

American Exceptionalism? Similarities and Differences in National Attitudes Toward Energy Policy and Global Warming

D. M. REINER,^{*,†} T. E. CURRY,[‡]
M. A. DE FIGUEIREDO,[‡] H. J. HERZOG,[‡]
S. D. ANSOLABEHRE,[§] K. ITAOKA,^{||}
F. JOHNSON,[⊥] AND M. ODENBERGER[⊥]

*Judge Business School, University of Cambridge,
Trumpington Street, Cambridge, UK, CB2 1AG, Laboratory for
Energy and the Environment, and Department of Political
Science, Massachusetts Institute of Technology, Cambridge,
Massachusetts 02139-04307, Mizuho Information and
Research Institute, Tokyo 101-8443 Japan, and Department of
Energy Technology, Chalmers University of Technology,
S-412 96 Goteborg, Sweden*

Despite sharp differences in government policy, the views of the U.S. public on energy and global warming are remarkably similar to those in Sweden, Britain, and Japan. Americans do exhibit some differences, placing lower priority on the environment and global warming, and with fewer believing that "global warming has been established as a serious problem and immediate action is necessary". There also remains a small hard core of skeptics (<10%) who do not believe in the science of climate change and the need for action, a group that is much smaller in the other countries surveyed. The similarities are, however, pervasive. Similar preferences are manifest across a wide range of technology and fuel choices, in support of renewables, in research priorities, in a basic understanding of which technologies produce or reduce carbon dioxide (or misunderstandings in the case of nuclear power), and in willingness to pay for solving global warming.

Introduction

Since the Bush Administration's withdrawal from the process of negotiating the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), the United States, the largest emitter of greenhouse gases, has stood apart as all major industrialized countries (save Australia) have ratified the agreement. This stance was reinforced at COP11 in Montreal, where the U.S. declined to participate in any formal negotiations for post-Kyoto commitments (1). Differences in public opinion are often used to explain, if not justify, differences at the governmental level. Indeed, many in the environmental community and European left take great pleasure in emphasizing these differences

* Corresponding author phone: +44-1223-339616; fax: +44-1223-339701; e-mail: dmr40@cam.ac.uk.

[†] University of Cambridge.

[‡] Laboratory for Energy and the Environment, Massachusetts Institute of Technology.

[§] Department of Political Science, Massachusetts Institute of Technology.

^{||} Mizuho Information and Research Institute.

[⊥] Chalmers University of Technology.

by referring to American "overconsumption", love of sport utility vehicles, and support for a President labeled as the "Toxic Texan" (2). American conservatives and climate skeptics often echo support for the view that Americans are incontrovertibly different (3). Rather than simply reiterating stereotypes, one can test directly whether the sharp divergence between the policies of the U.S. government and other industrialized countries is reflected in public opinion.

The notion of American Exceptionalism is usually attributed to Alexis de Tocqueville's classic *Democracy in America*, but in recent years sociologists such as Seymour Martin Lipset (4) have emphasized the key dimensions of differences as being liberty, egalitarianism, individualism, populism, and laissez-faire. Students of regulation such as Sheila Jasanoff (5) have used the same metaphor to argue that the pluralistic character of American politics is reflected in the scientific community and the use of science in regulation.

Survey Design

For the case of climate change and energy technologies, we explore whether and how these differences might emerge. We have conducted public opinion surveys in the United States, U.K., Sweden, and Japan, as part of a larger project on social and political implications of carbon dioxide capture and storage (CCS) technologies, which we hope can offer some important insights into policy preferences for addressing global warming and basic public understanding of the underlying phenomena.

Respondents were asked to describe their awareness of various energy technologies and were tested on their basic understanding of the relationship between energy generation technologies and carbon dioxide emissions. The polls solicited views on research and development priorities, beliefs regarding both the desired and likely national approaches to tackling global warming, and preferences on the energy technologies. Emphasis was put on posing the same questions across all four surveys, although translation and national context led to some inevitable differences.

