**Climate Change and Agriculture from a Development Perspective**

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I'd like to start by thanking the International Food & Agricultural Trade Policy Council, the International Centre for Trade and Sustainable Development, and the Bill and Melinda Gates Foundation for organizing this seminar on climate change and food security, two issues that are central to international sustainable development.

As the newly released recommendations from our distinguished hosts emphasize, climate change and food security are clearly interconnected. Agriculture is both highly vulnerable to climate variability and – together with land use change - accounts for a large portion of global greenhouse gas emissions. Without timely action on both adaptation and mitigation in the agricultural sector, climate impacts will greatly exacerbate some of our most important development challenges, including increased conflict over natural resources.

Since 1991, USAID has spent over $3 billion on programs aimed at mitigating climate change and helping vulnerable communities to build their capacity and resilience, while simultaneously pursuing development objectives in agriculture and other areas. With President

Obama's pledge to increase US leadership on climate change and food security, we are scaling up these efforts even further.

Let's start with adaptation to climate change. Higher temperatures, more erratic rainfall, and more frequent extreme weather events are posing serious threats to developing countries, in particular those that rely on more climate-sensitive sectors, including agriculture. And while farmers and resource managers routinely make decisions based on uncertain information, conditions will become even more variable as climate change accelerates. Adaptation measures will become increasingly important.

Mitigation is also key, as emissions from land use change and agriculture account for nearly 30% of global emissions; these make up a significant portion of total emissions for many developing countries.

Looking forward, it makes sense to address mitigation and adaptation together, and we hope to link development to new financial flows from carbon markets, including development assistance activities that will help address vulnerabilities to current and projected future climate variability. This will mean employing the technical expertise and knowledge of those who know the on-the-ground constraints and

opportunities, the resource practitioners, and in many countries that will mean doing a better job reaching women.

Our portfolio of programs addressing climate change and agriculture includes support for agricultural research through Collaborative Research Support Programs with U.S. universities, or CRSPs. One CRSP is researching ways to build the resiliency of Andean small holder production systems and their capacity to adapt to change; another is helping to develop an early warning system so that threats to the well-being of East African pastoralists' free-ranging livestock (such as drought, inadequate forage, and poor nutrition) can be detected and addressed in a timely manner.

The International Fertilizer Development Center is carrying out research into more energy-efficient production of fertilizers, with reduced nitrification and urea production.

And through the Consultative Group on International Agricultural Research, USAID funds cutting-edge research to help develop more climate-resilient crop varieties and protect natural resources threatened by extreme weather conditions. Our CG center partners are doing very encouraging work in these areas, from developing more heat-tolerant wheat in South Asia, where farmers are already seeing the impacts of

higher temperatures on crop yields, to rice materials that will tolerate higher salinity and longer periods of submergence, critical for low-lying areas affected by sea level rise.

Another Center partner is working to roll out an alley cropping technology with maize and a leguminous tree species, with impressive results on yield and soil quality. And our Center partners also work on dissemination of other relevant conservation agriculture practices, including zero-till farming and soil carbon conservation.

Partnerships with the private sector are of course also important for success. USAID's public-private partnerships include targeted research into more nitrogen use efficient maize and rice, to reduce fertilizer costs and emissions.

These kinds of materials and production practices need to be scaled up to broaden their impact, but they are not "silver bullets". In order to do this effectively and sustainably, we must understand the economic and social contexts in which farmers work. Land tenure is just one example, and we know that clear tenure rights can support improved production practices and increased vegetative cover, thereby supporting adaptation. For example, efforts to reverse desertification in the Sahel met with little success in the 1970s and 80s, but when Niger, in response to this

challenge, adopted a new Forestry law, land owners were given rights to the trees they planted – and as a result I'm told more than 13 million hectares have since been reforested.

Gender roles and relations is another important social variable, as women in many countries are those most engaged in food production – and those who will feel, most immediately, the impacts of global climate change. Clearly, we must combine promising technologies with a better understanding of how individuals and social groups relate to the resource base – and indeed, factor that understanding into our work to *develop* new technologies appropriate to farmers. Elinor Ostrom's being named a co-winner of this year's Nobel Prize in Economics, for her work on economic governance and common property resource management, perhaps underscores the importance of social and economic context far better than I; as an aside, USAID has been pleased to support Dr. Ostrom's work for many years.

