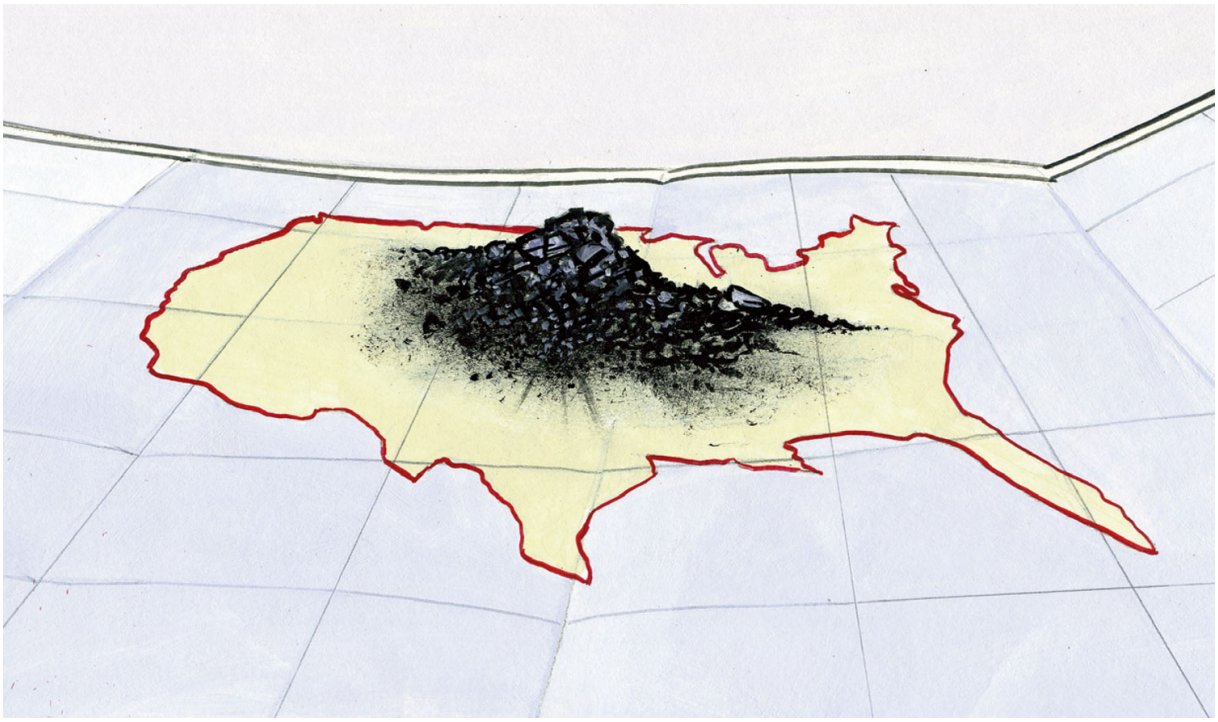
Science & Technology

The Deep Sleep

Are Americans waking up to global warming?

By
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|
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Arthur E. Giron

Americans flunked Global Warming 101. About a decade ago, after we'd listened to Bill Clinton and a Republican-led Congress debate for years whether or not to participate in the Kyoto Protocol, we knew less about global warming than did the citizens of almost any other developed nation. The U.S. population was among the least likely to know that burning fossil fuel is the leading cause of rising temperatures, according to a 1999 survey of 25 countries, even though mainstream climate scientists had already agreed that that was likely. Three years later, a Yale

study found that half of all Americans thought that the greenhouse effect was caused by holes in the ozone layer and that banning aerosol spray cans would help stabilize the earth's temperature.

Why the confusion?

It started with public relations campaigns organized by oil, coal, and auto companies during Bill Clinton's first term as president, explains Columbia sociologist Dana R. Fisher in her 2004 book *National Governance and the Global Climate Change Regime* . When Clinton proposed a major energy tax in 1993, Atlantic Richfield Coal and Oil Company, Exxon, Ford, Texaco, and others poured money into conservative think tanks that published reports arguing that the earth wasn't warming or that humans weren't causing it. The think tanks, with names like Greening Earth Society and Global Climate Coalition, had lots of success planting climate skeptics in U.S. news reports, even though their reports typically weren't peer reviewed.