The U.S. survey was conducted in October 2003 by MIT and Knowledge Networks using an Internet-based survey instrument ($n = 1205$, response rate = 70%), using a national sample drawn from a membership panel that are provided free hardware and Internet access (6). The Japanese study was conducted in December 2003 as a written survey administered in Tokyo and Sapporo by Mizuho Research & Information Institute and AIST ($n = 1006$, response rate = 64%) (7). The British survey was an Internet-based survey conducted by University of Cambridge, MIT, and YouGov in September 2004 ($n = 1056$, response rate = 40%) (8). Finally, the Swedish study was conducted in December 2004 by Chalmers University of Technology and SCB (Statistics Sweden) ($n = 742$, response rate = 49%).

The effect of differences in timing is likely to be relatively small since most questions focused on knowledge and general attitudes toward technology rather than on issues of more topical relevance. Both the U.S. National Science Foundation and the European Commission have conducted surveys of public understanding of science and technology for over a decade and have not found any significant changes in knowledge (9). Questions that found, for example, high levels of support for security-related energy research and development in the U.S. survey may be of a more transient nature.

There are some notable differences among the surveys driven by language, resources, and opportunities. The U.S. and U.K. surveys were conducted using Internet-based

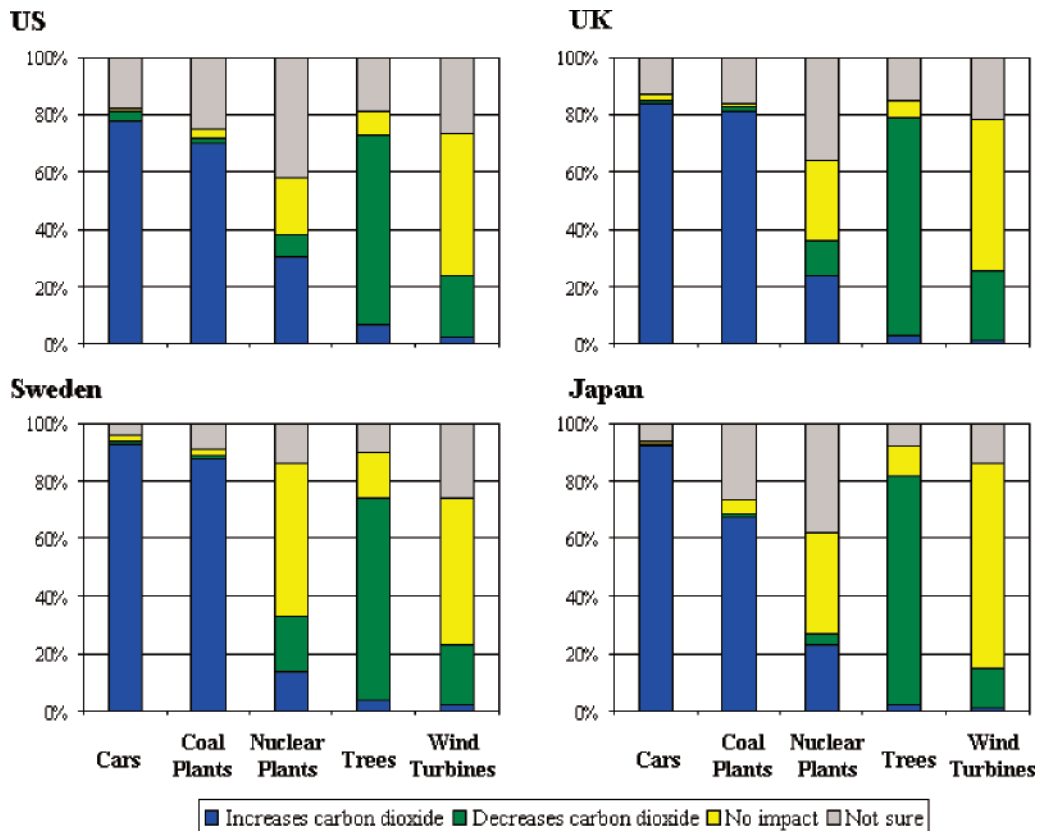


FIGURE 1. Responses to “There is a growing concern about increasing levels of carbon dioxide in the atmosphere. How do you think the following contribute to these levels?”

