Global Climate Change as an Issue of Values

One cause of climate change, as we saw in all the environmental problems discussed so far, is our lifestyle choices, which are determined by our values. Behaviors based on these values have resulted in population growth and extensive use of fossil fuels. The philosophy of living for the moment that pervades our culture limits our interest as a society in addressing climate change. The true dangers of global warming will occur in the future. Because the effects cannot be predicted precisely, they are removed from current reality. The public responds far more quickly to environmental problems that immediately affect their personal lives. Air and water pollution and the hazard of toxic substances provoke a faster and more active response than climate change because the impacts of the former are immediate.

The effects of global climate change are complex and difficult to see. Many of them will not become apparent for several decades. Social learning is required if climate change is to achieve status on the systemic and institutional policy agenda. We need to imagine that we ourselves are living in the future and experiencing the negative impact of global warming. Analysts who examine the solvency of the social security system face the same challenge, for most of the people who will be harmed if the system goes broke have more immediate financial worries to focus on and so the system's solvency does not get on the policy agenda.

Another value dimension to the issue stems from the question of equity. Do people in the developed world have an unlimited right to

burn fossil fuels to maintain their lifestyles while denying that same right to people in developing countries who are aspiring to a more consumptive lifestyle? A second equity concern is the greater vulnerability of poor people to the effects of climate change. Very often a wealthy nation can defend its settlements and food supplies against the negative impact of an extreme climate event. For example, the effects of droughts can be mitigated by irrigation, and the damage from floods can be fixed if massive amounts of capital are available to pay the costs of reconstruction. Poorer nations, on the other hand, lack the resources required for these kinds of responses. In his book *American Heat: Ethical Problems with the United States' Response to Global Warming,* Donald A. Brown (2002) takes the position that, because global warming has had and will continue to have a disproportionately large negative impact on poorer countries, reductions in emissions are a moral imperative. To Brown, the question that remains is how much reduction is needed, and, in his view, "no matter which ethical rule is followed on deciding on an atmospheric stabilization goal, the status quo on global warming emissions is ethically reprehensible" (232).

I do not agree that the ethical dimensions of climate change are as stark as Brown believes, but that ethics is one facet of the problem is clear. Because the science of climate change is uncertain, and because much of the impact will occur only in the future, I find the ethical dimension of the issue somewhat ambiguous. The key moral issue posed is that poor nations and poor people will probably be disproportionately affected by the climate change. Such change is also likely to worsen the environmental, social, and economic problems that lead to extreme poverty in the first place. Greenhouse emissions are clearly harmful, and we have an ethical obligation to reduce the threat of global warming for the most vulnerable among us, as well as for future generations. The political potency of this issue is rooted in its ethical dimensions.

Global Climate Change as a Political Issue

The industries that stand to lose the most from having limits set on greenhouse gas emissions are those that produce oil and energy (Levy and Newell 2004, 194). The Bush administration has evinced extremely close ties to both, particularly the oil industry. A powerful

force motivating the administration to question the science of global climate change was the financial and political power of the American oil industry. It was not surprising, of course, that President Bush, the former governor of a major oil state with a large base of campaign contributors in the oil industry, was on the side of the oil industry with regard to reducing greenhouse emissions despite campaign promises to the contrary in 2000. The fundamental logic of this position is that reducing greenhouse emissions will cost money that could otherwise be spent by consumers on goods or services or by the government on services or infrastructure, which would earn elected leaders political credit from constituents. The other side of the political equation is that enforcing emission reduction policies would gain elected leaders credit from environmentalists.