"The business interests targeted Europe, too, but Europeans wouldn't listen because a lot of their governments had already taken serious actions against climate change," says Fisher. "The energy companies had the ear of the U.S. Congress, though, and they were very successful at working the media in this country."

The Oxford political scientist Maxwell Boykoff has coined a term to describe the U.S. media's mishandling of global warming: "balance as bias." Journalists in this country gave undue attention to climate skeptics for more than a decade beginning in the early 1990s, Boykoff has written, partly because they didn't understand the science and partly because elected leaders like George W. Bush championed the contrarians.

These days, we get better information. Newsstands are plastered with images of drowning polar bears, melting glaciers, and extreme weather events. The *New York Times, Washington Post, Los Angeles Times, Wall Street Journal*, and *USA Today* have improved their global-warming coverage dramatically, Boykoff concluded in a study last year. He found that they now consistently report two irrefutable facts: that warming has begun and that scientists agree it's almost certainly caused by pollution. Turn on the television, and even oil giants like ExxonMobil and BP are touting their investments in alternative energy.

Have we gotten with the program yet? Actually, almost one in three Americans still don't believe there's solid evidence of global warming, according to a survey conducted in April by the Pew Research Council. And less than half of Americans believe that pollution is causing the earth to warm. We're also out of step with the international community in how much we care: Americans are less likely than citizens of most developed nations to say they personally worry about warming or that they would make a sacrifice to help fix it. The U.S. is at the back of the pack, too, in its professed willingness to help poor countries adapt to problems that they might face because of global warming.

"Most Americans, if they're asked in a survey about whether or not we should fix global warming, will say, 'Oh, yes, of course,'" says Tony Leiserowitz, an environmental policy expert at Columbia University's Center for Research on Environmental Decisions (CRED), who conducts survey research on climate issues. "But when asked about funding specific solutions, support falls off. They're certainly not prepared to pay more for gasoline or electricity."

Big coal country

One reason why Americans are ambivalent about global warming, Leiserowitz has found, is that more than half are under the false impression that only poor countries will deal with its most serious consequences. And while it is true that poor nations have fewer resources to, say, erect levees around coastal cities or improve irrigation on farms, Columbia research has shown that large sections of the U.S. also are increasingly vulnerable to devastating droughts, riverbank floods, and storm surges.

"Rising seas obviously will endanger people around the world since many population centers are near water," says Allegra LeGrande '07GSAS, a Columbia climate scientist who studies sea levels. Ecological problems that *will* disproportionately affect third-world regions, such as projected water shortages in the Middle East and South Asia, could harm U.S. interests, too, by causing regional instability, according to research conducted this year at Columbia's Center for International Earth Science Information Network.

There are plenty of Americans who get it, though. Some 880 cities in the U.S., representing more than 80 million citizens, have pledged to reduce their greenhouse

gas emissions in the spirit of the Kyoto Protocol. Typically, these cities provide incentives to residents and businesses to replace inefficient furnaces and boilers, improve insulation, or purchase electricity from power plants that use alternative-energy sources. New York City has been particularly ambitious under the current administration of Mayor Michael Bloomberg, launching dozens of energy-saving initiatives and recently inviting companies to submit ideas for experimental wind, solar, and water projects. A survey conducted by CRED this year found that two-thirds of New Yorkers are willing to pay significantly higher taxes to fund large-scale alternative-energy efforts. It might seem paradoxical that hundreds of U.S. cities abide by the Kyoto Protocol even as our federal government doesn't. Norway apparently thinks so. The Norwegian government recently awarded a grant to the sociologist Fisher to try to explain the disconnect. "They want to know what the heck is going on here," Fisher says, "probably in order to understand our government's position toward international climate treaties."

Fisher's working hypothesis is that the U.S. coal industry is blocking climate policy at the federal level. Coal companies and power plants that burn coal are most threatened by emissions controls, Fisher says, in part because coal is the dirtiest fossil fuel, producing the largest amounts of greenhouse gases relative to the energy it produces. And it's not just CEOs and stockholders who stand to lose money: Extracting coal requires lots of labor, and miners' unions form a powerful lobby. Coal is also mined in 26 states in the South, West, and Rust Belt, so its political influence is vast. Oil drilling, by comparison, is highly mechanized and concentrated mostly in Texas, Alaska, Louisiana, and California.