instruments, whereas the Swedish and Japanese surveys were written questionnaires using randomly sampled panels. The Swedish and British surveys took the same form as the U.S. questionnaire of 20 questions plus demographic questions although each had several country-specific questions. As part of a larger study on the role of information, the Japanese survey included 8 baseline questions in common with the other 3 surveys.

The different form of survey instrument might also be expected to produce some differences or introduce potential biases. Proponents of traditional telephone or face-to-face survey methods argue that biases in sampling may be introduced if the panel is selected over the Internet (access to those who are more technologically aware, away from the poor, or employed in certain jobs) (10). Online polling firms can point to flaws in traditional surveys such as telephone surveys being biased toward those who are home at the right time, excluding those who use mobile phones as their main telephone, and that people tend to conceal responses when traditional survey methods are used (11). All surveys seek to correct their samples for nonresponse bias to ensure a representative sample. Regardless of method, any poll will need to make some corrections to ensure gender, region, age and perhaps other demographic variables are representative of the larger population (12). The U.S. Internet poll compensates by offering access to those not already wired (13) whereas the U.K. survey uses other variables (such as newspaper readership) to correct for any discrepancies between the sample and the whole population.

Declines in response rates to surveys do not seem to have affected the accuracy of polls; in fact, the accuracy of polls has arguably increased as techniques have become more sophisticated (14). Comparisons between Internet and traditional surveys where the result is known, such as the poll taken immediately prior to an election have found no significant differences in the accuracy of one or the other

method, nor any clear biases (15). The potential for a pro-technology bias or a bias toward those who are technologically literate is the biggest concern in the present context (16). An additional concern is that in conducting surveys in multiple languages and cultural contexts there may be subtle differences in language that may, for example, account for why respondents might appear more knowledgeable in some countries on a particular issue.

Survey Results

Assessing public understanding of the linkage between carbon dioxide and energy production is critical if one believes that there is even a loose correlation between basic understanding, the strength of public support, and policy actions. There was a clear appreciation in all countries (>70% of the public in each survey) that coal-burning power plants and cars increased CO₂ levels and that wind turbines either had “no impact” or reduced CO₂ levels. Despite the low recognition for the term “carbon sequestration”, there was also a similar degree of understanding that planting trees decreased CO₂. By contrast, although over 20% of electricity generation in each country came from nuclear power, 31% in Sweden and over 60% in the other three nations either believed that nuclear power led to an increase in atmospheric CO₂ concentrations or did not know the answer (see Figure 1). The lower numbers in Sweden may reflect the long-standing national debate on the subject of nuclear power and that nuclear energy accounts for half of total generation. The overall findings are comparable with results of a recent Eurobarometer on energy (17).

There were additional areas where U.S. respondents appeared to show less knowledge. In testing the association between CCS and the problem being addressed, U.S. respondents were unable to distinguish among the problems listed, whereas in the U.K., Sweden, and Japan two to three

