

6. Slowing Greenhouse Gas Emissions: Politics and Costs

The previous chapters have shown that global warming would, in all probability, produce gains for most Americans. Somewhat higher temperatures would improve health, cut death rates, facilitate transportation, reduce heating bills, and help satisfy people's taste for warm weather. The major costs would come from higher sea levels and an increase in smog, which rises when temperatures climb. In most cases, those undesirable side effects could be mitigated at reasonable cost. From an American point of view, spending anything to reduce the emissions of greenhouse gases is unwarranted.

Nevertheless, the momentum to act has grown. Not everyone will agree that warming would be largely beneficial. Certainly parts of the world and even parts of the United States would be harmed from climate changes. To stop global warming totally, assuming the computer models are correct, is unrealistic. The IPCC has asserted that stabilizing atmospheric concentrations at no more than twice-current levels would require cutting emissions "substantially below 1990 levels" (IPCC 1995e). The cost of the latter step would be horrendous and so far few argue that we should go that far.

Nonetheless our leading newspapers and much political, environmental, and world leadership, to say nothing of the endless commentary on the network news programs, urge that America adopt measures to reduce greenhouse gases. Over 2,000 economists signed a statement calling for the government to take steps. Even the president and CEO of Chrysler Corporation, in a letter to the editor, wrote that "if in fact we are in a period of global warming, and if man is contributing to it, and if there's something we can do to slow it down, then we should act, and it may be prudent to assume the worst until we know better" (Eaton 1997).

Hysteria rather than rationality has taken over our discourse. A steady drumbeat of propaganda is stampeding the country into an unwise, expensive course.

Proponents of acting now to slow or even to prevent climate change start by suggesting that the United States, Western Europe, and perhaps the world adopt a “no-regrets” policy. The definition of such a policy varies with the author or authors. If it means policies sensible in themselves, few impartial observers would be opposed. The federal government, for example, sells water at heavily subsidized rates to California farmers who grow rice, a crop that generates massive amounts of methane, a major greenhouse gas. Eliminating the water subsidies would be economically efficient, even if policy-makers were indifferent to possible climate change. Other sound policies might include inducing energy-producing nations, such as Venezuela, to refrain from providing their populace with extraordinarily cheap gasoline or urging former communist countries to allow oil, gas, and coal prices to rise to market levels. Increasing the use of nuclear energy would also be beneficial, both for the economy and, if people are concerned, for reducing greenhouse gas emissions.

Typically, however, no-regrets policies imply regulations designed to induce consumers and businesses to conserve fuel. Many advocates claim that the cost of those policies is negative, that is, they would bring economic gains in addition to any benefit from reduced greenhouse gas emissions. Such assertions are questionable. If consumers or businesses could save money by taking these steps, why do they not do it? Firms rarely pass up an opportunity to save energy and cut their costs. Individuals might be unaware of possible savings in the short run, but advertising and the media could and would inform people of potential gains. At best, government action could hasten the installation of energy-saving devices. Whether the resulting benefits from conservation would outweigh the drawbacks is doubtful. Champions of instituting those measures often overlook the convenience to consumers and industry of current practices, the cost of making the changes, and the potential unintended consequences. People usually are much more knowledgeable about their own concerns than some official in Washington or an environmental advocate preaching from a tax-exempt think tank.

Fuel economy standards are often suggested as a “cheap” or even “no-cost” way to save energy. The United States has experimented with such standards for autos and they are not cheap. Nor do they save much gasoline. In 1996, General Motors was forced to boost the price of its lowest-cost model by \$200 to meet the latest exhaust

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standards (*San Jose Mercury News* July 25, 1996). To comply with earlier requirements, automobile manufacturers have installed expensive fuel-saving technology and made cars lighter, smaller, and consequently more dangerous than they need be, increasing highway fatalities (Crandall and Graham 1989; Moore 1991). Moreover, since driving the light, small car is cheaper—it travels farther on a gallon of gas—people go more miles, thus offsetting, at least in part, the fuel savings (Moore 1991). Autos are now much smaller than they were two decades ago, so large families or groups of more than 4 or 5 individuals must often use more than one vehicle for outings, again boosting petroleum use.