"There are states, like Wyoming, West Virginia, and Kentucky, whose entire economies are built around the coal industry," says Fisher. "The United States has the largest coal reserves in the world and half of all Americans get cheap electricity from coal-burning power plants."

Researchers haven't yet statistically analyzed if people who live in coal-mining communities are less knowledgeable of global warming or less supportive of climate policy than are most Americans. But Fisher has studied congressional voting records over the past decade and found that senators from coal states overwhelmingly vote against bills that would regulate greenhouse gas emissions. "People complain about George W. Bush as if his personal ties to the oil and coal industries are holding back climate legislation, but when he leaves office, it's possible that little will change,"

Fisher says. “You have 52 senators from coal-mining states, and that is absolutely the biggest obstacle to passing legislation right now.”

As part of a $700,000 grant from the National Science Foundation, Fisher is about to begin an investigation into how fossil fuel companies and environmental groups exercise political influence, both by lobbying lawmakers and through public outreach. “I want to find out everything I can about how groups politically invested in climate issues are peddling their influence,” Fisher says.

Because the vast majority of coal-mining states tend to vote Republican in presidential elections, Fisher might examine if the coal industry tries to appeal to conservative cultural values when opposing greenhouse gas regulations. She says that industry-funded think tanks have incorporated rhetoric about individualism and personal liberty in their public relations materials before. It would seem a propitious strategy: Since 1997, according to Gallup, the percentage of Republicans who say they believe the earth is warming has *declined* from 47 to 41 percent. Particularly striking is the fact that a full 56 percent of Republicans today say they recognize that most scientists believe the earth is warming. Many Republicans, in other words, simply don’t believe the scientists.

Degrees of exposure

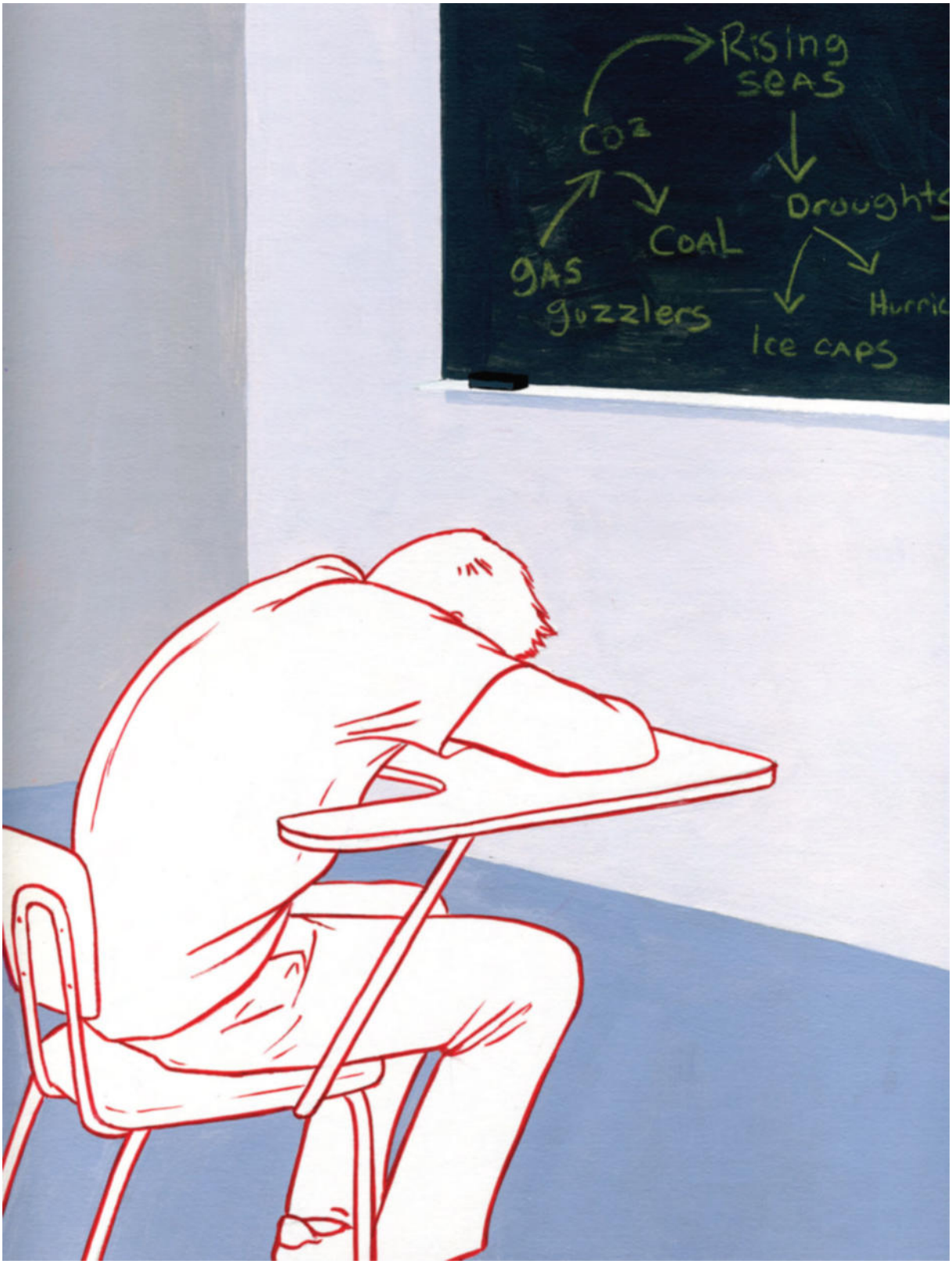
Americans have never been more divided on the issue of global warming: Whereas 10 years ago Republicans and Democrats believed in roughly equal numbers that the earth was warming, today Republicans are about half as likely as Democrats to accept the basic science of climate change. The simplest explanation may be that Americans have followed the cues of party leaders and political pundits, says Riley E. Dunlap, an Oklahoma State professor and a leading environmental sociologist. Public opinion on global warming began to diverge along party lines in the U.S. around 1997, when the Clinton administration pushed to join the Kyoto Protocol, Dunlap writes in a forthcoming issue of the journal *Environment*. Prominent Republicans, such as Nebraska senator Chuck Hagel, and conservative commentators, like Rush Limbaugh, weighed in loudly on the debate at that time, dismissing climate scientists as alarmists and frauds.