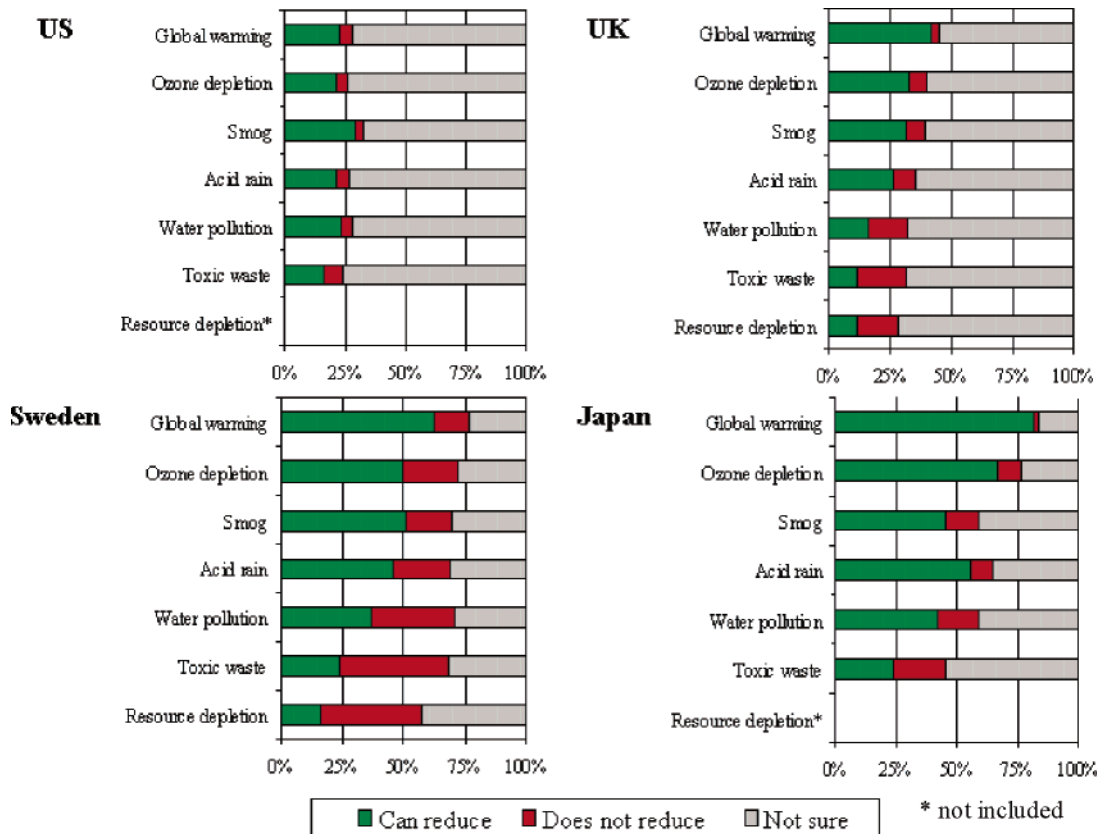


FIGURE 2. Responses to “Please select if “carbon sequestration” or “carbon capture and storage” can reduce each of the following environmental concerns.”

times as many people associated CCS with reducing global warming compared with toxic waste. Although respondents in those countries recognized global warming as the leading problem, many also listed other air pollution problems such as ozone depletion and smog (see Figure 2).

A survey by MORI (18) for the Scientific Alliance found that 70% of the British public were unable to name the leading contributor to global warming—although 30% named CO₂. As another source of confusion, Sterman and Sweeney (19) have found that few people understand the mechanism by which CO₂ builds up as a stock in the atmosphere. Given the variance in understanding of the carbon cycle, one might appreciate the difficulty for policy-makers of conveying rationale behind climate change policy.

Differences and similarities also appeared in policy preferences. Global warming was ranked as the one of the top two environmental problems facing their country by 55% in the Swedish survey and 49% in the British survey, far ahead of any other environmental problems. In the U.S., however, global warming was only ranked fifth at 21% after water pollution, ecosystem destruction, overpopulation, and toxic waste. These results are comparable to recent Gallup surveys (20–21) that have found various forms of water pollution as the leading environmental concern in the U.S.

The U.S. and European surveys asked for the priorities for the national energy agency and found a remarkable similarity in which priorities the public wanted to see their governments fund. Out of a list of 13 alternatives, new renewable energy technologies (wind, solar, etc.) was the clear leader with 47% in the U.S. survey and 52% in both the Swedish and U.K. surveys listing it as one of their top two national research priorities. Both the U.S. and U.K. surveys placed security and anti-terrorism near the top of the list of priorities at 32% and 23%, respectively. There was also widespread agreement that energy conservation and more

efficient vehicles deserved research support. Among the top five national priorities, notable exceptions were the higher priority assigned to research into clean drinking water and finding new oil and gas reserves in the U.S., mass transport in the U.K., and nuclear energy in Sweden.

