



Climate Change and Food Security in the Context of the Cancun Agreements

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Introduction

Recently food prices have once again shown an upward trend, kindling fears of another food price crisis along the lines of that experienced in 2007-2008. FAO recently signaled that its global food price index hit a new record high in February. Greater attention is now being given to climatic changes as one of the drivers of these price increases. FAO indicated that some food prices have more than doubled this year due in part to weather problems in key producing countries, which curbed global production of wheat, corn and sugar. *“On a global level, increasingly unpredictable weather patterns will lead to falling agricultural production and higher food prices, leading to food insecurity,”* the UNFCCC Secretary stated in an address delivered on 15 February 2011.

Article 2 of the UN Convention on Climate Change advised that stabilization of greenhouse gas concentrations in the atmosphere should be within a timeframe, which *“ensures that food production is not threatened”*. Yet climate variability and change have been and are expected to be more rapid and intense than previously thought, requiring both quicker and more profound adaptation. Agriculture, fisheries, forestry and the natural resources on which they depend, will be challenged to ensure the food security of an increasing number of people during this century (an additional 3 billion people by 2050, requiring an estimated 70% increase in global food production). This will have to be done under changing climatic conditions that are expected to exacerbate this already onerous task, especially in the most vulnerable parts of the developing world. In these areas in particular, adaptation of agriculture, fishery and forestry sectors will not be an option but an imperative for survival.

The Committee on World Food Security (CFS), at its last session, requested the High-Level Panel of Experts on food security and nutrition (HLPE) to *“review existing assessments and initiatives on the effects of climate change on food security and nutrition, with a focus on the most affected and vulnerable regions and populations and the interface between climate change and agricultural productivity, including the challenges and opportunities of adaptation and mitigation policies and actions for food security and nutrition”*. Consideration of the close interface between climate change and food security, by both CFS and UNFCCC, could contribute to greater coherence across these two policy areas.

Parties will now undertake further work on the design and governance of international climate change architecture decided in Cancun, which is to enhance action on, and support for, adaptation and mitigation. Such work could be usefully informed by and include inter-linkages between climate change and food security, some of which are highlighted below, for the perusal of Parties.

1. Food insecurity could be an indicator, within a broader methodology, for assessing vulnerability in the context of adaptation

In the Cancun Agreements the reduction of vulnerability and building resilience are central to enhanced action on adaptation, while financing is to target developing countries that are particularly vulnerable to the adverse effects of climate change. *“... enhanced action and international cooperation on adaptation is urgently required to enable and support the implementation of adaptation actions aimed at reducing vulnerability and building resilience in developing countries... taking into account the urgent and immediate needs of those developing countries that are particularly vulnerable.”*

The functions of the Adaptation Committee include *“... providing guidance on means to incentivize the implementation of adaptation actions, including finance, technology and capacity-building and other ways to enable*

climate-resilient development and reduce vulnerability...”. Parties are also invited “*to undertake impact, vulnerability and adaptation assessments*”.

How vulnerability might be assessed would therefore appear to be of some importance. According to the IPCC, vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity. This definition would seem inclusive of social, economic, ecological systems, which deliver sustainable development, food security and ecosystem services. Food production systems, and ecosystems within the larger landscape on which these systems depend, are highly sensitive to climate variability and change, as changes in temperature, precipitation and related pest and disease patterns can negatively affect production. Populations in low income, food-deficit countries are particularly vulnerable. They have limited capital, capacities (including taking risks required for innovation and diversification) and stamina (due to health impacts of under and malnutrition) to effect changes that could heighten the resilience of their agriculture-based livelihoods and the food systems to which they contribute and on which they depend.

Food insecurity could be an indicator, within a broader methodology for assessing vulnerability to extreme events and slow-onset changes. FAO work on food insecurity, including its annual publication *The State of Food Insecurity*, prepared jointly with WFP, its work on *Feeding the World in 2050* and its contribution, in the context of “*Africa, Climate Change, Environment and Security*” (ACCES) to a vulnerability discussion paper wherein food security vulnerability is used as an indicator of vulnerability to climate change, could be utilized in this regard.

2. Risk management in the context of slow-onset events merits greater attention

References to slow-onset impacts of climate change, in the adaptation section of the Cancun Agreements, are limited to the context of a work programme to address loss and damage associated with climate change impacts, specifically “approaches for addressing rehabilitation measures associated with slow-onset events” (see previous FAO submission on approaches to address losses and damages).

A much broader vision of risk management is needed to balance the current focus on the effects of short-term extreme events and to view slow-onset events beyond rehabilitation, especially as slow-onset climate changes are expected to have potentially catastrophic effects on food production in many developing countries, particularly between 2050 and 2100. While such changes may be relatively gradual and occur over the long term, action is urgently needed now in order to reduce risks *ex-ante* rather than *ex-post*, particularly through building the resilience of agricultural production systems.

