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## Research

### **The End of the World Is Nigh (Maybe)**

By Alana Conner

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SUSTAINABILITY

# The End of the World Is Nigh (Maybe)

▶ Life as we know it will come to a screeching halt within 200 years unless humans reduce their consumption, suggests a new research report. “If the current trends continue, there is a very realistic possibility that we will run out of resources,” explains Yogendra Shastri, the study’s lead author and a research engineer at the Vishwamitra Research Institute in Westmont, Ill. “There just won’t be enough food to eat.”

To study whether sustainability is even feasible, Shastri and colleagues first used known data to develop a computer model of how the world’s major systems—resources, plants, herbivores, carnivores, industries,



*Killing forests like this swath of the Peruvian Amazon is hastening the extinction of humankind. To save our species, people must consume less.*

and humans—interact with each other. They then played out different scenarios—a population explosion and continued growth in rates of per capita consumption—over the course of 200 years. (Their scenarios did not account for climate change.) They found that if consumption rates follow the same trajectories they have in the past, human beings will face extinction within 105 years.

“Human population growth does not affect sustainability so much, but if consumption increases, we are in trouble,” concludes coauthor Urmila Diwekar, president of Vishwamitra Research Institute and a professor of bioengineering at the University of Illinois at Chicago.

But as Heriberto Cabezas quickly points out, “these scenarios are not predictions of the future.” Cabezas, also a study author, is chief of the Sustainable Environments Branch of the U.S. Environmental Protection Agency. “We will get different technologies, policies, organizations, and public consciousness” that will change the parameters of the model. “A lot can change in 100 years. We barely had airplanes 100 years ago.”

The authors tested several such changes, including limiting herbivores’ consumption of plants and levying “discharge fees” (such as carbon taxes) on polluting industries. These small interventions sent ripples throughout the model—increasing prices for some resources, decreasing demand for others, reducing stress on some sensitive systems—that ex-

tended the longevity of our species by up to 30 years. The more of these interventions the better, the data suggest. “Reaching sustainability is going to take a lot of strategies and a lot of people,” says Cabezas. “There is no magic bullet.”

In the meantime, “the No. 1 priority is to reduce consumption of everything, especially plant-based resources,” says Shastri. In other research, he finds that reducing deforestation and converting agricultural land to forest land can forestall a catastrophe for 25 to 30 years. Conversely, “if you divert plant resources to biofuels, you’ll encounter a food crisis,” he says, as disruptions in plant resources ricochet throughout other ecological and economic systems.

“I can tell you what I do,” offers Cabezas: “I am installing low-energy bulbs in my house. I improved [its] insulation. I take the bus. I ask my children to take five-minute showers. I think twice before buying something that I may not need. I use a high-efficiency clothes washer. Over time,” he says, “these little things add up.” ■

Yogendra Shastri, Urmila Diwekar, Heriberto Cabezas, and James Williamson, “Is Sustainability Achievable? Exploring the Limits of Sustainability with Model Systems,” *Environmental Science & Technology*, 42, 2008.

LEADERSHIP

## Objects of Power

▶ “Karl Marx really nailed it,” says Deborah H. Gruenfeld, a professor of leadership and organizational behavior at the Stanford Graduate School of Business. The father of communism described how employers in capitalistic societies value workers solely on the basis of their ability to create wealth,



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