Setting rigid standards is virtually always inefficient, likely to inflate costs, and rarely productive of much gain. In the 1970s, for example, Congress amended the Clean Air Act—ostensibly to reduce air pollution—to protect coal miners in the Midwest by forcing new power plants to burn local “dirty” coal but install expensive scrubbers, thus preserving the workers’ jobs. As a result, power companies constructed few new plants but maintained the old ones, which were highly polluting, long past their expected lifetime. It is easier to believe in little green men from Mars than in Congress’s acting to put coal miners out of work now to protect people 100 years hence from warm weather. Unfortunately, Congress could be stampeded into adopting a regulatory scheme that would be inefficient, ineffective, unnecessary, and costly but that did not obviously endanger jobs.

Even if no-regrets policies were effective in reducing energy use, they would fail to stem the buildup of greenhouse gases. Reductions of greenhouse gases by any one nation are unlikely to have a significant effect on world emissions overall, so an international agreement by the major industrialized countries and a large number of the larger rapidly growing economies, such as China and India, would be requisite for slowing potential warming. Those countries view growth as more important than stabilizing CO₂ emissions. Still other countries may see benefits from a warmer climate.

The political juggernaut, however, is already rolling. Under the Berlin Mandate, signed in 1995, the major countries of the world agreed to negotiate a treaty to reduce greenhouse gases below 1990 levels by some time in the next century. In December 1997 in Kyoto, Japan, over 150 countries met for 10 days to agree on a protocol

that would curb emissions. Even though President Bill Clinton and the U.S. Congress asserted that China and other major Third World states must be included, the restrictions on CO₂ negotiated in Kyoto apply only to the rich nations of the world.

The Administration's Proposal

In the summer of 1996, Timothy Wirth, undersecretary of state for global affairs, proposed that the nations of the world make a legally binding commitment to trim greenhouse gas emissions. In January 1997, the State Department recommended that each industrialized country create an "emissions budget" that would set a level of allowable carbon dioxide emissions. An international regulator would fix the level of emissions permitted after the year 2005. The United States advocated that each member of the Organization for Economic Cooperation and Development (OECD) "ensure that its net anthropogenic emissions of greenhouse gases do not exceed its emissions budget for any applicable budget period." In other words, the administration, which opposes a constitutional amendment to balance the fiscal budget, proposed that the developed world adopt a treaty to balance an emissions budget.

A draft of the Clinton administration's plan shows that it would have, in effect, taxed carbon at \$100 per ton, enough, staffers said, to cut U.S. emissions to 1990 levels. That tax implied new gasoline levies of 26¢ a gallon, a charge of \$1.49 per 1,000 cubic feet of natural gas, an impost of \$52.50 on each ton of coal, and a \$0.02 boost in taxes on a kilowatt of electricity (*Wall Street Journal* July 15, 1997). Those charges would produce revenues of about \$180 billion per year. The tax sounds familiar. Early in its first term, the Clinton administration proposed a British thermal unit (Btu) tax. Such a tax would be the liberals' dream—almost unlimited additional government revenues to spend on new projects—and the economy's nightmare of rising unemployment and slower economic progress. Moreover, economists such as Gary Yohe of Wesleyan University and Lawrence Horwitz of DRI/McGraw-Hill report that even \$100 per ton would not be enough to bring emissions back to 1990 levels (Horwitz 1995; Yohe 1996).

Sensitive to its political unpopularity, the administration quickly disavowed its proposal. In a period when Congress had been weighing the repeal of the 1993 4.3-cent increase in the federal gas tax,

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legislators were as likely to vote to boost fuel prices significantly as to give up free parking at National Airport. Even if such a tax were imposed in the future, raising hundreds of billions of dollars per year, would the government recycle the funds? Spend them? Or waste them?

Shortly before the Kyoto meeting, the president, in his eagerness to take a position, announced a plan that would mandate binding curbs on carbon emissions to bring them to 1990 levels in the next 10 to 15 years (Clinton 1997). The plan entailed few details but mentioned spending \$5 billion over the next five years on tax breaks to spur energy efficiency and to develop new nonfossil fuel technologies. The Europeans, already critical of the Japanese proposal to cut emissions 5 percent below 1990 levels by 2010, were even more irate when confronted with Mr. Clinton's new position. Earlier in the year, on July 25, the Senate had passed unanimously Senate Resolution 98, asserting that the United States should not sign any treaty that fails to hold developing countries to the same standards as the industrialized countries or results in serious harm to the U.S. economy. To meet this mandate, the president promised that "the United States will not assume binding obligations unless key developing nations meaningfully participate in this effort" (Clinton 1997).