A key measure, among others, is to develop staple food varieties with heightened adaptation to future climatic conditions. To do this, material existing in gene banks needs screening, while *in-situ* diversity (including that of uncultivated wild relatives) needs to be collected before it disappears. Both can be used to breed better climate-adapted crops, in particular heat, drought, submergence and saline-tolerant varieties of the major cereals, in ways that respect breeders and farmers rights in accordance with the International Treaty on Plant Genetic Resources. Enhancing the capacity of developing countries to develop and disseminate crop varieties and animal breeds that are adapted to changing climate conditions is also of particular importance in ensuring adaptation to slow-onset events. Relevant work under the aegis of the Treaty, the Commission on Genetic Resources for Food and Agriculture and especially by the Global Crop Diversity Trust – all housed in FAO – could be utilized.

Another important strategy is to protect or rehabilitate degraded ecosystems that contribute directly or indirectly through ecosystem services to agricultural productivity. These include protection of watershed areas crucial for the delivery of clean and reliable supplies of water for irrigation and other farm uses, maintaining forest resources that provide crucial material or economic supplements and safety-nets to poor and vulnerable farm households, and restoring degraded rangelands. Sustainably managing these ecosystems will help reduce their vulnerability to gradual changes in the climate, as well as to some extreme events to some extent.

In the context of the UNFCCC negotiations, slow-onset impacts of climate change and their effects on food security have received little attention. It is both important and urgent that developing countries are made aware of and supported in addressing slow-onset dimensions of adaptation that affect their food security. Adequate space for these issues could be designated within the work to be undertaken by adaptation

structures and mechanisms decided in Cancun, with appropriate linkages to the work of relevant international organizations and national best practices.

3. Food security could be considered within the context of economic and social consequences of response measures

In the Cancun Agreements, Parties “*decided to provide a forum on the impact of the implementation of response measures...*”. The Chairs of SBSTA and SBI are to convene a forum (at the thirty-fourth and thirty-fifth sessions of these bodies) in order to develop a work programme under the subsidiary bodies to address these impacts, “*... with a view to adopting modalities for the operationalization of a work programme and a possible forum on response measures*” at COP 17.

Meeting increasing demand for fuel, food and carbon storage in terrestrial sinks cuts across biofuels, food security and REDD+. National policy-makers will be challenged to capture synergies and manage trade-offs inherent in these competing land-uses.

Already biofuels (a mitigation response measure) from food crops were associated with spiking food prices in 2007-2008. While different country contexts result in different impacts, biofuel crops can potentially result in competition for land and water resources with food crops and removal of potential food from food systems. A number of international organizations have flagged the importance of taking measures to avoid the potential negative impacts of biofuels on food security in certain national contexts and globally, and enhancing the potential positive impacts. To this end, FAO has developed “A decision support tool for sustainable bioenergy”, which aims to assist decision makers in the process of developing a national bioenergy policy and strategy and/or assessing investment opportunities. Utilizing agricultural residues to produce biofuels may divert their use as soil amendments, contributing to reduced fertility or water retention in some soils. This is not to say that in countries where land, water and food are plentiful, biofuels may have a negligible impact on food security and a beneficial impact on the income of farmers, including smallholders. What is important is that countries assess the potential implications of this response measure for their food security.

The success of REDD+ could well depend on how successfully its interface with agriculture is managed. Agriculture is a major driver of deforestation due to positive returns to converting forests to agricultural uses - including biofuels. Financial incentives provided by a REDD+ instrument to conserve and sustainably manage forest land would need to provide at least the same level of income or benefits to the land users to be effective in reducing agricultural expansion onto forest lands. Intensification of agricultural systems could be a substitute for agricultural expansion - although by increasing the returns to agricultural lands - it could also increase the incentives to continue deforesting. This highlights the importance of considering the dynamic opportunity costs that farmers and forest communities may face with foregoing agricultural production on forested areas. Countries will increasingly have to grapple with competing land-uses and to explore measures to achieve a desirable balance among carbon storage in forests, increased agricultural productivity and the safeguarding of food security.

Ensuring that incentives do not lead to perverse outcomes will be important, as will more comprehensive land-use planning and landscape approaches, which look holistically at land-use and attempt to integrate multiple goals or targets within spatial planning to determine the optimal balance across different land uses in order to meet, on a sustainable basis, national economic, environmental and social goals. Also, some improved agricultural management and production practices can offer multiple benefits for adaptation, mitigation and productivity and integration of trees into agricultural production systems through agroforestry can benefit both mitigation and agriculture. However, in many places such approaches and practices are not yet at a scale to make an appreciable difference and adoption faces a number of barriers.

Increasing awareness within climate change and food security policy agendas of the linkages across these two areas can be a first step in helping countries to maximize potential synergies and minimize trade-offs and perverse outcomes. Article 2 of the United Nations Framework Convention on Climate Change already makes this linkage and current spiking food prices connected to extreme events underlines the urgency of this step. For this reason, Parties may wish to consider the positive and negative socio-economic consequences of response measures for food security in an eventual forum to address the impacts of implementation of response measures.