Global warming remains a partisan issue, says Fisher, in part because it seems abstract to people. “Most environmental problems we’ve faced involve concrete problems that people can smell, taste, or see, like dirty water or toxic waste in your community,” she says. “Global warming is different.” Public debate therefore tends to revolve around matters of principle, such as our right to drive large vehicles or the government’s right to tax gasoline, she says.

Beyond issues of individualism, why exactly are so many Republicans skeptical of climate science? Is it because their jobs are linked to coal? Or is it because they are influenced by President Bush’s skepticism? Do they dismiss Al Gore because he’s a Democrat? Or do they distrust scientists because scientists don’t want creationism taught in schools?

Behavioral scientists find it difficult to quantify how personal values and emotions influence our perceptions because so many variables can be involved. Tony Leiserowitz, the CRED researcher, who is also a Yale professor, is among the few scholars who have tried to measure how values influence Americans’ opinions on warming. In 2002, he conducted a national survey designed to flesh out everything from Americans’ political and religious views to how they get their news to whether or not they’re prone to believe conspiracy theories. He found that people who don’t believe in global warming are more likely to be white, male, religious, politically conservative, and radio-talk-show listeners. That was predictable based on his previous research, but Leiserowitz identified one fundamental personality trait that stood out: sensitivity to social-justice issues. A person highly attuned to inequality among people, Leiserowitz’s data show, is more likely to believe that global warming is real, to worry about the problem, and to support legislation aimed at controlling greenhouse gas emissions.

“It seems that we’re open to registering different types of information, depending on our personal worldview,” says Leiserowitz, who based his assessment on four basic personality types formulated by scholars of cultural studies. “Some people are primarily attuned to individual rights or to maintaining order in society,” he says. “And the people we call egalitarians apparently pick up on information about global warming.”



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Research like this can help environmental groups communicate to specific audiences, says Elke Weber, a cognitive psychologist who directs CRED. A campaign

promoting fuel-efficient vehicles through a church network, for instance, might be most effective if it appeals to social-justice lessons in the Bible. Weber says the Georgia-based Evangelical Environmental Network recently had success with a brochure featuring an image of Jesus Christ behind a steering wheel and the tagline, “What Would Jesus Drive?”