On climate change policy itself, respondents displayed a few notable differences but many similarities when asked how global warming “should” be addressed versus how it “will” be addressed. Only 17% of Americans believed that “global warming has been established as a serious problem and immediate action is necessary” compared to 36% in Sweden, 41% in the U.K., and 54% in Japan, whereas 24% of Americans believed that “more research is necessary before we take any actions” compared to 18% in the U.K., 12% in Sweden, and 8% in Japan (see Tables 1 and 2).

By contrast, when asked how their nation would actually address the issue of global warming, fully two-thirds of Japanese believed that changing lifestyles to reduce energy consumption was the leading possibility compared to one-third of Americans, one-quarter of Britons, and only one-fifth of Swedes. Developing new technologies to solve the problem was cited as the most likely outcome by between 21% (U.S.) and 33% (Sweden) of the samples. Americans and Europeans were both less sanguine and more cynical—many believed that it would be necessary to “learn to live with and adapt to a warmer climate” (ranging from 13% in the U.K. to 19% in Sweden) and that “global warming is a problem but [my country] won’t do anything about it” (ranging from 12% Sweden to 24% in the U.K.) whereas much lower numbers offered these views in Japan (4% and 6%, respectively). Thus, the Japanese were less pessimistic, which may reflect the belief that lifestyle choice was sufficient to address climate change (22) and Japanese success at reducing consumption following the oil shocks of the 1970s (23).

TABLE 1. Responses To “Many Scientists Believe that Human Activities, Such as Burning Fossil Fuels to Drive Cars and Generate Electricity, Are Causing the Earth’s Atmosphere to Warm Somewhat. There are Many Ways that [My Country] May Respond to this Situation. Which of the Following Statements Comes Closest to Your Opinion?”

Answer	United States	United Kingdom	Sweden	Japan
I believe that firms and government researchers will develop new technologies to solve the problem.	21	26	37	22
I believe we will have to change our lifestyles to reduce energy consumption.	32	27	22	66
I believe we will learn to live with and adapt to a warmer climate.	17	13	19	4
I believe global warming is a problem but [my country] won’t do anything about it.	24	21	14	6
I believe we will do nothing since global warming is not a problem.	7	3	2	NA
Not sure	NA	10	6	2

