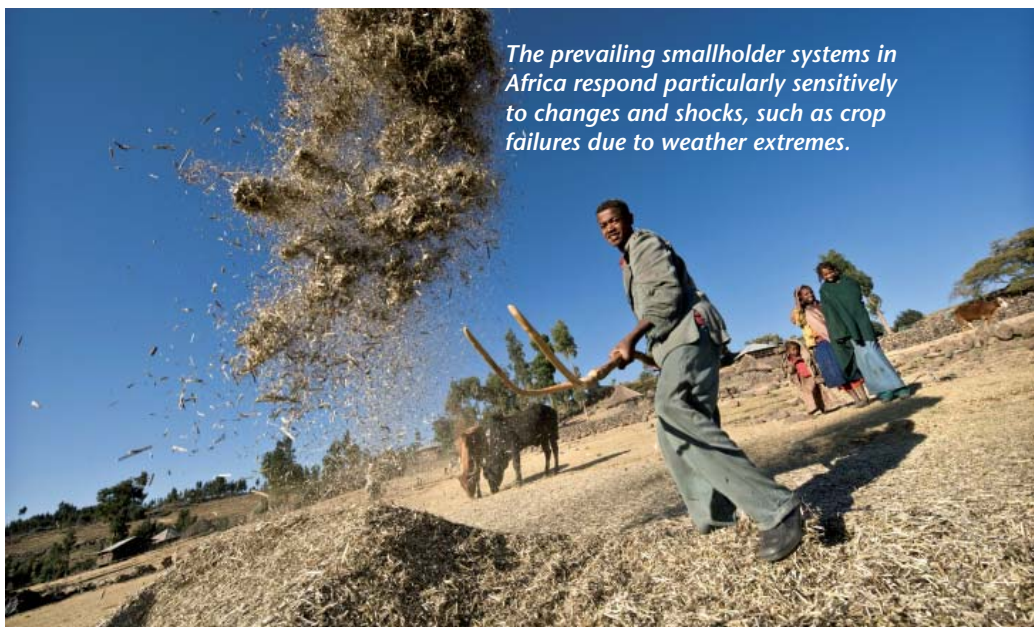
The United Nations Economic Commission for Africa (UNECA) estimates that Africa contributes less than four percent of worldwide CO₂ emissions. At the

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The prevailing smallholder systems in Africa respond particularly sensitively to changes and shocks, such as crop failures due to weather extremes.

Photo: laif

same time, though, the continent is particularly hard hit by the effects of climate change. Despite the still uncertain forecasts of the precise impacts of climate change at local level, there is widespread agreement on regional African trends such as rising temperatures, desertification, water scarcity and increasing frequency of extreme weather events. So, the African agricultural sector must adapt to uncertainty and thereby confront a threefold challenge: it must produce more food for a growing population, it must adapt better to climate change and in doing so it should not itself cause increased greenhouse gas emissions. The FAO refers in this context to “climate-smart agriculture” – agricultural systems that in future not only sustainably increase productivity, but more so resilience to climatic changes and achievement of national food security and development goals. The roadmap adopted at a recent conference on Agriculture, Food Security and Climate Change in The Hague/Netherlands provides examples of effective adaptation measures and suggestions to better coordinate various international agricultural and climate initiatives.

Yet, many African governments are already using the UN Framework Convention on Climate Change (UNFCCC) process and have developed National Adaptation Programmes of Action (NAPAs). A recent comparison of ten African NAPAs reveals the high priority that is attached – at least on paper – to climate adaptation and rural poverty reduction. The programmes focus on country-specific food security and resource conservation measures designed to help the rural poor to adapt better, in both social and economic terms, to increased climate variability (see Table on page 34). The countries of the Sahel region and southern Africa have already had to adapt their farming methods to aridity and desertification during the past two decades and have gained considerable experiences with such adaptation measures (see Box). However, the “climate-smart agriculture” report of the FAO as well as