The president's proposal was singularly short on specifics. In effect, the president recommended that we commit to restrictions without considering how to achieve them or what they would cost. According to the White House, under a business as usual strategy, greenhouse gas emissions would exceed 1990 levels by 30 percent in 15 years. No matter how well spent, the president's proposed expenditure of \$1 billion annually for five years will not reduce those emissions to the 1990 levels. Nor can that reduction be achieved by installing 20,000 solar panels on the roofs of federal buildings. Such a drastic cut would take stronger measures than efforts to make new forms of energy, not dependent on fossil fuels, practical.

The president also proposed that reduced regulation of the electricity industry would save consumers billions of dollars while reducing greenhouse gas emissions. Those are likely to be contrary goals. If deregulation leads to lower power costs, elementary economics teaches that people will use more electricity because they will be less inclined to conserve. Only if reduced controls over the power companies improve efficiency of generation and transmission

sufficiently to compensate for the more prolific use of electricity will there be any net savings in carbon emissions.

Automobiles, trucks, and other vehicles emit about one-third of all U.S. carbon dioxide. The only way to reduce emissions from such mobile sources is to impose higher fuel costs or to require new vehicles to meet more stringent fuel economy standards. Since travel would be cheaper, the latter policy would encourage more traffic, resulting in greater highway congestion. Consequently, it would save much less fuel and produce more CO₂ than expected. Moreover, more stringent CAFE standards would require years to convert the existing fleet of autos into a more fuel-efficient one and would probably fail to meet the 2012 target. If Clinton is serious about slashing emissions, the Congress would have to boost gasoline taxes sharply. Whether the administration goes the higher fuel-cost route or chooses the more stringent CAFE standards, it is certain that consumers would be forced to buy lighter, more vulnerable cars, which would increase highway deaths.

The president's plan also envisioned a market system for trading emissions, which would require that major energy producers face quotas for carbon dioxide emissions. If a power plant is limited to emitting a given amount of CO₂, it must either buy certificates to allow it to exceed that level, change its fuel, or introduce new technology. None of these options is costless and the expense would have to be passed on to consumers.

The trading scheme was presumably patterned after the program submitted in January to the international group drafting the Kyoto agreement. That draft protocol would require each country to establish multiyear budgets for greenhouse gas emissions, particularly of carbon dioxide. All OECD members, with two significant exceptions (noted below), plus those countries that were part of the former Soviet empire, including Bulgaria, Ukraine, and Russia itself, would be required to limit emissions. The collapse of the economy in Russia and in the former members of the Soviet Union makes their meeting lower CO₂ standards easy. Many of their most polluting industries either have been shut down or are operating at a fraction of their former value. Nevertheless, those countries would be faced with less stringent requirements than the advanced industrialized countries that make up the OECD. The rest of the world—China, India, all of Latin America, and Africa—would be encouraged to become

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signatories to the agreement but would not have to meet those standards. It is worth noting that South Korea and Mexico, new members of the OECD, have asserted that they will remain exempt from the greenhouse gas requirements.

As noted, the State Department has also proposed that compliance with the requirements be monitored by an international group of experts. Making governments enforce restrictions on their own industries would be a major problem. The benefits of curbing emissions go to the world at large but the costs are paid locally. Careful monitoring of enforcement efforts would be necessary, contentious, expensive, and difficult. In fact, international oversight would almost certainly fail.

As punishment for failing to meet the budget ceilings, the United States suggested that countries be forbidden to sell carbon equivalent certificates (an empty threat since a state not in compliance would presumably have no emissions credits to sell) or that they lose voting rights in the Convention, a penalty that would certainly keep world leaders up at night! While the United States would be likely to abide by any agreement, compliance by other states is less assured.