Information technology is also critical for both adaptation and mitigation, though many farmers and governments around the world lack access to timely, accurate weather forecasts to help make production decisions and anticipate food shortages or spikes. The recent agreement in the Third World Climate Congress to establish a global

framework for climate services is an important step to meeting needs on the ground. These kinds of initiatives need more support.

USAID also funds the Famine Early Warning System Network (or FEWS NET), which analyzes remotely sensed and ground-based data to provide time-sensitive information on emerging food security conditions. We anticipate that FEWS NET will expand to cover up to 30 new countries over the next five years. USAID also collaborates with NASA to support SERVIR, which processes satellite and other data for weather prediction and disaster response in Central America and East Africa. SERVIR's new Climate Mapper tool shows historical weather records and projected changes, so that development planners can consider adaptation needs. We are anxious to extend the SERVIR model globally. We also help bring weather and climate information to remote rural communities through the RANET program, which uses satellite data broadcasts, community radio, cell phones, and web based systems.

With respect to other aspects of the enabling environment, USAID is supporting research to explore the potential for innovative financial services, such as weather-based index insurance, to complement risk reduction activities and increase the availability of agricultural finance. In addition, we publish guidance to help our field missions and partners

integrate climate change adaptation into project planning, including water resources management – an area of intersection that will no doubt get increased, and much deserved, attention.

Reforestation and reduced deforestation can contribute to carbon sequestration and prevent soil erosion, increasing long-term agricultural yields. In Kenya, USAID is part of a public-private partnership where farmers earn approximately two cents per tree for each year that it is growing on their plot of land. To date, over 35,000 small farmers have planted over 4 million trees. The program seeks to prepare farmers to enter anticipated future international carbon markets. That additional income would help farmers support their families and invest in future crop productivity, in addition to providing more incentives to plant and maintain trees.

All of these areas of work are integral to the international negotiations leading up to the UN Climate Change Conference in Copenhagen this December. Meeting the climate and clean energy challenge is a top priority for President Obama. Since January, the United States has taken historic action at home – including a clean energy investment of over $80 billion in our economic stimulus package and new vehicle efficiency standards – and the President is working with Congress to advance comprehensive climate and energy legislation.

We recognize that the United States must be a leader in the global effort to combat climate change. But we also recognize that climate is a global crisis that demands a global solution, with everyone involved. The United States is committed to a multilateral approach that can put us on a path to a low-carbon future, facilitate effective adaptation measures in the world's most vulnerable countries, and provide access to technology and resources so that all countries have the capacity to reduce emissions and develop resilience.

Building on decades of development experience, USAID will play an important role in this effort, working with our partners – governmental and non-governmental, at home and abroad.

With new resolve and new resources at the international level, we believe we can avoid catastrophic climate change, and also make adequate, nutritious food accessible to communities around the world. To do so, we need to build on the best research from both the social and physical sciences, scale-up proven interventions, and support country-driven initiatives. And we need to understand that climate change and food insecurity can affect men and women differently, requiring gender-sensitive interventions.

USAID recognizes that effective solutions to the interrelated problems of climate change and food security require engagement from many different stakeholders. As the IPC/ICTSD Platform recommendations state, we need coherent and coordinated action. We are looking for new opportunities to share information and collaborate on different levels – local, national, regional, and global - to develop innovative solutions and make them broadly accessible. Most recently, our Acting Administrator, Alonzo Fulgham, hosted a side event to the UN General Assembly in New York. This brought together high-level representatives from developed and developing countries, international aid organizations, research institutions and the private sector, to draw attention to the need to address climate change and food security concurrently, and identify gaps and opportunities for collaboration. I was heartened by the shared sense of urgency and enthusiasm in that room.

I am sure there is that same urgency and enthusiasm here today. I hope this seminar will contribute to the growing momentum on these issues, and provide us all with new contacts and connections to facilitate joint action.

Thank you.