Climate change is more a science and technology issue than a political one. No one is in favor of global warming, but those opposed to strong measures to reduce CO_2 emissions tend not to believe that the cost of such measures outweighs the benefits. Although certain businesses will be disadvantaged by the costs, overall it appears that higher environmental standards have indirectly advanced the modernization of American industry, creating wealth by creating cleaner environments. The operation of sewage treatment plants, for example, has not only resulted in clean rivers but has also contributed to the development and value of waterfront property. Policies that reduce greenhouse emissions may make certain cities more livable in the summer and might therefore encourage factories to invest in overall plant modernization. These investments, in turn, could increase competition, an economic plus. Thus, if the cost of mitigating climate change turned out to be a good investment, elected leaders supporting such policies would benefit politically. However, if these policies caused companies to close down plants in the United States or move to developing countries with less stringent greenhouse gas regulations, political supporters could suffer at the polls.

An elected leader's stance on the issue of global warming is symbolic of his or her attitude toward environmentalism. A large environmentalist constituency, and an energetic interest group community, is actively engaged in national and international environmental issues. But global warming did not (and, again, excuse the pun) generate much political heat in the United States until 2001, when President Bush came out against the Kyoto Protocol. The paradox is that Bush's

opposition may have taken a relatively low-intensity international issue and given it domestic political currency in the United States. He may have had the same inadvertent impact on the issue's standing in the international community. During the 2004 presidential campaign, Bush's position on climate change was part of a set of issues that environmentalists cited as evidence of his anti-environmental stance.

Senators John McCain and Joe Lieberman seized this issue as a way to delineate their own brand of moderate, mainstream environmentalism, and also, perhaps, to tweak a president whom neither was very fond of. The energy industry and other businesses opposed to emission limits lobbied against the McCain–Lieberman Climate Stewardship Act, and the Senate defeated the bill in late 2003 by a 55 to 43 vote. Opposition from the political Right was also intense. Writing about McCain–Lieberman in the conservative *National Review* on October 29, 2003, Marlo Lewis Jr. observed that,

> [The bill would] impose a cap on CO_2 emissions. Carbon dioxide is the inescapable byproduct of the carbon-based fuels—coal, oil, and natural gas—that supply 86 percent of all the energy Americans use. U.S. energy consumption is expected to increase by 34 percent between 2001 and 2020, and carbon-based fuels are expected to supply about 90 percent of the increase. Enacting any variant of [McCain-Lieberman] . . . would be tantamount to issuing a congressional declaration of war on the fuels that power the U.S. economy. Worse, it would establish the institutional framework for a succession of legislative, regulatory, and litigation assaults on carbon-based energy. (Lewis 2003)

Despite strong language on both sides of the issue, climate policy lacks the kind of grass-roots support generated by environmental issues with sustained and visible local effects. Climate change politics is primarily inside the Beltway engaged in by elites, and a factor in the rarefied world of international diplomacy. Its lack of a geographic focus, unlike the geographical significance of a toxic waste site, reduces its salience on the American political agenda. Although the issue is driven by scientific analysis, it is the political perspective that influences how the science of climate change is interpreted. Thus the intersection of science and politics helps to define the issue.

Politics also defines which emission control and carbon sequestration technologies will be used to reduce U.S. greenhouse gas emissions. The political dimension of the issue is partially derived from one's overall attitude toward the role of government. Left on its own to engage in unrestricted, profit-maximizing behavior, industry has no reason to think about long-term effects and reduce its greenhouse gas emissions. Those who believe that the free market alone can best deliver a high quality of life will also resist regulations imposing greenhouse gas reductions. Free market advocates might favor the use of the tax code to induce good behavior, but overall they are not sure about the seriousness of the problem and worry that global warming is merely an excuse to revitalize command-and-control regulation (Victor 2004, 31).

