behaviour could help people use energy more efficiently. He and his colleagues have calculated that if a 'reasonable fraction' of people — estimated at 20 to 30 per cent — made small, environmentally beneficial changes, such as switching furnace filters or driving less aggressively, then overall household energy consumption could drop by up to 20 per cent. That's not even assuming that the majority of people would take such measures. "The rate of return is amazingly high," says Dietz.

So why hasn't everybody started doing these things? This is the core of what Dietz, Zahran and others are keen to understand. "Economic and social programs with [monetary] incentives can vary by a factor of ten in their uptake," Dietz says.

Sociologists are far from having a catch-all explanation for this variation. But the pattern that Zahran is seeing at the level of local government — that the selfish way out is the most often selected — might be playing out at the national level too. "There's been a relative failure of international agreements to change our greenhouse gas emissions," says Broadbent. "Both natural and political scientists have begun thinking about why nations aren't taking this more seriously."

There are plenty of other questions that sociology is well-placed to tackle. "There is such a long list," sighs Paul Stern. He highlights a few: How can we understand the consumption that drives climate change? Why do people desire larger houses for fewer people, and faster cars for more crowded roads? What's behind the public acceptance — or otherwise — of policies that seek to mitigate climate change, and of the scientific evidence they are based on? And why are there differences across countries?

> "There are a lot of valuable contributions that could be made, and very few of them have been made."
>
> Paul Stern

And then there's the next step. It's all very well coming up with a to-do list like this, but how can it all be put into practice? "What advice would I give government? I've been struggling with just that question," says Stern. "We definitely need to build scientific capacity in this area," he says — ensuring stable jobs and training for young researchers or building more interdisciplinary centres, for example. Another angle is to set challenges that are truly cross-disciplinary, says Hoskins. The Grantham Institute at Imperial College does just that, running projects that aim to design sustainable cities or decarbonize electricity. These are projects that call for a mixed bag of engineers, chemists, economists, town planners and sociologists. "Dealing with generalities, we just seem to float", he says, but "taking specifics seems to be quite useful." Sociology must overcome its own internal wrangling too. "We've been poking traditional sociologists in the ribs, saying, 'pay attention'," says Brechin.

The take-home message is clear: it's all very well having a shiny new technique for burying carbon or turning plants into fuel, but "if we don't understand how society is going to perceive it, it might well backfire", Liverman says. The tools of natural science cannot help us ask what makes our culture so consumption-heavy, what determines how individuals or communities differ in their response to climate change, or what power dynamics are at play when governments negotiate their policies.

Consequently, "there's only so far we can go by understanding the science of the technologies needed to mitigate and adapt", says Hoskins. "In the end it's whether people will take them up."

In the words of Albion Woodbury Small, who in 1892 founded the first sociology department in the US at the University of Chicago, "Sociology was born of the modern ardor to improve society." And what better way to improve it now than to join the ranks of those tackling climate change?

Published online: 30 July 2009

doi:10.1038/climate.2009.73

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Ice memory

Ice has become an unequalled resource for studying the Earth's climatic history. **Anna Barnett** rounds up several new features on our site that pay tribute to the field of paleoclimatology, from the initial discovery of climatic clues in ice through to current efforts to recover a core that stretches back over a million years.

Some of scientists' gravest concerns about future climate change are rooted in the past. Records studied by paleoclimatologists reveal that the more extreme possibilities for this century and beyond — temperatures soaring, ice sheets vanishing, fertile lands withering into deserts — were realized previously on Earth when atmospheric greenhouse gas levels surged. This summer, experts working to understand how and why such changes occur met in Columbus, Ohio, at the Byrd Polar Research Centre, one of the world's top facilities for reconstructing past climates.

The scientists who gathered at the American Geophysical Union's Chapman Conference on Abrupt Climate Change, held 15–19 June, bring a diversity of tools to bear in understanding the past. Among the proxies they use are ice cores, tree rings, corals and marine sediments. Though each has its own merits, ice cores have provided unparalleled insights into the nature of the Earth's climate system. Offering records of climatic history whose detail and completeness are unmatched, ice core data stretch back 800,000 years and are conveniently located in some of the world's most climatically sensitive regions.

JEAN DE POMEREU, INTERNATIONAL POLAR FOUNDATION

Dome A in Antarctica, site of some of the continent's thickest ice, is one proposed location for drilling a core one million years old or more.

Two new features on *Nature Reports Climate Change* pay homage to the work of scientists who, over the last few decades, have been tireless in their efforts to extract clues about the Earth's climate from air bubbles, isotopes and dust particles trapped in ice.

First, a timeline of polar cores (http://tiny.cc/icetime) documents in fine detail the discoveries of scientific pioneers, from the first efforts to read ice records through to today's hunt for ice a million years old or more. Complementing this chronology of scientific discovery is an interactive map layer for Google Earth (download map layer, http://tiny.cc/icemap; download Google Earth, http://tiny.cc/gearth). Through a simple download, you can visit the sites where polar researchers have holed up year after year, drilling thousands of metres of Greenland or Antarctic ice before hitting bedrock.

Also in this issue is an exclusive interview with world-renowned glaciologist Lonnie Thompson. In his quest to understand how ice is changing atop the world's mountains, Thompson has spent more spent more time above 20,000 feet than any other human being. The glaciers he studies not only provide water for millions worldwide, they act as sentinels that tell us the climate system is changing.

Such endeavours come with scientific challenges as well as personal ones. As understanding abrupt climate change becomes increasingly crucial, ambitious plans for studying these icy environs will be ever more important.

Published online: 4 August 2009

doi:101038/climate.2009.76

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