Other Proposals

European nations recommended a carbon or an energy tax to curtail CO₂ production to 15 percent below 1990 levels by the year 2010. Although no one knows exactly how high taxes would have to be to achieve such a level of emissions reduction, a carbon tax of several hundred dollars per ton would have to be levied to reduce fossil fuel use significantly. The European Union proposal would have required Germany and a few other member countries to curb emissions by at least 25 to 30 percent while some nations, such as Portugal, could have increased their release of greenhouse gases by up to 40 percent.

The OECD has also floated a proposal to tax aviation fuel used on international flights and hitherto untaxed. The report recommends that the tax be boosted gradually over time. Needless to say, the airline industry strongly opposes this proposal. As it points out, CO₂ emissions from commercial aircraft account for only 2 percent of all such output. Such a tax would affect all international air travelers, depress tourism, and discourage trade. It would also boost unemployment, slow growth, and encourage isolationism.

Australia and Japan, among others, wanted different emissions reduction requirements for each of the advanced countries. Australia, which relies on the sale of fossil fuels abroad and has no nuclear power, wanted its dependence on coal taken into account. Heavily populated Japan proposed setting emissions limits on a per capita basis, which would have adversely affected sparsely settled Australia. The Japanese proposed a 5 percent cut from 1990 levels but with different requirements depending on the national economy. (They wound up with a 6 percent reduction.) Oil-producing nations as well as those with extensive coal reserves opposed any legally binding constraints on burning fossil fuels.

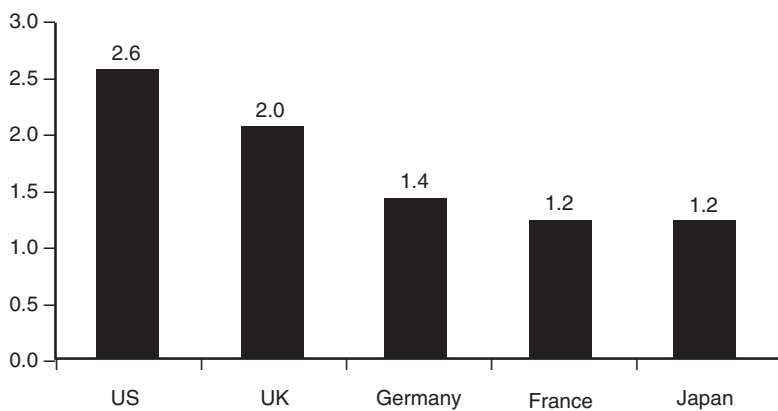
The World Debate

The politics of warming involves both domestic considerations and international agreements. Domestically, politicians compete to demonstrate their commitment to *saving the planet* while continuing to protect favored industries and groups. To cite but one example, coal miners in the U.S. have demonstrated their political clout in clean air battles. Realizing the potential consequences, the AFL-CIO has come out strongly against any treaty that does not impose equal restraints on Third World countries. The U.S. Senate has unanimously passed a nonbinding resolution against any agreement that does not include China, India, Mexico, and Brazil.

On the world scene, conferences and pronouncements abound. At the end of June 1997, world leaders gathered in New York for what was dubbed "Rio plus Five" but became known as "Rio minus Five." President Clinton was charged by some of our closest allies with failing to lead the world. Although the president gave a rousing speech, painting a fearsome picture of a world full of storms, rising seas, and spreading disease, he feared more the wrath of the voters than the wrath of the weather or of his colleagues.

The new British prime minister, Tony Blair, the German chancellor, Helmut Kohl, and President Jacques Chirac of France took the United States to task for failing to adopt stringent goals on greenhouse gas emissions. On the other hand, the Australian government was pleased that the United States did not endorse the European Union plan to cut greenhouse gas emissions over the next 12 years by more than 15 percent. The Canadians, Japanese, and Scandinavians seemed more on the fence. What was going on?

Figure 6-1
ECONOMIC GROWTH RATES OVER LAST FIVE YEARS



SOURCE: *Economic Report to the President*, 1997.