The politics of climate change has domestic variants, as we have seen in the United States, but it is largely an element of political relations between sovereign nations. International relations is an elite politics that reflects the economic interests of nation-states. With globalization, corporations have gained influence over the behavior of multiple nation-states (Levy and Newell 2004, 4). Although national sovereignty remains a powerful force, international regimes (or sets of governing rules and norms) have grown dramatically in the past half-century. This growth emerged, in part, to facilitate international economics and the flow of trade and capital across national borders. Whether the strength of global corporations will enable them to compete with a strong nation-state such as the United States, Japan, or China is unclear. I think that the people who control physical force (armies and police) will still tend to dominate those who control the cash, but this conflict is largely symbolic. Generally these two sets of powerful entities—multinational corporations and nation-states—are acting in concert. Our governing elites are often well connected individuals who move between the public and private sectors, or minimally have strong business and political alliances in addition to social relations across the public and private spheres. Vice President Richard Cheney is a good example of such an elite player, having served as a Cabinet official and also as CEO of Halliburton, the Texas-based construction and engineering firm that serves as a contractor for oil companies and for the U.S. government. These "elites" operate under the assumption that national and corporate interests are either inherently compatible or can and ought to be brought into alignment.

The issue of global climate change has gained status on the international political agenda as the world's political and economic elite have come to slowly accept that climate change is a real problem that could affect the business environment. Swiss Re, one of the world's largest reinsurance companies, for example, has begun to provide insurance against risks associated with climate change, a move prompted by the firm's analysis of the financial risks posed by climate change. In 2003 Swiss Re estimated such financial risks at more than $40 billion a year and expected it to rise to $150 billion a year by 2010. Their risk analysis also led Swiss Re to become a leader in corporate climate policy. Innovations include an internal climate policy, which states:

> Despite advances in research, climate development is and will remain uncertain. Immediate action must be taken nevertheless, as even natural climatic variability carries risks far greater than generally assumed, and man's influence on the climate system will aggravate these risks even further. (Swiss Re 1998)

Swiss Re also intends to become "greenhouse neutral." In October 2003 the company announced that it would launch a ten-year program

> combining internal emissions reduction measures with an investment in the World Bank Community Development Carbon Fund. The voluntary initiative makes Swiss Re the largest global financial services company to set itself the goal to become greenhouse neutral. All Swiss Re locations will participate in the initiative. The programme will utilise the same methodology as Swiss Re offers to clients through its "Greenhouse Neutral" package in partnership with the Commonwealth Bank of Australia. (Swiss Re 2003)

The position of the European Union on climate change and the (slowly) growing recognition of the problem by the U.S. government illustrates the impact of these financial facts on international and domestic climate politics. Poor people will not be the only ones to suffer; the entire global economy could be destabilized. When comparing the costs of reducing climate change to the potential loss of economic activity that could result from global warming, the trade-off seems straightforward.

Global warming is a worldwide political issue with looming potential effects and has gained a growing consensus among our political and economic elite that rapid climate change needs to be controlled. The hope is that the urgency of the problem will reduce political conflict surrounding the issue and focus attention on technology and management concerns. The political dimension of this environmental issue will undoubtedly continue to be intense but, in the end, will probably result in substantive policy to reduce greenhouse gas emissions.

Global Climate Change as an Issue of Science and Technology

The use of carbon-based fuels for electricity, heat, and transportation has changed most people's way of life. It determines the work we do, what we eat, how much leisure time we have and what we do with that time. Our lifestyle is so closely tied to the use of fossil fuels that it would probably be impossible to phase out their use. For that reason, some proposals for reducing atmospheric levels of greenhouse gases focus on removing the gases from emissions and storing them, the process called sequestration, rather than reducing the use of emission-producing fuels. According to Klaus Lackner:

> Climate change concerns may soon force drastic reductions in CO_2 emissions. In response to this challenge, it may prove necessary to render fossil fuels environmentally acceptable by capturing and sequestering CO_2 until other inexpensive, clean, and plentiful technologies are available. . . . Storage time and capacity constraints render many sequestration methods—such as biomass sequestration and CO_2 utilization—irrelevant or marginal for balancing the carbon budget of the 21st century. Even the ocean's capacity for absorbing carbonic acid is limited relative to fossil carbon resources. Moreover, with natural ocean turnover times of centuries, storage times are comparatively short. Generally, sequestration in environmentally active carbon pools (such as the oceans) seems ill advised because it may trade one environmental problem for another. . . . Underground injection is probably the easiest route to sequestration. It is a proven technology suitable for large-scale sequestration. Injecting CO_2

> into reservoirs in which it displaces and mobilizes oil or gas could create economic gains that partly offset sequestration costs. (2003, 1677–1678)

This particular approach suggests that we continue to use fossil fuels for energy until we can replace them with solar- or hydrogen-based sources of energy. A combination of techniques will undoubtedly be applied for increasing energy availability while reducing the presence of CO_2 in the atmosphere.