“People need to have an emotional, personal reaction to a risk before they take steps to avert it,” says Weber. “And what triggers our fear, worry, and concern is different for different people.”

Environmental activists find it difficult to get people concerned about global warming, Weber says, because its most catastrophic effects — mass extinctions, submerged coastlines, chronic food and water shortages — exist today only in climate models. She says humans are genetically wired to respond to palpable threats like wild animals, disease, and war, not to abstract dangers that we might face in the distant future. Psychologists, partly for this reason, have called global warming “the perfect problem.” From the viewpoint of a risk assessment expert, like Weber, our response to global warming can seem almost the opposite of a phobia: Even when people reflect on the worst possible consequences of global warming, our level of concern tends to be irrationally low, in part because no past traumas have primed us to be frightened of melting ice or slowly rising seas.

CRED researchers, on the other hand, have shown that people’s responses to information about global warming will vary depending on small differences in the way information is presented. Psychologists at CRED offer training to policymakers, activists, educators, and climate scientists on how to communicate effectively about global warming. Some of their tips are recognizable from watching the news: Don’t terrify people with doomsday scenarios that can lead to apathy; rather, focus on solutions. Others are quite subtle: When promoting an environmental policy, describe its benefits before you describe its costs. Also, when promoting an environmental policy, explain how our planet has been damaged and needs fixing. That’s more effective than talking about preserving nature, because we tend to place a higher value on things we’ve lost than on things we possess — which means we’re willing to make greater sacrifices to retrieve something than to hold on to it in the first place.

Weber is aware that grooming messages about climate policy might draw criticism as being manipulative. But she says that risk assessment studies have shown that there is “no neutral way” to present information. In other words, when someone describes a policy proposal to us, human nature dictates that we will be influenced by whether we hear first about the benefits or the costs. Weber says that presenting information about an environmental policy in a way that prompts us to carefully consider the option maximizes the choices we have available to us, since humans are inclined to worry less about global warming than is warranted by a rational assessment of the risks. Weber sees her work as being closely related to that of the behavioral economists Richard H. Thaler and Cass R. Sunstein. They argue in their 2008 book *Nudge* that it’s ethical for governments and corporations to employ psychological methods to steer people toward good decisions, such as investing in retirement funds, giving to charity, or supporting schools.

“In applied settings, the fruits of psychological research are obviously used in Machiavellian ways by countless people and organizations,” says Weber. “But they can be used to promote public welfare, too.”

The selling of global warming

Are Americans getting all of the information they need to make good choices to confront global warming? Public debate in this country often overlooks important economic and ethical dimensions of the problem, say Columbia experts.

Consider the prospect of regulating our nation’s greenhouse gas emissions. Climate scientists warn that developed countries should reduce their emissions 80 percent by 2050 to stabilize greenhouse gas concentrations at a safe level. The Lieberman-Warner Climate Security Act, which the U.S. Senate debated in June, called for roughly this level of reduction. But Republicans killed the bill, saying it would hurt the economy and raise gasoline prices. That misses the point, according to Columbia economist Geoffrey Heal. He says it’s obvious that limiting our greenhouse gas emissions would hurt the economy in the near term. His point, and that of many other economists, is that reducing emissions is a good long-term investment.

Heal explains how emissions controls would work: A tax or regulatory structure would drive up the price of energy from fossil fuels, encouraging investors to put

more money into wind, solar, and geothermal energy technology. Shifting our economy off fossil fuels would hardly be painless: As capital is redirected from old companies toward new ones, people will lose jobs and need retraining. The Climate Security Act would cost the U.S. an estimated 1 to 3 percent of its gross domestic product every year for the foreseeable future, many economists have predicted. “One percent of GDP, for a typical family that earns $45,000, translates into a $450 hit on your energy bills every year, gasoline plus electricity,” says Heal

But if renewable energy projects are developed to scale in the United States, Heal says, several decades from now energy will be cheaper than if we’d remained dependent on fossil fuels. That will make our entire economy more efficient, he says. And if U.S. companies dream up the best new green-energy solutions, we’ll have a major new export industry. “Limiting global-warming emissions is a great investment,” Heal told a Senate committee considering the bill in June. “When you compare the cost of acting to the cost of not acting, cutting emissions would give us a return of 10 to 1.”