Why should the British and the Germans have pushed such drastic steps when, as pointed out above, the result would be devastating to their energy-intensive industries? In part, their politicians could pose as “greens,” knowing full well that the United States will never agree to such restrictions. Moreover, since European Union emissions have grown much less than have those originating in North America, meeting the standards would be less costly to those states than to the United States. In fact, both Germany and the United Kingdom have actually cut their emissions of greenhouse gases in the 1990s, making them feel morally superior and able to lecture the wasteful Americans.

Two factors have contributed to less greenhouse gas emissions from the European Union. As Figure 6-1 shows, the United Kingdom, Germany, France, and Japan have all grown much more slowly than the United States over the last five years. Slow growth means less energy use and, hence, more modest increases in CO₂ emissions. In addition, with the fall of the Berlin Wall, the West Germans took over the communist East, which had been populated with inefficient, coal-burning industries. Those plants could not compete with the modern facilities in the West. Even though the Bonn government

attempted to maintain industry in the former Marxist East (primarily to protect jobs), much of the industry was so hopelessly inefficient that it was eventually shut down. The resulting reduction in CO₂ emissions has put the Federal Republic in a strong position to argue that, since it has met the obligations of Rio, so should the United States. Opposition parties in that country, however, have pointed out that the area of the former West Germany has, in fact, increased its greenhouse gas emissions. In addition, the European Union has admitted that, were it not for the halving of East German emissions, the European Union's total CO₂ would rise 9 percent by the year 2000.

The United Kingdom also has undergone considerable readjustment. The Conservative government instituted a privatization program for its inefficient, money-losing coal industry. As a consequence, many mines were forced to close. That was a one-time cut, of course, unlikely to be matched by future emissions reductions. Nevertheless, it has allowed Prime Minister Blair to reproach President Clinton for the U.S. failure to curb its greenhouse gases.

Although the French might have to make significant reductions in carbon dioxide emissions to meet the European goal, they joined the other European Union countries in attacking the United States. Anything that might slow the U.S. boom, reflected in a less than 5 percent unemployment rate in comparison with more than twice that level for France and Germany, is worth the costs to the anti-American Gaullists. Meeting the European proposal would reduce U.S. competitiveness compared with that of the Europeans. Moreover, as President Chirac remarked pointedly at the G-7 summit, "The average American is responsible for emitting three times the amount of greenhouse gas as the average Frenchman." The relatively low levels of French emissions result from that country's reliance on nuclear energy for 80 percent of its power and the taxing of gasoline at rates that, if imposed in the United States, would make blood flow on the streets of American cities and towns.

On the other side of the issue were the Australians, who rely exclusively on fossil fuels for energy and who also export large quantities of coal. Prime Minister John Howard has asserted that a flat-rate reduction in emissions would devastate the Australian economy. He said recently: "We're a net exporter of energy and we're a highly developed country and if the current European and American proposals go through, it will damage Australia, cost Australian jobs, reduce our GDP. . . ." He wanted any agreement to

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provide “differentiated” goals that take into account each country’s special circumstances, particularly its reliance on fossil fuels. The minister for foreign affairs, Alexander Downer, affirmed in July 1997 that the European Union’s target for reducing its greenhouse gas emissions by 15 percent by 2010 was “unworkable” and “unacceptable” (Downer 1997).

Within the United States, politicians, experts, and academics were split on the issue. Pushing the administration to agree to the European standards or, at least, to rigid limits, were environmentalists, a handful of politicians, and some well-meaning commentators. On the other side were those concerned with any agreement’s impact on economic growth, employment, and trade; those who are skeptical about the significance of any climate change; and those who find evidence that a warmer world would on balance prove beneficial.

Nor is the debate an entirely partisan affair. Representative John Dingell, a senior Democratic member of the U.S. House of Representatives Commerce Committee, has repeatedly requested that the administration provide an economic analysis of the effects of any agreement. That analysis has yet to appear. Representative Dingell is particularly concerned with the exemption from stringent controls of developing countries, such as China and India. This powerful Michigan representative fears, with some justice, that the Kyoto agreement will be costly and will potentially result in an “economic fiasco.”

The Kyoto Agreement

The outcome of Kyoto remained uncertain until the morning of the eleventh day, after the scheduled ending of the Conference of Parties, Third Session. The cleaning people were getting the hall ready for the next convention and some of the Russian translators had already left. The agreement reached reflected almost a total capitulation on the part of the United States.