The development and use of technologies that contribute to global warming is clearly an important dimension of this issue. Human beings have made use of combustible energy since the discovery of fire. Our primary fuel for heating and cooking in the pre-industrial era was wood, which was ultimately replaced by coal; the coal was then used to run turbines to generate electricity. Oil and gas partially replaced the use of coal, and many thought at one time that these fuels would be replaced by nuclear energy. If nuclear power had not posed a dangerous waste and security issue, oil and gas may well have been replaced and perhaps we would all be living in the completely electric houses predicted in the fifties.

Unless we develop a technical solution to reduce CO_2 emissions, our economic growth will suffer and world poverty will probably increase. If the need to reduce gas emissions becomes urgent, powerful nations will likely impose restrictions on less powerful nations, regardless of treaty obligations. The political stability of developing nations would probably not survive a drastic reduction in living standards. As a result, there would probably be no reduction of emission or reductions would be borne disproportionately by weak and poor nations.

Global climate change may only be a precursor of other worldwide environmental issues that will result from large-scale changes induced by the planet's efforts to absorb more than six billion people and their ever growing technology. In their classic work *The Energy Basis for Man and Nature*, Howard and Elisabeth Odum (1981) project the policy impact of the laws of thermodynamics, focusing specifically on the idea that energy cannot be created or destroyed, only transformed. The earth's ecosystems are a closed and interconnected system. When energy is used to perform work, the form of energy degrades and has an impact elsewhere in the system. With global warming, it is apparent that human

technology and the level of energy use are resulting in negative impacts worldwide. We should not assume that this is the only impact of our growing population and use of energy; it is simply the first effect we have been able to detect. What will be next? Can we develop the technology needed to measure and mitigate these global impacts?

Considering the technological complexity of dealing with the planet's warming, one may long for "simple problems" such as preventing tank leaks or reducing pollution from waste-to-energy plants. Global problems are especially difficult since we do not have accurate measures of global environmental conditions and have never engineered technology on a global scale. If we devise a technology that fails to mitigate global warming but instead has an unanticipated, negative impact, the consequences could be catastrophic. Even though we cannot ensure success, however, there is no alternative but to try.

Energy consumption and quality of life are inextricably entwined. Social, cultural, and economic development relies on the availability of energy. The genie is out of the bottle and cannot be put back. If we attempt to remove the material well-being people are accustomed to, the political instability that would result could very well lead to the use of weapons of mass destruction. And the effect of those weapons on the planet would be far more damaging than anything that might be caused by global climate change.

The problem of global warming clearly has a number of dimensions. Politics are involved in the effort to regulate the rate of warming as technology continues to develop. But the primary aspect in treating global warming is essentially scientific. Research is needed at a scale resembling the investment in science we saw in the United States during the Cold War. Global warming was caused by technology, and fixing the problem requires the development of new technologies. We need a source of energy that does not generate CO_2 or other forms of pollution.

Global Climate Change as an Issue of Policy Design

We could probably reduce the amount of carbon dioxide and other chemicals released into the atmosphere if we abolish our modern lifestyle along with its technological advances. We could also use the blunt instrument of command-and-control regulation, requiring immediate, massive reductions. Or we could allow developed nations

to maintain current levels of emissions and not permit developing countries to increase their use of fossil fuels. But clearly these are all unrealistic solutions. To alter the trend of global warming with few undesirable impacts, we need to design policies that are cost-effective, gradual, and equitable.

