

More people, more environmental stress

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Although it's long been suspected that human activity has greatly contributed to environmental stress, it's only recently that science has begun to show just how great a role that activity is playing.

In an article published in the journal *Nature Climate Change*, Michigan State University's Thomas Dietz and his colleague, Eugene Rosa of Washington State University, take a critical look at the various factors that have long been prime climate-change suspects. One in particular: The role of [population growth](#).

"How does population growth influence [greenhouse gas emissions](#)?" Dietz asks. "Well, in looking at most nations of the world during the last few decades we find that for each 1 percent increase in population, we get a bit more than a 1 percent increase in emissions."

And with the Earth's population projected to reach 10 billion by the end of this century, "it unquestionably will add to the stress we place on the planet," Dietz said.

Until recently, climate-change debate had focused on whether it was brought about by human activity. Recently that debate has shifted to what sorts of activities are creating it.

"No single factor acts independently of the others," said Dietz, a professor of sociology and [environmental science](#) and policy, and assistant vice president for environmental research. "The effect of [population size](#) depends on [consumption](#); the effects of consumption

depend on how many people are consuming at that level."

Another factor that has sparked climate-change debate focuses on how affluent a nation is. On one hand it's argued that more affluent nations use more resources, thus creating more emissions.

On the other hand, citizens of more affluent nations tend to be more socially conscious and are willing to work and pay for a cleaner environment.

"For example," Dietz said, "increased use of electricity generated by [renewable sources](#) that do not emit [greenhouse gases](#) might partially or wholly compensate for the tendency toward increased emissions that come with increased affluence."

Dietz and Rosa write that they are not optimistic about the future, calling the paper they did "sobering."

"The population and economic growth that can be anticipated in coming decades will tend to push emissions substantially upward," they wrote.

The only possible saving grace, they say, is improved technology and changes in the way humans use resources.

"However, these changes will need to be huge because they must counter substantial increases in scale coming from population growth and especially increasing affluence."

More information: www.nature.com/nclimate/journal/nclimate1506.html

Provided by Michigan State University

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