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**Urban Planet: How Growing Cities Will Wreck the Environment Unless We Build Them Right**

By [Bryan Walsh](http://science.time.com/author/bryanrwalsh/)Sept. 18, 2012

The Chinese city of Shanghai will be one of the largest urban areas in the world

It’s easy to miss amid the day to day headlines of global economic implosion, Presidential campaign foibles and Mideast rage, but there is a less conspicuous kind of social upheaval underway that is fast altering both the face of the planet and the way that human beings live. That change is the [rapid acceleration of urbanization](http://science.time.com/2011/02/23/the-new-science-of-telecoupling-shows-just-how-connected-the-world-is%E2%80%94for-better-and-for-worse/), as more and more people in every corner of the world put down their farm tools and move from the countryside or the village to the city. In 2008, for the first time in human history, [more than half the world’s population](http://www.gizmag.com/go/7334/) was living in towns and cities. And as [a new paper](http://www.pnas.org/content/early/2012/09/11/1211658109.abstract?sid=12628921-9db0-420f-b0a3-210c4a556aaa) published in the *Proceedings of the National Academy of Sciences*shows, the process of urbanization will only increase in the decades to come — with an enormous impact on biodiversity and potentially on climate change.

As Karen Seto, a professor of the urban environment at Yale and the lead author of the *PNAS*paper, points out, that the wave of urbanization isn’t just about the migration of people into urban environments, but about the environments themselves becoming bigger to accommodate all those people. Today urban areas — ranging from Times Square to a small  town in India — cover perhaps 3 to 5% of global land. But Seto and her co-authors calculate that between now and 2030, urban areas will expand by more than 463,000 sq. mi. (1.2 million sq. km). That’s equal to 20,000 U.S. football fields being paved over every day for the first few decades of this century. By then, a little less than 10% of the planet’s land cover could be urban. “There’s going to be a huge impact on biodiversity hotspots and on carbon emissions in those urban areas,” says Seto.

The bulk of that great urban expansion will be in Asia — where more than 75% of the increase in urban cover is projected to occur — and in Africa, where urban land cover will be 590% above the 2000 level of 16,000 sq. mi. (41,000 sq. km). In China and in India, cities will balloon — especially smaller, second-tier cities like Dalian or Pune that often lack the attention and the funding of megacities like Guangzhou or Shanghai. That’s worrying because much of the urbanization wave is happening with little to no advance planning, amplifying the environmental cost of stuffing hundreds of millions of poor people into half-built metropolitan areas that often lack basic sanitation, waste management or water services. “The growth is really going to be in those medium-sized cities, and that’s where the planning has often been lacking,” says Lucy Hutyra of Boston University, a co-author of the *PNAS*paper.

Those areas of Asia, Africa and parts of South America that will see urban territory grow most rapidly tend to overlap with biodiversity hotspots, concentrations of exotic plants and animals. Humans are the [ultimate invasive species](http://science.time.com/2012/01/31/invaders-how-burmese-pythons-are-devouring-the-everglades/) — when they move into new territory, they often displace the wildlife that was already living there. The *PNAS* researchers estimate that urban expansion will encroach on or displace habitats for 139 amphibian species, 41 mammalian species and 25 bird species that are either critically endangered or endangered. And as land is cleared for those new cities — especially in the densely forested tropics — carbon will be released into the atmosphere as well. “In developing countries, there is a lot of pristine land and hotspots that could be threatened by the process of urbanization,” says Seto.

All of this might seem surprising to people who’ve read this blog for the past couple of years. Counter-intuitive as it might be, we’ve usually presented urbanization as a good thing for the environment — and especially for carbon emissions. In the U.S., it’s residents of cities like New York [that tend to have smaller carbon footprints](http://science.time.com/2011/09/20/using-tax-money-to-make-old-buildings-green-again/), especially compared to their counterparts in the countryside and the suburbs. Dense urban areas reduce commute distances — saving gas — and allow residents to forgo cars altogether. That density also pushes urban residents to live in smaller homes, which in turn means less energy is needed for heating and cooling living spaces. If urbanization tends to be good for the environment in the U.S. and Europe, why wouldn’t that be the case in the rest of the world?

It’s true that as people in developing nations move from the countryside to the city, the shift may reduce the pressure on land, which could in turn be good for the environment. This is especially so in desperately poor countries like Madagascar, where residents in the countryside slash and burn forests each growing season to clear space for farming. But the real difference is that in developing nations, the move from rural areas to cities often leads to an accompanying increase in income — and that increase in income leads to an increase in the consumption of food and energy, which in turns produces an uptick in carbon emissions. Getting enough to eat and enjoying the safety and comfort of living fully on the grid is certainly a good thing — but it does carry an environmental price. In the U.S. urban dwellers [tend to be poorer](http://www.planetizen.com/node/49081) than their counterparts in the suburbs —though the recent gentrification of top-tier cities like Washington and San Francisco has altered that dynamic — and consume less, especially energy. But that’s not so in the developing nations.

The urbanization wave can’t be stopped — and it shouldn’t be. But the *PNAS*paper does underscore the importance of managing that transition. Seto notes that around 65% of the urban land core in 2030 has yet to be built. If we do it the right way, we can mitigate urbanization’s impacts on the environment. “There is an enormous opportunity here, and a lot of pressure and responsibility to think about how we urbanize,” says Seto. “The one thing that’s clear is that we can’t build cities the way we have over the last couple of hundred years. The scale of this transition won’t allow that.” We’re headed towards an urban planet no matter what, but whether it becomes a heaven or a hell is up to us.