EVENT SUMMARY: CAMBIO CLIMÁTICO Y SEGURIDAD ALIMENTARIA EN AMÉRICA CENTRAL

Thursday, June 19, 2014
San Salvador, El Salvador

Central American countries face some of the greatest vulnerability to climate change in the world, including impacts on agriculture in the region due to changes in rainfall and increased intensity and severity of extreme weather events. Food security in a region where the agricultural sector is largely composed of small holders is already tenuous, with climate change and variability increasing the challenges faced by national governments, regional organizations, and the farmers themselves.

On June 19, 2014, the Latin American Program of the Woodrow Wilson Center, in coordination with USAID/EL Salvador and Comisión Centroamericana de Ambiente y Desarrollo (CCAD), brought together a group of experts and practitioners to discuss these issues. As part of the seminar, "Cambio Climático y Seguridad Alimentaria en América Central: Casos de Estudio de Adaptación" (*Climate Change and Food Security in Central America: Case Studies in Adaptation*), representatives from NGOs and government ministries in eight different countries gathered in San Salvador, El Salvador to discuss climate change adaptation and food security in Central America, including the role of women and related population dynamics challenges.

The event featured presentations by the relevant secretariats of Sistema de Integración Centroamericana (SICA): Manuel Jiménez Umaña, of Consejo Agropecuario Centroamericano (CAC); Víctor Ramírez, of Centro de Coordinación para la Prevención de los Desastres Naturales (CEPREDENAC); Patricia Ramírez, of Comité Regional de Recursos Hidráulicos (CRRH); and Christa Castro Varela, of Comisión Centroamericana de Ambiente y Desarrollo (CCAD). Sandeep Bathala of the Wilson Center presented on women's roles in climate change adaptation and food security, including the linkages between populations dynamics, reproductive health, and responses to climate change and food security vulnerabilities. Nancy McCarthy of Lead Analytics, who has also worked with the Food and Agriculture Organization of the United Nations (FAO) and on the Fifth IPCC Assessment Report, discussed Climate-Smart Agriculture and the importance of conservation agriculture and other sustainable practices to ensuring food security, as well as the challenges to implementing these practices. Jaime López Martínez and José Luis Arellano Monterroasas, of the Instituto Nacional de Investigaciones Forestales Agrícolas y Pecuarias and Comisión Nacional del Agua in Mexico (respectively), offered in-depth presentations of their collaborative work on the watersheds (cuencas) of rivers in the Sierra Madre mountain range in Chiapas, Mexico.

Climate change and variability are likely to impact (or are already effecting) each of the axes of food security in Central America—availability, access, utilization, and stability of food supplies. Representatives from the SICA secretariats discussed the challenges as well as the region's needs for addressing them. Much of the agriculture in Central America is small holder or family-based production, but this sector accounts for as much as 70 percent of food production of internal consumption in the region, according to Manuel Jiménez of the CAC. These small holders are especially vulnerable to climate change and variability, including extreme weather events and changes in rainfall patterns. Stakeholders in the region are focused on building resilience, fostering rural development, and improving competitiveness to help these farmers adapt to climate change challenges. There needs to be focus on building greater institutional capacity at the national and regional level, as well as investment in rural

infrastructure. Speakers emphasized the importance of integrated risk management and disaster response across beyond national boundaries, considering the frequency with which extreme weather events cause impacts across borders. A major challenge, noted several speakers, is the weakness of monitoring and forecasting systems in the region and the related lack of reliable data. They stressed the importance of better systems for information gathering, managing, and sharing, such as observation networks and the idea of a regional data clearing house. Speakers also noted the ongoing challenge of the small budgets allocated to institutions managing these challenges, and a lack of long-term planning and financing due to typical government cycles.

Population dynamics and the role of women in climate change adaptation are gaining greater traction in the climate change adaptation discussion in the region, and featured prominently in the day's discussion. Following a presentation by Sandeep Bathala, the event participants engaged in small group workshop discussions on the relationship between population dynamics, climate change, and food security. Population dynamics—including population growth, urbanization, migration, and the age and gender structures of a population—can have major impacts on development and can affect a community's resilience to climate change. Urbanization—especially rapid and disorganized, unplanned urbanization—influences a population's vulnerability and resilience to natural disasters and climate change trends. There is often little institutional support for migrants, including those who migrate to urban areas after natural disasters. In Central America, rural-urban migration is effecting populations in both zones. Migration is often driven by loss of productive land and disorganized land distribution, which is exacerbated by a concentration of population in areas with land most vulnerable to climate change. Population growth in Central America—determined by fertility, mortality, and migration—also impacts to climate change challenges. Rural populations are growing at a faster rate, often with the fastest growth in the areas most vulnerable to climate change. With land in many of these zones loosing productive capacity and forcing more rural-urban migration, participants in the day's discussion emphasizes the importance of working with rural community and religious leaders to educate their communities on the benefits of family planning. Women and children are among the populations most vulnerable to the consequences of climate change in Central America and around the world. Women balance many roles in society, especially those related to food security at a family level. For many women, access to reproductive health and family planning services impacts not only fertility, but also income, health, education, and rights.

For agricultural communities, strategies for sustainable agriculture are key for strengthening resilience to climate change and vulnerability, as well as improving productivity and income for small holders. Nancy McCarthy of Lead Analytics discussed applications for Climate-Smart Agriculture in the region. In addition to sustainably increasing income and productivity, improve adaptation to climate change and climate vulnerability, the goals of Climate-Smart Agriculture include reducing agricultural contributions to climate change and improving national food security goals. Climate change trends, such as changes in rainfall and extreme weather events, impact agriculture in a variety of way; these include changes to watersheds, evaporation, and changes to agricultural yields. Climate-Smart Agriculture seeks to improve sustainability through better land management, conservation agriculture, and agro-forestry practices. It also promotes intensification (rather than extensification) of land use.