What is the *right* thing to do?

Curtis Brainard ’06GSAS, ’06JRN, a science journalism critic at Columbia Journalism Review, says that major U.S. newspapers these days cover the economics of climate change extensively, but typically overlook the ethical issues involved. “The ethics get complicated,” he says, “but deserve public attention.” Consider again the Climate Security Act, for instance. There’s little disagreement among economists that cutting our emissions 80 percent by 2050 will cost between 1 and 3 percent of our GDP, as that’s a pretty straightforward calculation. But economists, to determine if this is a wise investment, also must calculate the damage that global warming will cause if we don’t regulate greenhouse gas emissions. That raises tricky questions: Should economists try to factor into their cost-benefit analyses the small risk that global warming will cause cataclysmic disaster, even though climate scientists can’t yet measure that risk accurately? Economists also need to consider the degree to which our investments may have limited value in the distant future. They must ask: How much enjoyment will future generations take from our sacrifices, considering they’ll likely be wealthier than we are and know better how to address the problems they face?

Economists don’t have rules for answering these questions. And it’s largely because they plug different answers into their equations that they disagree about whether or not we should make serious sacrifices to stop global warming, the moral philosopher John Broome explained in a recent issue of *Scientific American*. The Yale economist William Nordhaus, for instance, has concluded that it’s foolish to implement strict emissions controls, based largely on his stances toward these ethical considerations, Broome writes. Columbia economists Jeffrey Sachs and Geoffrey Heal, as well as former World Bank chief economist Lord Nicholas Stern, are at the opposite end of this debate. Their calculations suggest it’s foolish *not* to invest in the future.

Granted, debates among economists about the finer points of cost-benefit analyses might be esoteric for the nightly news. But the CJR critic Brainard says journalists could explore more intuitive ethical questions: What is the proper amount of greenhouse gas emissions for a typical American city? Should China and India be exempt from limits since they’re developing countries? Do Americans owe a debt to African farmers for warming-related damages, since the U.S. is partly at fault? “Ethical dilemmas such as these are implicit in many climate-related articles,” Brainard wrote on the CJR Web site recently. “It is rare that they are stated explicitly, however, and that is unfortunate. It is reasonable to assume that readers might answer them differently if reporters actually laid out all the ethical considerations involved.”

Warming up to the idea?

“Climate scientists today are scared,” says Steve Cohen, who is executive director of Columbia’s Earth Institute, which encompasses many of the University’s climate science programs. “This summer, they saw these huge ice chunks break off in the Arctic and it’s a profound experience for them. Some of these scientists never thought that they’d see anything like that in their lives. There’s an increasing sense of urgency, I think, among the scientists to get their science out in front of the political world so that people can act on their knowledge.”

To that end, scientists earlier this year launched the Columbia Climate Center, which facilitates projects aimed at stopping and adapting to global warming. Columbia’s traditional strength in climate science is basic research in paleoclimatology, or the

use of geologic records to track climate over history; the University now has faculty members working on nearly every aspect of climate change, from the analysis of ice cores to the modeling of weather systems to the development of solar energy. At the Climate Center, these scientists are joining up with sociologists, psychologists, economists, and policy experts to do applied research on mitigation and adaptation challenges. Already, several professors are working with New York City public officials to determine the best way to prepare for heat waves, storm surges, water shortages during droughts, and overloading of the electric grid.

Media specialists periodically visit the Climate Center, too, to provide tips to the scientists on how best to communicate with reporters and the public. “Getting people to pay attention to global warming can be frustrating,” says Peter Schlosser, a Columbia geochemist and oceanographer who directs the Climate Center. “But there’s plenty to be encouraged about. A few years ago, when I gave talks to the public about climate change, I’d get lots of skeptical questions: How do we know you took good measurements? Isn’t it really natural variations in the weather? That’s been changing in the past two years. Now a lot of people ask: What should we do? Is it too late? Is the problem too big for one community, one country to fix? Will there be technical solutions? Of course, these questions are more difficult to answer. But finding practical solutions is a focus for many of us now.”

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