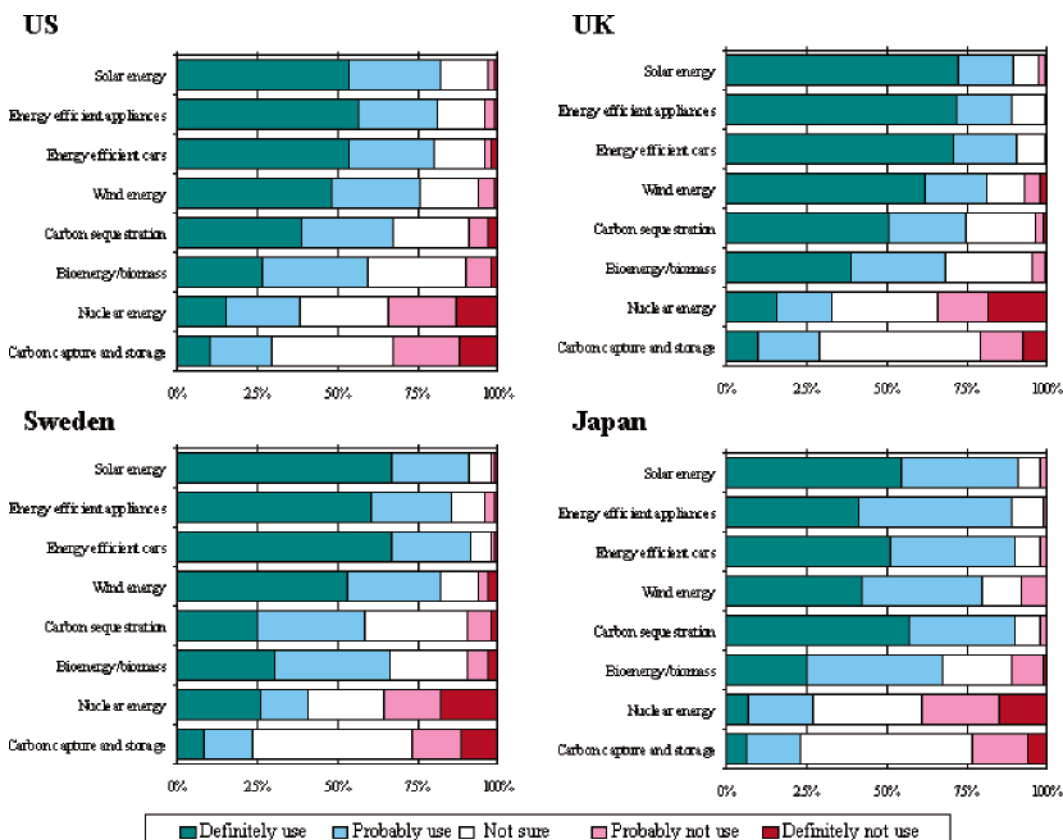


FIGURE 3. Responses to “The following technologies have been proposed to address global warming. If you were responsible for designing a plan to address global warming, which of the following technologies would you use?”

TABLE 2. Responses To “From What You Know about Global Warming, Which of the Following Statements Comes Closest to Your Opinion?”

Answer	United States	United Kingdom	Sweden	Japan
Global warming has been established as a serious problem and immediate action is necessary.	17	41	35	54
There is enough evidence that global warming is taking place and some action should be taken.	36	33	45	34
We do not know enough about global warming and more research is necessary before we take any actions.	24	18	13	8
Concern about global warming is unwarranted.	7	4	2	0
Not sure	16	4	3	3

Acceptance that global warming was a problem was above 90% in all countries, although there remains a core of roughly 7% of Americans who assert in various guises that global warming science is not credible, compared with no more than 3% in the other countries. More generally, among Americans there is increasing recognition that “there is a consensus among the great majority of scientists that global warming exists and could do significant damage”; recognition

has grown from 28% in 1994 to 43% in 2004 and 52% in 2005, and the view that scientists are divided on the existence of global warming and its impact fell from 58% in 1994 to 50% in 2004 and 39% in 2005 (24).

On technology choice, the four countries displayed similar inclinations across a range of technologies (see Figure 3). Solar energy, energy-efficient appliances, and energy-efficient cars all garnered 80–90% favorability ratings with virtually

no one expressing negative views. Wind energy, carbon sequestration (defined as planting trees), and biomass/bioenergy, all were viewed favorably by clear majorities and relatively few answered “definitely do not use” but in each case a notable minority (generally in the 5–15% range) displayed at least some skepticism toward using the technology. Finally, nuclear energy and CCS were viewed with a great deal more equanimity. Among those voicing an opinion, support and opposition to the technologies was comparable, with less uncertainty and a slightly stronger bias in favor of “definitely not use” for nuclear power.

We also investigated the effect of correcting misperceptions. In the U.K. and U.S. surveys, half of the respondents were given additional information on costs (i.e., that costs of renewables are substantially higher than competing technologies) and environmental impacts (such as that nuclear power does not produce CO₂) as a means of testing the strong opinions voiced for renewables. With information, there was a notable shift away from support for renewables. Support for increasing renewables decreased from 46% to 40% in the U.K. and 49% to 25% in the U.S. In the U.K., support for expanding nuclear power doubled from 9% to 18% and support for CCS went from 1% to 10%, while in the U.S. those figures increased from 7% to 11% and 6 to 16%, respectively. Some would argue, therefore, that education will reduce support for renewables and improve the willingness of the public to consider nuclear or carbon capture, but one might equally acknowledge the strength of support for renewables even among a group where these persistent misperceptions were corrected.