By the time Vice President Gore arrived on Monday, after a week of gridlock, the Conference had degenerated into a mix of revival meeting and guerrilla warfare. One night a group held a prayer meeting around the ice sculptures, pleading for their forgiveness as they began to melt. The Korean Federation of Environment Movements put signs on bushes outside the entrance proclaiming “Cool the Earth, Save Us,” “Reduce GHGs [greenhouse gases] 20%,”

“Please: Gas Masks!” “Silent but Angry,” “No Nukes, No Fossil Fuel for Us.” (No Energy?) Given that CO₂ fertilizes plants, that research has shown that 95 percent of all plants would grow faster, bigger, and would utilize water more efficiently in a world enriched with carbon dioxide, the KFEM’s “Know Nothing” position was stunning. On the last day, a Japanese environmental group organized a demonstration in behalf of forests. The trees, too, were against CO₂!

Another group of environmentalists demonstrated against air travel; I assume they wanted us to go home by ship, preferably by sailboat. Greenpeace mounted a humongous solar-powered kitchen, with an environmentally friendly refrigerator, powered by \$20,000 worth of solar panels, jutting 15 feet into the air—something all housewives hunger for. To offset the somewhat pricey cooler, they offered free solar-brewed coffee, at least when the sun was shining. Greenpeace also exhibited a huge metal dinosaur made of scrap auto parts—at least they were recycling. I admit to being impressed with the metal reptile if not with their arguments. In keeping with the spirit of the occasion, the thermostat in the conference hall was turned down from its normal 73° to 68°, which forced many participants into wearing coats indoors. That brought many complaints but saved about 2 percent of the conference hall’s heating bill—that should save the planet!

“Eco,” a green publication, one of the newsletters published at the conference, reported, “It was a lovely day, rather hot for December. It seemed that climate was on our side.” Now if they could take their instinctive preference for global warming and translate it into policy, we could put all of this to rest.

The foregoing rendition has barely conveyed the overwhelming fundamentalist environmental flavor of the convention. The halls were swarming with young, earnest types—vegetarian sandwiches sold out quickly at the snack bar—who were preaching the gospel of an energy-free world. Abstinence or, in modern terminology, conservation was the only road to salvation. Overheard was one young man saying to an eager female environmentalist, “You must come up and see my wind farm.” Those of us who questioned the need for a treaty could be counted on one hand while those who thought that no treaty would be strong enough to save the world were legion.

On his arrival, the vice president said that he had given instructions to the U.S. delegation “to show increased negotiating flexibility

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if a comprehensive plan can be put in place, one with realistic targets and timetables, market mechanisms, and the meaningful participation of key developing countries.”

Gore’s speech fit well into the dominantly religious flavor of the Kyoto meetings. He spoke of “a fundamentally new stage in the development of human civilization.” Really!! “The most vulnerable part of the Earth’s environment is the very thin layer of air clinging near to the surface of the planet, that we are now so carelessly filling with gaseous wastes [CO₂, the basic food for plants] that we are actually altering the relationship between the Earth and the Sun.” Oh sure!! “The extra heat which . . . is beginning to change the global patterns of climate . . . to which we have adapted over the last 10,000 years.” [What about the previous 100,000 years?] Changing human behavior “. . . requires humility, because the spiritual roots of our crisis are pridefulness [Yea, brother!] and a failure to understand and respect our connections to God’s Earth and to each other.” Amen!! “Our children’s children will read about the ‘Spirit of Kyoto,’ and remember well the place and time where humankind first chose to embark together on a long-term sustainable relationship between our civilization and the Earth’s environment.” Alleluia!! He wound up by comparing opponents of the treaty to cigarette manufacturers.

In the evening, at his press conference, Gore shifted slightly to say that “in order to send an agreement to the Senate, we must have meaningful participation.” Meanwhile the Chinese had emphasized their “no, no, no” policy. “No” to any restrictions; “no” to any agreement on future restrictions; and “no” to any inclusion in the treaty of any reference to voluntary restrictions. Members of the Group of 77 (virtually all Third World countries numbering many more than 77) also echoed the Chinese position.

