

CITIES: Larger Amazon fires highlight new urbanization challenges in developing countries (Wednesday, December 12, 2012)

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Fires in the Amazon are now larger and more difficult to control. A new study shows that these conflagrations are not because of increased farming but due to rapid urbanization.

"Oftentimes we think that when there are more farmers, there will be more fire, but that is actually the opposite of what we found," said Maria Uriarte, professor of ecology and environmental biology at Columbia University and one of the researchers on a team that visited the Peruvian Amazon.

The forests of the Amazon have long been fire resistant because of their high humidity. The humid forests formed natural firebreaks around patches of farmland, making it safe to practice slash-and-burn agriculture there for decades. But now drought, development and demographics have raised the fire risk.

The last 10 years have brought severe droughts to the Amazon. Previous research has shown that the "one-in-100-year drought" in 2005 affected 1.9 million square kilometers, while the more intense "megadrought" of 2010 affected close to 3 million square kilometers.

Large swaths of the forest, laden with moisture from transpiration trapped by the dense canopy, were cleared to grow crops. The lands, then left fallow, have been replaced by quicker-burning grasses and shrubs. More flammable vegetation has also taken over the fields of absentee landlords who have left their farms for the city. The road network, like the highway between the city of Pucallpa and the capital Lima in Peru, is breaking through the old humid forest, creating and connecting new open and dry lands.

As the population in the Amazon has grown rapidly, so has its urbanization. Peru's population grew 20 percent to 7.5 million between 1993 and 2007, but the rural population fell as much as 60 percent in some areas.

Who is left to fight fires?

Fire control in the Amazon involves creating fire breaks between farm plots and using sand or water to put out the blaze. "Fire control is a social activity. There's a group of people that go out and prevent the fires from going where they shouldn't," Uriarte said. Now, there aren't enough people to fight fires. Uriarte and her team found that the fires burned more often and over larger areas in places where the rural population decline was the steepest.

The rural-to-urban migration is not restricted to the Amazon; it's happening all over the world and more rapidly in developing countries. Worldwatch Institute examined 2010 census data and found that 3.5 billion people, or just more than half the world's population, lived in cities. That number is projected to jump by a couple of billion by midcentury.

"There's going to be, by 2050, 9.3 billion people. There's going to be more than 2 billion more in cities. The lion's share is going to be in developing countries in the cities," said Grant Potter, development associate at the institute. The report breaks down the numbers to be 2.45 billion more people in cities in developing countries and 170 million more in cities in developed countries.

Africa is projected to be a big urban center by 2035, and its cities will be home to 1.26 billion more people by 2050. Asia, which in 2007 had eight of the 10 most densely populated cities in the world, will have another billion people in its urban centers by 2040, according to the Asian Development Bank.

Escapees from drought may see flooding

Urbanization is also now being caused by more than the demand pull -- better wages in the city draw a bigger labor force. It is being driven by a supply push -- people trying to escape drought and famine in rural areas. Much of that drought and famine is caused by climate variation and failure of agricultural systems to cope with it.

Climate uncertainty looms over the cities as well. In 2010 coastal flooding threatened more than 300 million urban dwellers in Asia. Speaking at an event earlier this year on urbanization in Asia, ADB assistant chief economist Douglas Brooks said, "With more urbanization, more people would be at risk." The ADB predicts that flooding will threaten 410 million urban Asians in 2025.

Recognizing that urbanization in developing countries cannot and should not be stopped, the ADB called for policy measures across Asian cities to ensure "green" urbanization that includes clean air, clean water and clean transport options.

Meanwhile, the Columbia University researchers believe that some of the changes in farming hold out hope for the Amazon. They say much of the cultivated land in the Amazon is now being used for palm oil plantations that are less susceptible to fire. They have also studied predicting big droughts in the Amazon from sea-surface temperatures in the Atlantic Ocean, which could serve as early warnings for fire risk in the future.