

# How to get the message across on climate change

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Graphic: Christine Daniloff

For many scientists working in the field of climate research, one of the most alarming trends has nothing to do with the climate itself: It's the poll numbers showing that even as scientific projections of global climate change get ever more certain, public perceptions about climate change are getting ever more skeptical.

Why is there such a huge — and growing — disconnect? John Sterman, the Jay W. Forrester Professor of Management at MIT's Sloan School of Management, says there are specific characteristics of climate change that make it unusually difficult for people to grasp. But the good news, he says, is that there are approaches that can help bridge that gap in understanding.

For example, Sterman's group has developed climate simulators to help policymakers, business leaders, the media and the public learn about the dynamics of climate change and the consequences of the choices we must make.

“When experimentation is impossible, when the consequences of our decisions unfold over decades and centuries,” Sterman says, “simulation becomes the main — perhaps the only — way we can discover for ourselves how complex systems work, what the impact of different policies might be, and thus integrate science into decision making.”

Sterman's analysis was [published this month](#) in a special issue of the journal *Climatic Change* devoted to the subject of how to improve the communication of climate science to the public, the media, business leaders and lawmakers.

Scientists on the Intergovernmental Panel on Climate Change (IPCC), among others, have made an ever-clearer case “that climate change is real, that it's happening now, and that much of it is caused by human activity,” Sterman says. And yet, “in the U.S., at least, more and more people disagree with the science. Despite the enormous efforts and success of the IPCC and scientific community in assessing climate change and the risks it poses, their efforts to communicate those results are not working.”

Sterman says that more research on the scientific specifics of climate change, while important, is “not going to solve the problem.” While some scientists suggest that public resistance to efforts to control emissions has to do with worries over the weak economy, Sterman says that “the poll results show something much more troubling: People increasingly deny that climate change is happening.”

“These are not disagreements about how we should respond to the risks

of climate change,” he says. “This is denial of the scientific facts. Political ideology, not science, increasingly determines what people believe to be true about the physical world. If you believe that responding to climate change will hurt your industry or increase government control over your life, one way out is to construct a worldview in which it’s not happening.”

It’s possible for people to cling to such views, he says, partly because “the scientific community has done a poor job of communicating.” Some scientists think the answer is more research to narrow the uncertainties, and more public education on subjects such as how the carbon cycle works. “That just doesn’t work,” Sterman says. “Telling people facts doesn’t change their beliefs.”

Research on risk communication, Sterman says, shows that “you have to start where people are, with how people see the world.” The issue of climate change, by its nature, creates “a perfect storm of public confusion,” he says. That’s because the climate is “a complex system, global in extent, and involves long timeframes compared to what people ordinarily think about. The climate is affected by the actions of every individual and every nation, and what we do now will affect the world we leave to our children.”

In addition, with climate change, “you have very powerful vested interests seeking to confuse the public, for ideological and pecuniary reasons,” he says.

Sterman’s research also delves into specific aspects of climate change that add to public confusion. One common misunderstanding, he says, is the difference between emissions and accumulations of greenhouse gases such as carbon dioxide (CO<sub>2</sub>). “Most people think if we stabilize emissions, we’ll stabilize the climate,” he says. “But that’s wrong. If we stabilize emissions today, atmospheric greenhouse gas concentrations

will continue to grow.”

To explain why, Sterman uses the analogy of a bathtub: Greenhouse gas emissions are water flowing into the tub, and natural sinks — forests and oceans, which absorb CO<sub>2</sub> from the air — are the drain. As long as the water pours in faster than it drains out, the water level continues to rise.

But today’s emissions are about twice as large as the flow out, so merely stabilizing emissions means the level of water in the tub will keep rising. In Sterman’s research, more than 80 percent of people surveyed made this error in understanding.

Andrew Hoffman, a professor of sustainable enterprise at the University of Michigan who was not involved in this research, says this study is important because “too much of the attention so far has been on only the scientific part” of [climate change](#). By studying the economic, social and political dimensions as Sterman has done, he says, “we’ll start to understand this a lot better.”

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