Experience with adaptation in the Sahel

Through their work on implementing the United Nations Convention to Combat Desertification (UNCCD) in national implementation plans, a number of African countries, especially in the Sahel, already have vast experience in climate adaptation measures. They have recognised that climate change is a key determinant of their national development. Recent research has compared different African countries and analysed their levels of preparedness for the challenges of climate change. One result is that under similar climatic conditions, different national policies can have significant influence on the local population’s capacity to adapt. This is illustrated along the border between Niger and Nigeria: afforestation programmes in Niger are counteracting the loss of soil fertility and “regreening” entire regions, while on the Nigerian side, where no conservation policy was implemented, there is only sparse vegetation cover and the soil’s water retention capacity is limited. Simple measures of sustainable soil and water management such as stone contour lines (see article on pages 36–37), planting pits in agroforestry systems and surface reservoirs can enormously increase local productivity. Rural development programmes have achieved well-documented successes by scaling up such measures. In addition, political decentralisation has enabled local decision-makers to increasingly take advantage of their scope to make decisions to respond better and faster to local climate phenomena.

Stone contour lines stop the rainwater from running off so that it can infiltrate into the soil.



Photo: M. Landolt

a survey of the Heinrich Boell Foundation outline the shortfalls of mainstreaming climate change mitigation and adaptation policies in the overall political framework in many developing countries, especially the lack of coherence in food security, agricultural and development policies.

■ Climate Financing in Copenhagen: too little for the wrong purpose

Since the international climate negotiations in Copenhagen/Denmark in 2009, the world has become increasingly aware of just how urgent it is to support Africa – and developing countries elsewhere – to adapt to climate change. However, estimates of the costs involved vary widely, with annual adaptation costs for developing countries being put at between 30 and 100 billion US dollars (USD). The question of who should bear what proportion of these costs, and whether the money should

come from public or private sources, is one of the key issues in international climate negotiations.

The existing public and private funding mechanisms are still insufficiently well structured and have insufficient funds at their disposal. Taking all climate funds together, of the 26.8 billion USD pledged, about 11 billion has so far been disbursed; 8 billion USD has been spent (see Diagram on page 35). Only about 8 percent of this money has been used explicitly for adaptation measures. UNECA estimates that until 2009 less than one percent of the climate funds disbursed benefited sub-Saharan Africa.

In this situation, the commitments agreed in Copenhagen, involving the immediate provision of financial aid for the worst affected developing countries had been considered a success. It was also important that the Copenhagen Accord specified that new climate funds must be provided in addition to official development assistance (ODA),

Table: Adaptation measures for rural areas in Africa

	Technical/agro-ecological	Agro-political	Socio-political	Institutional
National / Policy Level	<ul style="list-style-type: none"> ■ National research and extension on multi-sectoral implementation of adaptation and of decision-making under uncertainty ■ Expansion of meteorological research and extension ■ Improving public access to weather and climate information ■ Investment in early warning systems ■ Expansion of conservation areas 	<ul style="list-style-type: none"> ■ Investment in rural marketing infrastructure (roads, markets, market information systems) ■ Expansion of agricultural extension systems to include climate know-how ■ Investment in strategic food reserves and post-harvest technologies 	<ul style="list-style-type: none"> ■ Expansion of public healthcare ■ Public investment in rural education, especially for women and girls ■ Expansion of social security systems 	<ul style="list-style-type: none"> ■ Good governance and anti-corruption measures in connection with administration of international adaptation funds ■ Decentralisation to strengthen local adaptation and decision-making capacities ■ Implementation of National Adaptation Programmes of Action (NAPAs)
Local / Farm Level	<ul style="list-style-type: none"> ■ Breeding of adapted varieties ■ Sustainable water management ■ Expansion of land under irrigation ■ Conservation of soil fertility and water storage capacity ■ Anti-erosion measures ■ Sustainable land management ■ Agro-forestry systems and afforestation ■ Composting of organic matter ■ Rainwater harvesting 	<ul style="list-style-type: none"> ■ Decentralised post-harvest protection ■ Expansion of agricultural financial services ■ Introduction of rural insurance systems (e.g. weather-based harvest insurance) 	<ul style="list-style-type: none"> ■ Support the creation of social capital at local level, e.g. by promoting social or ecological services ■ Expanding social security systems such as Social Safety Nets for the most vulnerable population groups ■ Investment in education, especially for women and on issues of agriculture and climate ecology 	<ul style="list-style-type: none"> ■ Community involvement in implementation of National Adaptation Programmes of Action (NAPAs) ■ Decentralised disaster management schemes ■ Involvement in resource conservation at community level

Source: authors' own work based on NAPAs of African countries

and that half of the new money must be used for adaptation measures. The funds pledged in Copenhagen amounted to 30 billion USD annually for the three years from 2010 to 2012 and 100 billion USD annually by 2020.