Policy designs typically address certain problems while causing others. The U.S. interstate highway system is a good example. While it allowed for faster and safer travel, it also encouraged and indirectly subsidized suburban sprawl. A key goal in policy design is to predict both the direct and indirect impacts of the proposed policy. Despite economists' "assumptions" of certainty, individual and collective human behavior is difficult to foresee. A decentralized, federal political system has the advantage of allowing us to experiment with small-scale pilot projects to gauge the success of a policy. Although a problem as urgent as global warming does not afford a lot of time for experimentation, still various approaches can be attempted simultaneously in different locations. Such experimental policy designs enable us to uncover the approach that works best.

Building on the success of the U.S. acid rain policy, Senators McCain and Lieberman's 2003 legislation proposed a "cap and trade" policy design. Under cap and trade, an overall emission limit, or "cap," is set, and those who emit less than the cap permits can then sell, or "trade," their "pollution rights" to those who cannot easily reduce emissions. This policy helps to ensure the most reduction at the least expense (Victor 2004, 32–33). For certain types of emissions, this approach could be less costly than the pure command-and-control method. There are three other policy designs we could pursue

1. Tax credits or deductions for businesses that demonstrate reduced emissions.
2. Tax credits or deductions for fuel-efficient or nonfossil fuel vehicles.
3. A crash research-and-development initiative to create technologies to mitigate the effect of greenhouse gases, such as carbon sequestration and the development of fuels or energy technology with little or no emission.

The international nature of the problem requires different design elements for nations at various stages of economic development and

an enforcement mechanism for noncompliant states. As noted, when the largest single emitter of greenhouse gases, which also happens to be the most powerful nation in the world, refuses to participate in an international governance scheme, policymaking is undermined. No amount of policy design finesse and creativity can overcome the political setback caused by the U.S. rejection of the Kyoto Protocol.

Incorporated in the Kyoto Protocol are certain design elements to ensure equity and impact. Policies proposed by the European Union and McCain-Lieberman are examples of reasonably sophisticated, "first-generation" policy designs that, if adopted, could begin the learning process needed to achieve emission reductions. At this writing, the United States lacks the national political will to begin this policy process, even in the short run. Nor do we know if the reductions that can be achieved without economic disruption are sufficient to resolve the problem of global climate change. A technological fix that would allow continued economic growth without environmental damage is key to addressing this issue.

Global Climate Change as a Management Issue

If the need for new technology is at the heart of the climate change issue, the management dimension is to develop the capacity to invent and then deploy such technology. The organizational capacity required to develop a new source of fuel or a practical form of carbon sequestration would be on the scale of NASA's moon project in the 1960s. Shifting from fossil fuels to other forms of energy would also require considerable organizational and social learning. For these reasons, the climate issue will be dominated by management considerations at some time in the future. For now, however, it is too early, in terms of policy, program, and technological development to consider management a predominant dimension of the problem.

Organizational capacity is currently needed to continue research and scientific development on the impacts of climate change, to work with nation states in developing strategies to reduce greenhouse emissions, to monitor corporate behavior, and to encourage emission reductions. At this stage of policy development, organizational learning is a high priority. We need to improve our understanding of the dimensions of

the problem and to stimulate the behaviors needed for reduced emissions. We have many models to draw on to build institutions that promote organizational learning and the development of science and technology to reduce global warming. That is the easy part. But once we learn what is required, we then need to build nation-specific and global institutions that can implement those solutions. The difficulty of that task is unprecedented.

Summary of the Multiple Dimensions of Global Climate Change

As environmental policy evolves, the ecological problems we face become increasingly complex. Climate change, the first truly global environmental issue, challenges our political institutions. These institutions were designed to deal mostly with local problems and lack strong cross-national and international governance mechanisms. A principle objective of government is to maintain public security, sustenance, and safety. Historically, when threats to security became broader geographically, governments in turn grew to represent more extensive areas. The emergence of the United States of America and the European Union are examples of this phenomenon. If threats to our security are global, history tells us that government institutions on a worldwide scale may soon follow. Although a world government is difficult to envision, the emergence of a global economy and global environmental problems may be the start of demands that could lead to a global political structure.

