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Climate Change Adaptation and Population Dynamics in Latin America and Caribbean: Key Issues for Policy Dynamics

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Climate Change Adaptation and Population Dynamics in Latin America and the Caribbean: Key Issues for Policy Makers

Comments by Lisa Palmer (Presented by Sandeep Bathala)

I'm an independent journalist and a fellow at the National Socio-Environmental Synthesis Center (SESYNC). Today I will offer you my perspectives from my reporting on population dynamics, specifically offering perspectives on Latin America, and I will also talk to you about research I'm learning about as fellow at SESYNC.

First, as we know, climate change is altering agriculture across a variety of societies, but what does this mean for global food security, especially the world's most vulnerable people? That's what I hope to uncover as I continue the research and reporting that I started as a scholar at the Wilson Center. My forthcoming book is *Hot, Hungry Planet,* which is a narrative about the people attempting to reconcile the threat of climate change with the need to feed a growing population. Today I want to touch on some of the population dynamics related to agriculture in Latin America as well what that means for climate adaptation.

Let's begin in Colombia. Colombia's population is about 45 million people. It ranks high on the human development index and is an upper middle-income country; poverty is a major issue for over 52 percent of the population. And 69 percent of population in rural areas lives below the poverty line. Colombia also has one of the highest rates of displaced people due the effects of past civil conflict. The World Bank estimates that 3.7 million people, or almost 10 percent of the population in Colombia, are vulnerable to climate change. These vulnerable people live primarily in two areas: in the Andes where water shortages and land degradation pose problems, and in the coastal areas prone to sea level rise.

Key sectors in Colombia that will be affected by a changing climate include agriculture and livestock, water resources, coastal systems, human health, and ecosystems and the services they provide. Considering the vulnerabilities of its rural population, climate adaptation will be important to building resilience especially in agriculture – both in the production of important crops like rice and sugar cane, but also in the production of livestock.

I reported from Colombia last year on a travel grant from the Solutions Journalism Network and I visited some of the areas in transition to report on what people are doing to improve degraded lands, improve food security, and conserve water resources. Because such a large proportion of the population living in rural areas fall under the poverty line, and their livelihoods depend on agriculture, I met with some

of the people who are trying new techniques around agriculture and livestock production, agroforestry, crop diversification and alternative food sources through local initiatives.

Many coffee farmers, who are unable to continue growing coffee because yields plummeted after experiencing increasingly warming temperatures, have switched their production. One farmer I met with switched crops. She had a portion of her land planted as coffee, but transitioned it to shade-grown coffee under plantain trees, and the rest of the land is planted for intensive grazing through innovative agroforestry systems for cattle grazing. She also planted groves of fruit trees. She was savvy with her investments in improving her land. After hearing about opportunities at a community meeting, she was able to get a loan discounted by 40 percent to plant the trees for agroforestry because these systems also provided other benefits for ecosystems such as improvements in soil and water conservation.

Other farms that I toured also diversified. They have started growing high value specialty crops like pepper, vanilla, stevia and had apiaries. Some rice farmers adopted special irrigation systems and soil moisture and fertilizer management plans for growing rice to deal with scarce and unpredictable water resources and changing El Nino/La Nina events, which are leading lead to increasing incidence of prolonged drought. In Colombia rains are also coming earlier in some areas than farmers have typically experienced. Many of them depend on techniques that fathers and grandfathers used, and have resisted some of the adaptation efforts that researchers and agriculture federations are promoting.

Along the same lines, population dynamics in Ecuador means that more people are vulnerable to extreme weather events from ENSO/La Nina and by the fact that 96 percent of the urban population lives in the coastal and mountainous region. The extreme events associated with floods, droughts and heat waves could produce severe socio-economic and environmental impacts including crop failure, fire fires, and energy insecurity from loss of hydropower.

Population dynamics to improve rural food security by such interventions like instituting agroforestry and payment for environmental services or credit systems for soil, water and biodiversity conservation would provide long term sustainable sources of diverse fruits, nuts and fodder for people and livestock while mitigating climate change and soil erosion. The age structure of Ecuador's rural population, as well as the migrations of young people to cities, points to vulnerabilities for food security in adapting to climate change.

Another case study I want to highlight is Nicaragua. I recently met with researchers who are working on a research project at the National Socio-Environmental Synthesis Center. To better understand their research and analysis, first let me tell you about SESYNC. Environmental problems are by definition social problems. That's why today we are talking about things like population dynamics and the environment – climate, extreme weather, drought, what have you. SESYNC was

founded on the premise that progress toward a sustainable future requires new knowledge that arises from close collaborations across many disciplines, for example the natural and social sciences, humanities, NGOs, and agencies. There's also another piece to research at SESYNC: that the knowledge is actionable, that it can mean something for decision makers.

One of the new research teams at SESYNC has focused on Nicaragua to expand and understand the ways increased market integration, new technologies and demographic changes impacts biological diversity, ecosystems services and resource valuation. The role of globalization and population dynamics is having a great impact on Latin America; and in this case, the researchers are looking to better understand not only the migrations of people moving into indigenous regions as but the effects of a road that has been built. This area of the Pearl Lagoon Basin in Atlantic Nicaragua is a coastal system well suited for examining the mechanisms and consequences of rapid change that is resulting from the road access to Managua. Basically, how are people adapting to or changing with globalization, and what kinds of changes in ecosystems should they expect that might impact their sustainability?

Historically this region has largely relied on its natural resources for subsistence. Now fishermen are trading their catch for export to the Chinese market. They are planting cash crops for the first time. With a study that integrates the ecological data, ethnographic, demographic and economic data from four decades, the researchers are looking to correlate with changes in biodiversity and eco-system services to determine whether current policies are acting to conserve, enhance or diminish them.

Articles:

In the Pastures of Colombia,
Cows, Crops and Timber Coexist
As an ambitious program in Colombia demonstrates, combining grazing and agriculture with tree cultivation can coax more food from each acre, boost farmers' incomes, restore degraded landscapes, and make farmland more resilient to climate change.
http://e360.yale.edu/feature/in_the_pastures_of_colombia_cows_crops_and_timber_coexist/2746/

Agricultural Movement Tackles
Challenges of a Warming World
With temperatures rising and extreme weather becoming more frequent, the "climate-smart agriculture" campaign is using a host of measures — from new planting practices to improved water management — to keep farmers ahead of the disruptive impacts of climate change.
http://e360.yale.edu/feature/agricultural_movement_tackles_challenges_of_a_warming_world/2844/

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