Theoretically, this pledge made it possible for African countries to fund short- and medium-term adaptation measures. In practice, though, the use of the money was beset with the same problems that had affected all bilateral and multilateral funds before Copenhagen. Of the promised funds, hardly anything has actually been disbursed. In addition, the commitment to spend half the money on adaptation has not been honoured so far. For example, the EU Member States and the European Commission, which administers around 64 percent of the funds pledged by the EU, decided in 2010 to spend 63 percent of the money on mitigation and only 37 percent on adaptation.

The present shortcomings in adaptation financing can be summarised as follows:

1. Formally, the Copenhagen Accord has only been noted; it does not have the binding force of an agreement adopted by a UN Conference of the Parties.
2. The funds pledged so far do not cover the estimated future adaptation costs of the developing countries; the voluntary pledges of the industrialised countries have not been honoured so far.
3. Most of the pledged funds are spent on mitigation projects since there are as yet insufficient opportunities for funding agricultural adaptation projects through the existing climate funding mechanisms.
4. Only a small proportion of the pledged funds benefits the African continent.
5. Existing climate financing mechanisms are socially unbalanced and "gender blind". Implementation of agricultural adaptation projects in Africa must, however, be specifically attuned to social and gender-equality requirements in order to meet the needs of the most vulnerable groups.

■ **Cancún: Some progress, details to be discussed**

After the disappointing results of Copenhagen and the three intermediate summits in Bonn/Germany and Tjianjin/China, the outcome of the Cancún Climate negotiations have been surprisingly positive – at least with regard to some aspects of the international climate regime including financing for adaptation. Little success was achieved with regard to addressing the shortcomings of the fast start finance initiative. But on a positive note, parts of the Copenhagen Accord have been formalised into binding UN protocols; in particular, the medium-term financing mechanism including adaptation has been agreed upon (an annual 100 billion USD for developing countries for 2012–2020). Even though the governing mechanisms of this climate fund still need to be negotiated, at least the Cancún summit has delivered a roadmap to achieve this with equal participation of developing and developed countries alike.

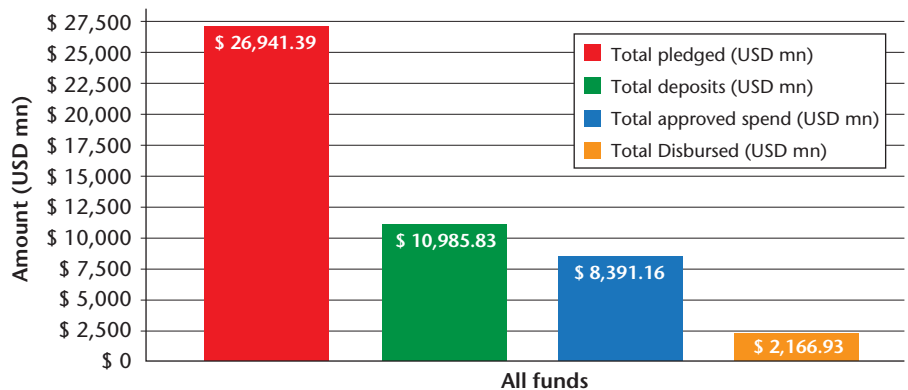
■ What needs to be done?