In Central America as in other regions, however, there are several barriers to implementing Climate-Smart Agriculture practices. First, in order to implement these practices effectively, there needs to be more site-specific data and details on the situation in a particular region, which is lacking in many cases. There are also a number of barriers to small holders in particular to adopting Climate-Smart Agriculture: (1) A long time frame for full implementation (5-15 years) and delayed benefits; (2) Many small-holders face a lack of secure tenure or do not hold a formal title to their land; (3) Many also lack insurance or other safety nets in case of poor harvest; (4) Some traditional farming methods may be highly sustainable, but these methods are being lost; (5) Climate-Smart Agriculture has high labor and materials costs, especially high up-front costs; (6) There is a risk of collective action problems and the possibility for

positive spillovers when farmers implement Climate-Smart Agriculture and their neighbors do not. Additional hurdles to these agricultural practices include challenges with the monitoring and evaluation of their success, especially when these projects cannot be measured for their effectiveness over a long time frame (ideally, decades). The issue of insurance—which most small holders do not have—is also a difficult one. Premiums may be prohibitively high in some cases, but there is also a general lack of insurance culture in the region. Participants in the seminar brought up related questions such as at what level insurance should or could be effectively offered (individual versus community), and what type of insurance would offer small holders the best protection against loss (profit insurance, counter-cyclical, or catastrophic insurance). Additionally, implementation of these agricultural practices is likely constrained by limited national resources (especially at the ministerial level) and what other sources of funding may be accessible from outside groups.

After the expert presentations from Nancy McCarthy, Sandeep Bathala, and the SICA representatives, Jaime López Martínez and José Luis Arellano Monterroasas, of the Instituto Nacional de Investigaciones Forestales Agrícolas y Pecuarias and Comisión Nacional del Agua in Mexico (respectively), presented a case study on their project on climate change, agriculture, and watershed restoration in Chiapas, Mexico. After describing the complexity of the many levels of natural watershed systems (*cuencas*), the researchers explained the threats to the health of the watershed in Chiapas, including deforestation, and degradation due to changes in land use, urbanization, hurricanes and tropical storms, erosion and sedimentation, flooding and landslides. Notably for Chiapas and the small countries of Central America, ecological challenges like those of this watershed extend beyond national boundaries, producing trans-border impacts. As McCarthy highlighted in her discussion of Climate-Smart Agriculture, imported models brought to help address the problems for the Chiapas watershed needed to be calibrated for local use, which required extensive and reliable local data.

López Martínez and Arellano Monterroasas offered successful strategies for addressing problems of the watershed in Chiapas which took into account the socio-economic as well as ecological vulnerable of the zone. These strategies included community organization, erosion control techniques, and eco-tourism. Locals were trained and aided by technology transfer programs, and were able to see the benefits of conservation practices in action. One of the reasons for success in Chiapas was a highly participative program which involved local communities and built on social capacity. Success is being measured in the area of land and the number of producers impacted by these programs.

One particular program for forest rehabilitation in the area focused on controlling run-off. Problems facing local communities included deforestation, problems with the water supply, firewood shortages, and lowered coffee profits (due to loss of shade). As a solution, the team created centers for plant production where coffee trees resistant to coffee-rust (a disease) were nurtured; communities were introduced to a new technology—a stove which required less fuel (firewood); and reforestation programs were implemented.

Climate change and variability have the capacity to have major impacts on the way of life for many people in Central America, and food security is one area likely to be particularly effected. Nevertheless, many of the communities most vulnerable to climate change related challenges also have a great capacity for adaptation. During the discussion portion of the day's event, participants highlighted several additional points that they saw as key challenges of the region in terms of climate change and food security, and some offered recommendations for governments and organizations working to improve resilience:

- Damage to physical and communications infrastructure from extreme weather can have extended effects on livelihoods, especially in more isolates and agriculture-dependent communities.

- The focus of adaptation strategies (including alternatives to existing strategies) should be on the availability of sustainable and complementary resources. Programs should work to ensure that technology and practices they introduce will be sustainable.
- Institutional strengthening is crucial at all levels and in all countries. Participants noted that institutions are especially weak in rural areas.
- Conservation practices can often be difficult to sustain after the initial funding has run out. One participant from Guatemala cited a World Food Program case which has been self-sustaining for twenty years and recommended ex-post analysis to see why this program was so sustainable. Participants agreed on the need to create virtuous cycles that encourage small holder to continue using conservation agriculture practices after the funding is gone.
- Building on the Chiapas case, participants underscored the importance of community participation—involving local populations and giving them options for how to adapt to climate change rather than telling them what to do.
- Reflecting on the role of women in climate change adaption and food security, participants suggested that women may be more focused on the benefits that can be created through the use of more sustainable practices and may be less distracted by local politics than men in these communities might be. Participants also noted that the rural-urban migration in these areas are often predominantly of men, so women are often left as heads of household and women make up the majority of workers in these communities.
- Participants came back to the crucial issue of data and the need to find a true baseline for measuring the success of these climate change adaptation and food security projects.
- In addition to data, other unmet needs include better infrastructure, structures for organization and collaboration. Many participants commented on the need for better integration and coordination among similar projects and among those working on food security and climate change issues across the region.
- Funding, which is always limited, should be refocused on finding solutions to root problems rather than dealing with their consequences.
- As a solution to limited funding at an institutional level and limited or unpredictable income at a family level, participants suggested greater diversification of crops or economic activities, agro-tourism, and producing higher-value organic coffee, for which there is growing demand.

For more information of this event, please contact Christine Zaino (Christine.Zaino@wilsoncenter.org)