

Academy Panel Split on Greenhouse Adaptation

Its conclusion that the United States can adapt relatively painlessly to global warming draws two vigorous dissents

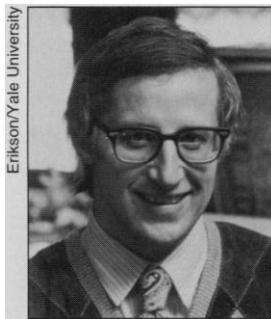
IN STARK CONTRAST TO THE POPULAR VISION, the impact of greenhouse warming in the United States will be, by and large, mild and the nation should have little trouble adapting to the several-degree temperature rise predicted for the middle of the next century. That message comes not from the National Coal Association but from a panel of the National Academy of Sciences in a new report released last week.

But not everyone is buying the panel's rosy outlook. By all accounts, it triggered a heated debate, not just within the "adaptation panel" that produced this report but in a related academy committee that produced a report on greenhouse policy earlier this year. Indeed, Jessica Matthews, vice president of the World Resources Institute and a member of the policy panel, dissented from that report when it reflected the adaptation panel's views. Ecologist Jane Lubchenco of Oregon State University, a member of the adaptation panel, followed suit in the new report. Both say, essentially, that the panel erred in trying to divorce ecological from economic effects.

In assessing the ultimate impact of climate change, according to the new report, the crux of the issue is both the rate of change and the speed with which society and nature can respond. The panel, which was chaired by Paul Waggoner of the Connecticut Agricultural Experiment Station, has few doubts that society, at least, can keep up. Indeed, the report reads like a virtual paean to human adaptability, technological innovation, and the market. It describes the myriad innovations that have climate-proofed humans and their activities over the past century—such as refrigeration, air conditioning, windshield wipers, and irrigation—the sorts of technologies that will help society cope with greenhouse warming, the panel notes. It concludes that both the speed of innovation and the turnover rate of capital investments—the time it takes to replace equipment in industry or cultivars in agriculture—are faster than the projected rate of climate change.

The bulk of the report is an analysis of how sensitive various activities or ecosystems are

to climate change, and how adaptable. Industry and the energy sector, both relatively insensitive, should have little trouble adapting, they note. Agriculture, by contrast, is exceedingly sensitive to climate fluctuations. But, says the panel, it too can adapt, though at some cost, by continuing efforts to diversify and improve crops. (The panel does caution however, that extremely rapid climate change could "challenge this essentially optimistic view.") Nor is climate change likely to



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"The idea that the impact will only be modest is at variance with the scientific consensus you hear at meetings." —William Nordhaus

render any areas of the country uninhabitable, the panel notes, but the costs of adaptation could be high—especially for protecting coastal cities from sea-level rise.

The only exceptions to these generally upbeat conclusions are natural ecosystems, which the panel admits will be tough to "climate-proof" because their response times are as slow as, if not slower than, the expected rate of climate change. Effects could be severe; indeed, some species might disappear, though the most likely outcome is that the composition of communities will change.

The bottom line, the panel says, is that no drastic interventions seem warranted. "Like generals building a Maginot Line in the wrong place, we might bankrupt ourselves building dikes against floods that never come." In most cases, there is time to wait "until we see whites of the enemies' eyes," they say. The exception is long-lived structures, like bridges, for which it might be more economical to design for climate change than to retrofit.

Meanwhile, the panel recommends changes that will help to cope with current climate fluctuations—and thus prepare for a changing climate as well—such as improving building insulation, disaster manage-

ment, and control of low coastal areas, and diversifying the water supply. They also recommend efforts to preserve biodiversity, both in the wild and in seed banks and zoos.

More generally, the panel recommends shoring up market mechanisms, since "most adaptation to changing climate takes place through decentralized individual reactions to social, economic, and political signals. Where market signals are impeded, adaptation...is slowed." This is especially important for water resources, notes panel member William Nordhaus, an economist at Yale University: "The water system looks like a pressure point for climate change. And it is the one place where our political and economic system doesn't seem to work well."

When these arguments were first presented to the policy panel earlier this year, they were "blasted," says member Stephen Schneider of the National Center for Atmospheric Research. He objects to the panel's

reliance on a "surprise-free scenario of mild, predictable change." The panel does not specify a particular climate scenario but concentrates on "moderate" and "gradual" change. But faced with "vociferous dissent," the panel made major changes, says Schneider, such as acknowledging that catastrophic effects are possible—in which case adaptation will be neither cheap nor easy.

"They added enough caveats so I can live with it," says Schneider.

Not so Matthews and Lubchenco, who both object to the "sanguine" and "complacent" view of the report. Says Matthews: "I did not do this lightly. I felt the statements really can't be supported," she says, referring in particular to the assertion that adapting to climate change will be no worse than coping with the Dust Bowl. She and Lubchenco argue that the panel underestimates the extent to which human economic activity is dependent on natural systems.

Responds Nordhaus: "Ninety percent of U.S. economic activity has no interaction with the ecological changes Lubchenco is concerned about. Agriculture, the part of the economy that is sensitive to climate change, accounts for just 3% of national output. That means there is no way to get a very large effect on the U.S. economy. It is hard to say it is the nation's number one problem."

But Nordhaus welcomes the debate. "The idea that people can adapt, and that impact will only be modest, is very much at variance with the scientific consensus you hear at meetings. But it was subjected to very strenuous counterattack and debate, and I think it stood up pretty well." ■ **LESLIE ROBERTS**