Attitudes toward current and future generations showed striking similarities and notable differences. Well over 80% in each country believed that they had a responsibility to look out for the interests of future generations even if it made the current generation worse off, but attitudes on foreign aid varied widely. Fully 60% of Americans believed that foreign aid should be reduced or removed entirely compared to 35% of Britons and only 17% of Swedes, while 52% of Swedes and 20% of Britons, but only 6% of Americans, supported increasing aid. Official development assistance as a share of national income was already lowest in the U.S. and highest in Sweden (U.S. 0.15%, U.K. 0.34%, and Sweden 0.79% of respective Gross National Income in 2003) (25). One explanation for the low U.S. figures is that the average American assumes that roughly 20% of the federal budget goes to foreign aid. When informed that the figure is closer to 1% of the budget, support for aid increases substantially (26).

But there was a noticeable disjuncture between willingness to pay on one hand and national policies and public expressions of concern. Asked how much they would pay on top of their existing electric bill to “solve global warming”, 14% of respondents in Japan, 24% in the U.S., 22% in Britain, and 43% in Sweden refused to pay *anything* extra (although Swedes do already pay the highest electric bills as a fraction of income). Less than 10% in each of the surveys expressed a willingness to pay more than the equivalent of \$50 per month and American and British respondents were most likely to express a willingness to offer these larger amounts. This may also, in part, reflect suspicion that a premium added to an electric bill will not be well spent.

Discussion

So how exceptional are Americans compared with their European and Japanese counterparts? On certain measures, such as support for foreign aid and agreement with the statement that “global warming has been established as a serious problem and immediate action is necessary”, American support is far below that of the other three nations surveyed. There remains a small hard core of less than 10% of the American public who are nonbelievers in the science

of climate change and do not believe in the need for action, whereas that group is much smaller in the other countries surveyed. The difficulty in associating carbon dioxide with global warming appears worse among Americans but is by no means unique.

More remarkable, given the sharp divisions at the governmental level and the simplistic prevailing views of differences in attitudes and behaviors, are the similarities in preferences across a wide range of technology and fuel choices, in support of renewables, in research priorities, in a basic understanding of which technologies produce or reduce carbon dioxide (or misunderstandings in the case of nuclear power), and willingness to pay for solving global warming.

There are many possible reasons that might be invoked to explain the political differences. Some possible reasons that we have documented here including a greater suspicion of foreign aid, lower sense of urgency on the question of climate change, and presence of climate skeptics in the U.S., but on the latter two points, at least, there seems to be a move toward greater acceptance of the science and the need for action. There are also important historical, cultural, and political reasons for lingering differences as detailed in works on American Exceptionalism by Lipset, Jasanoff, and others. On the specific question of the Kyoto Protocol, unlike the parliamentary democracies of most of Europe or Japan, advice and consent to international agreements lies with the U.S. Senate, where party discipline is notably weak. The U.S. does not adhere to many other international agreements, including those that would not impose significant costs, such as the Convention on Rights of the Child. Another reason may well be that politicians have not recognized the support of the American public for action. Most leaders presumed that the public was opposed to the agreement even though their overall level of support (71%) was almost identical to that expressed by the political leaders surveyed (27).

At the same time, there has been movement in the U.S. Senate, for example, to at least consider the possibility of mandatory targets in the future and the recent Energy bill includes language that shows much greater acceptance of the science of climate change (28). Pushing from the opposite direction, Prime Minister Tony Blair has recently signaled a willingness to find ways of bringing the United States and major developing countries into an agreement that may not require binding targets (29). Although the Bush Administration shows no signs of reengaging with the Kyoto process, over the longer term, the similarities in public opinion may be a sign of a greater willingness of Americans to support additional effort on climate change as well as indicating some limits on the willingness of others to take action.

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