Our capacity for self-destruction may also necessitate new types of global political institutions. We obviously cannot predict how global political institutions, processes, and practices will evolve, but they may indeed be essential to manage unprecedented problems such as global warming. New political institutions will not be needed, however, if nation-states and global corporations can meet the unparalleled threats now facing us. Institutions currently in power clearly do not want their authority threatened by a new institutional arrangement, and therefore have every incentive to respond to these new demands. Enlightened self-interest, however, is considered enlightened precisely because most powerful leaders define their self-interest in narrow and conservative terms and do not see the need for change until it is too late. Franklin

D. Roosevelt's welfare state, a response to the Great Depression, may well have preserved the power structure in the United States. FDR, however, was not a typical governing elite. If those in power today want to remain in charge, they will need to implement the principles of sustainable development, that is, protect the environment and reduce global poverty. Can they rise to the challenge?

The world's political and economic elite have gradually accepted the facts of global warming. But can they transform that acceptance into resources to develop the technologies that will enable us to maintain our current lifestyle without generating more greenhouse gases? A technological optimist would answer yes. A skeptic would perhaps predict catastrophe. In a sense, we are back to Malthus, needing to project the future based on trends. Malthus predicted that we would overpopulate the planet and then be unable to produce enough food to feed everyone. But he did not account for technological innovation in the production and distribution of food. Will today's science and technology come to our rescue with innovative ways to resolve the climate issue? The jury is out.

Conclusions

Climate change is a reflection of the power of our technology and the difficulty of controlling its impact. As a society, we depend completely on technology and are entranced by its magic. But how much more technological do we want our world to be? As a child, I watched "The Jetsons," an animated TV show that featured a family of the future living in a totally technological world. The dog took a walk on a treadmill, cars flew through the air, and the maid was a robot. The natural world did not exist. People lived in the sky and got their food from dispensers on the wall. When I first began to study environmental policy and values in the mid-1970s, I recalled that show and wondered what had happened to the Earth below. The Jetsons never saw a tree, a river, a mountain, or an ocean. George Jetson worked three hours a day, and material comfort was assured. Are we capable of creating such a world, and would we want to? The Wealthy Texas oil magnate and philanthropist Ed Bass funded the Biosphere II experiment in Arizona to see if a self-sustaining ecosystem was possible. The results showed that, more than forty years after the Jetsons' technological

world was conceived, we still lacked the science and technology needed to operate our own biosphere. The Biosphere II could not provide enough food and oxygen to support human life. We still needed the original biosphere, the planet Earth.

Our way of life in America is not that of the Jetsons, but we do enjoy a lifestyle that is an energy-dependent, technological marvel. Visit a southwestern suburb in the United States. Drive your three-thousand-pound, air-conditioned SUV on an eight-lane interstate highway to your four-thousand-square-foot, climate-controlled home, your kitchen laden with modern appliances that range from a subzero freezer to an automatic icemaker. Enter your den where you find your computer and World Wide Web–based entertainment system that can record entertainment for you to view at your convenience. Swim in your climate-controlled pool, or water your garden, with water that has been pumped from a mountain range more than a thousand miles away. Clearly, although we do not yet have the technology of the Jetsons, we still have dreamlike technology and, with it, parks, forests, oceans, and other natural environments to play in, relax in, and marvel at. But technology comes at a price and, with global warming, the bill for our technology is coming due.

Here we leave behind the discussion of sample environmental problems and return to a consideration of the preliminary framework for understanding environmental policy issues presented at the start of this book. Has the framework given us a more thorough, multidimensional understanding of these environmental issues? We explore this question in the final section of the book, "Critiquing the Framework."