To move towards more reliable financing of adapting African agriculture to climate change in future, the following measures are necessary:

Provide immediate support for adaptation in African agriculture. Continuing uncertainty as to how the impacts of climate change will unfold at local level must not keep the international community paralysed until climate computations have been refined or until the “new green revolution” promised by research yields a breakthrough in plant breeding. Even under favourable conditions, it takes at least ten years for such innovations to be taken up by small-holder farming systems largely present in Africa. Until these “climate-smart” solutions take hold, African countries must endeavour to utilise national and regional experience to adapt their farming systems (see table). The NAPAs of developing countries in Africa are available and should be immediately co-financed by the countries that are major emitters of greenhouse gases in order to promote food security and poverty reduction in rural Africa in the face of climate change.

Improve the balance between mitigation and adaptation. At the Hague Conference on Agriculture, Food Security and Climate Change in November

Cash flow of all publicly financed international climate funds (to December 2010)



Source: www.climatefundsupdate.org (18.12.2010)

2010, the FAO estimated the Copenhagen Accord’s funding gap (assuming that all bilateral and multilateral pledges are honoured) for support to developing countries to be around 40 percent for mitigation and more than 95 percent for adaptation. If Africa is to be successfully supported to adapt its agriculture to climate change, this lack of balance between mitigation and adaptation must be addressed. As stakeholders compete for internationally prestigious, often very high-tech mitigation projects, agricultural adaptation measures are at risk of being relegated to a position of even lower priority than under the current international climate financing mechanisms.

Obtain binding pledges for adaptation. A global deal to save the climate needs to provide an agreement secur-

ing international financial support for mitigation and adaptation in the South. Financing adaptation can no longer materialise in an obscure, mainly voluntary manner. Developing countries need a legally binding, reliable and easily accessible financial mechanism that can incorporate smaller projects in rural Africa – and not only large-scale mitigation projects.

What is missing in the climate finance debate is a normative framework. While a massive scale-up of private finance is urgently needed, it is the responsibility of states as signatories of the UNFCCC to assure that human rights, international environmental law and democratic approaches are safeguarded and basic criteria in the mobilisation, governance and disbursement of public climate funds are respected.

Zusammenfassung

Der Klimawandel verschärft die Armut- und Ernährungssituation in den Entwicklungsländern. Das ländliche Afrika ist davon besonders betroffen. Obwohl wirksame Anpassungsmaßnahmen bekannt sind und in Nationale Anpassungspläne (NAPAs) eingearbeitet wurden, hinkt die internationale Finanzierung dem Bedarf hinterher. Zum einen reichen die Zusagen der Verursacherländer des Klimawandels nicht aus, zum anderen begünstigen sie Mitigationsprojekte, statt sich auf Anpassungsmaßnahmen im ländlichen Raum zu konzentrieren. Auch fließt bisher nur ein geringer Teil der Mittel nach Afrika. Was die künftigen Finanzierungsmechanismen zu Anpassungs- und Mitigationsmaßnahmen betrifft, wurden auf dem Klimagipfel

in Cancún entscheidende Fortschritte erzielt. Künftige Klimafonds müssen jedoch in der Lage sein, vor allem kleine und an lokale Bedingungen angepasste Maßnahmen im ländlichen Afrika zu unterstützen, wenn sie einen relevanten Beitrag zur Anpassung der afrikanischen Landwirtschaft an den Klimawandel leisten wollen.

Resumen

El cambio climático agudiza la situación de pobreza e inseguridad alimentaria en los países en desarrollo. Las áreas rurales de África se ven especialmente afectadas en este sentido. Si bien se conocen medidas eficaces de adaptación, las cuales han sido integradas en los Planes Nacionales de Adaptación (PNA), el financiamiento internacional no logra satisfacer la de-

manda. Por un lado, los fondos asignados por los países causantes del cambio climático no son suficientes y por otro favorecen los proyectos de mitigación en lugar de concentrarse en las medidas de adaptación en el ámbito rural. Además, sólo una pequeña parte de los fondos está destinada al África. La cumbre climática COP-16 en Cancún ha logrado progresos importantes en relación con los principios de los futuros mecanismos de financiación para las medidas de adaptación y mitigación. Sin embargo, si los futuros fondos climáticos aspiran a proveer un apoyo significativo para adaptar la agricultura africana al cambio climático, necesitan estar en condiciones de fomentar medidas de adaptación pequeñas y localizadas en las regiones rurales de África.