

## AFRICA GROUP

### SBSTA SUBMISSION ON ISSUES RELATING TO AGRICULTURE

*This submission is made by the Africa Group in response to the SBSTA 38 conclusions that invited Parties to submit views on the current state of scientific knowledge on how to enhance the adaptation of agriculture to climate change impacts while promoting rural development, sustainable development and productivity of agricultural systems and food security in all countries, particularly in developing countries ....taking into account the diversity of agricultural systems and the differences in scale as well as possible adaptation co-benefits (Document FCCC/SBSTA/2013/L.20 para 2).*

Recognizing that agriculture holds the key to Africa's sustainable and rural development, a top priority on the global agenda is how to feed the projected nine billion people by 2050. This task is especially formidable in Africa, where more than one-third of the world's poor and malnourished people live, with close to 80% small scale farmers directly or indirectly relying on rain-fed agriculture as a source of livelihood. Africa's capacity to produce food is likely to be challenged by the combined effects of resource degradation and increasing adverse impacts climate variability and change. Thus, ensuring food security in this region requires urgent actions to improve the productivity and climate resilience of agriculture and an increased attention to climate risk management tools, including safety nets and insurance, to ensure adequate and affordable food is available for the most vulnerable. The priority for the agriculture sector in Africa is to ensure food security, eradication of poverty and socio-economic development, environmental and livelihood sustainability, with special attention to small-scale farmers and fishers, under a changing climate. To achieve this goal, adaptation will be necessary, including adaptation options where mitigation co-benefits may also be possible

From the global perspective, it is appreciated that due to uncertainties in climate projections and other factors, including carbon dioxide fertilization (i.e., photosynthetic CO<sub>2</sub> fixation), socio-economic development pathways and the differential adaptive capacities of countries in the region, projections of the impacts of climate change on agriculture are not spatially explicit and depend heavily on scenario assumptions that fail to mimic the future climate conditions. Various studies have been conducted on the impacts of climate change on agriculture in Africa amidst several limitations, yet despite limitations most scenarios, including the most recent analysis of the World Bank, indicate significant impacts on agriculture production across the African continent. The major constraints could be attributed to the gaps in the scientific knowledge of climate change impacts on agriculture that have hitherto not been modeled due to data limitations. For example, there is limited understanding of: (1) direct impact of climate change on pastoralism and African agricultural and livestock

farming systems; (2) the prevalence and impact of pests and diseases in changing climate; (3) the socio-economic impact of extreme weather and climate events, and loss and damage associated with extreme and slow onset events, as current GCM scenarios do not account for such events and yet they are increasingly becoming common in Africa; and (4) effectiveness of adaptation response measures and coping strategies by small scale farmers and on gender, taking into consideration the types of impacts that are likely to be felt in Africa, in particular temperature rise, increased variability of precipitation, drought, and long-term drying. This is further constrained by inadequate data, technical and institutional capacities that hinder effective application of climate modeling to inform national development planning and decision making at different levels.

In light of the foregoing, the Africa Group has identified four priority areas that the international community through SBSTA could support Africa so that it could have the most current state of knowledge that would enhance Africa's adaptive capacity to address climate change impacts and build climate resilient agriculture sector. These are:

- 1. Capacity building on the development and application of tools and methods for climate monitoring, modeling, uncertainty analysis, downscaling, early warning and updatability for climate change:** Africa is vulnerable to several climate change related challenges and impacts that are tied closely to the region's geographical diversity, economy and population patterns. Since there is paucity of accurate historical climate and agricultural data in Africa, there is need to study in detail the indicators of exposure and sensitivity. Also needed is data relevant to slow onset changes that will affect agriculture, fisheries, and food security, such as temperature rise, long-term drying, sea level rise, and ocean acidification. Improved national data collection and retrieval systems is very important for Africa, including data from earth observing systems to improve micro climate modeling to enable more accurate interpolation. In addition, it is imperative for the international community to put in place a Programme of Work on capacity building on development and application of various tools and methods, particularly for climate monitoring, modeling, downscaling that would lead to improved regional temperature and precipitation simulations, so that they can be used as direct inputs into agricultural impact models and early warning for developing countries, especially Africa with a view to building the requisite technical capacity and strengthening institutional infrastructure.

**2. Assessment, development and identification of research and technological options and practices for agricultural adaptation and adaptation co-benefits, including understanding positive impacts, limits to adaptation, and monitoring systems for adaptation:**

The motivation for research and technological options is the need to develop innovations tailored to the local scale that directly and indirectly enhance adaptive capacity of Africa's agriculture in a changing climate including assessment and monitoring of climate impacts for adaptation (impacts on key staples and natural resources, how rainfall, temperature and carbon dioxide concentrations will interact in relation to agricultural productivity, changes in the incidence, intensity and spatial distribution of important weeds, pests and diseases and help to identify limits so as to identify when transformational approaches to adaptation are necessary and help to identify limits so as to identify when transformational approaches to adaptation are necessary, such as when diversification options dwindle for agropastoral or artisanal fishing systems. Moreover, there is little information on the relationship between agricultural adaptation and adaptation co-benefits (i.e., adaptation actions and practices that have mitigation benefits). Thus, enhanced research, including competitive research funding and better-managed programs, are critical for innovation to improve agricultural productivity to alleviate global poverty and hunger, as well as to identify adaptive limits and implications for regional food security.

**3. Assessment of technological needs relating to adaptation and promotion of technology transfer:**

It is critical to assess technology needs relating to adaptation and the transfer of these technologies particularly to the most vulnerable communities in developing countries, especially Africa. This will enable these communities to adapt quickly and increase resilience. Africa is of the view that there is need for technology needs assessment relating to adaptation and the transfer of these technologies in agriculture particularly to the most vulnerable communities in developing countries. The assessment of technologies (and policies) will have to be done in relation to multiple objectives and multiple temporal/spatial scales in order to: Evaluate trade-offs and synergies between the development outcomes of increased food security, enhanced rural livelihoods for poverty reduction and addressing climate change, Evaluate the costs and benefits of adaptation options at different spatial scales and understanding short-term and long-term gains obtained from technology options and how they affect adoption. Promoting the transfer of relevant adaptation technologies and implementation of adaptation practices for which enabling means (investment/financing, capacity building) inclusive of and suitable for agriculture will be necessary.

**4. Identification of approaches to enhance integration of indigenous and science-based knowledge:** Indigenous knowledge (IK) plays a critical role in decision making by Africa's small scale farmers in their quest to manage climate related risks, including extreme weather events and to cope with the impacts. Such coping strategies and indigenous knowledge vary by sub-region or country and to a great extent are localized. On the other hand, science-based knowledge systems such as weather forecasting, though useful, need downscaling for them to be meaningfully applied at the local scale. Therefore, to be more effective in dealing with the increasing challenges of climate change impacts in Africa, it is imperative to explore ways of integrating indigenous knowledge and science-based knowledge systems.

Finally, we note that it would be helpful for SBSTA to welcome the participation of the IPCC at the workshop as it will have released the Working Group I report, "The Physical Science Basis" of its Fifth Assessment Report (AR<sub>5</sub>) and will be well-advanced in the preparation of the report of Working Group II on "**Impacts, Adaptation, and Vulnerability**". In particular, it may be useful to have a presentation on the global and regional climate projections, as well as the findings on ocean acidification that might have an impact on agriculture, livestock and fisheries. It may also be beneficial to invite some form of participation from FAO and the CCAFS programme of the CGIAR, which have made major contributions to international work on agriculture and climate change.