The Europeans held out for more stringent cutbacks than Clinton had proposed. As a result, the American delegation agreed to reduce U.S. emissions 7 percent by the commitment period, 2008 to 2012. The Third World countries were not even mentioned in the document. Other advanced countries have targets ranging from an 8 percent cut (the European Union) to an allowed 10 percent increase for Iceland. The reductions are to be applied to the carbon dioxide equivalent emissions of carbon dioxide, methane, and nitrous oxide and are cutbacks from 1990 outputs. For hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride, the limits are to be calcu-

lated from 1995 emissions.* The negotiators failed to agree on any enforcement mechanism or sanctions for noncompliance. The United States did win (if that is the right term) the right to trade emissions among developed countries, subject to review at the next meeting, and, in a separate agreement, an exemption for “multilateral operations” approved by the United Nations.

All the countries signing the protocol are required to have in place by 2007 a system for measuring manmade greenhouse gases and their removal by sinks.† But such a measuring scheme is neither easy nor very accurate. Scientists know that more carbon dioxide is absorbed by sinks worldwide than they can account for. Since climatologists do not know where all the CO₂ goes, can any country determine how much carbon dioxide is being reabsorbed domestically? Measuring the other gases will also be neither easy nor straightforward. Does anyone really believe that Ukraine, Greece, and Romania will have an accurate monitoring system in place by the start of this program?

Even if the Congress takes the issue of global warming seriously, it will have major problems with this agreement. First, its exclusion of China, India, and Brazil will badly hurt American industry and many manufacturing jobs will be exported. Given the overwhelming opposition among both Democrats and Republicans to any agreement that fails to include these countries, the prospect for Senate ratification is close to zero. Moreover, giving the United Nations—including Russia and China both of which have veto power in the Security Council—power over our military outside the United States is unlikely to be popular. In addition, the air force, navy, and armored ground forces will be constrained domestically. Will the air force, for example, be able to properly train their pilots, which requires regular and frequent flights?

Effectiveness of the Agreement

The Kyoto agreement entails forecasts of future greenhouse gas emissions. But energy use, which requires the burning of fossil fuels,

*The first two of these gases were developed as alternatives to chlorofluorocarbons (CFCs) banned under the 1987 Montreal Protocol. The last is used in heavy industry to insulate high-voltage equipment. All three have 140 to 23,000 times the warming potential of CO₂.

†Sinks are biological or physiological processes that remove CO₂ from the atmosphere and store it. Trees and oceans, for example, both take up carbon dioxide and convert the carbon to other forms such as wood or calcium carbonate.

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depends on economic growth and prosperity. Economists are poor soothsayers and often over- or underestimate growth. Accurate forecasts for a long period are impossible. Not only are we unable to predict the economic future but technology can change greatly, leading to more or to less demand for fossil fuels. If countries levied carbon taxes, probably the most efficient method for reducing CO₂ emissions, the magnitude of their effect on demand for energy and the amount of fossil fuels consumed would be uncertain; it would depend, among other things, on the availability of substitutes, income effects, the price responsiveness of the public, and distributional consequences.

Moreover, modelers project that most of the climate change will come to pass many decades hence, with the forecasted 4.5°F temperature increase not occurring for 100 years. No one can have any reasonable idea about technology, population, or energy sources a century into the future. We can project, however, that future generations will have better technology at their disposal; that they will be wealthier; and that they will live longer. They will certainly be in a better position to deal with any adverse changes in the climate than is mankind today.

The Clinton administration had difficulty in deciding on what it could accept at Kyoto. Its quandary was magnified by the projected failure of the United States to reduce emissions to 1990 levels by the year 2000. Rather than cutting them, a booming economy appears likely to boost emissions of carbon dioxide by at least 15 percent in this decade. Meeting the goal of cutting emissions enough to prevent climate change, which might require slashing emissions by some 60 percent, seems out of reach. Avoiding a warmer world would require a radical curbing of emissions by all countries, which in turn would lead to a worldwide slowdown in growth, perhaps even a depression that might make the 1930s look like Disneyland on a good day.

The Kyoto agreement is futile. Even the former chairman of the IPCC, Bert Bolin, says that the present plan would, if fully implemented, cut warming 25 years hence "by less than 0.1 degree C, which would not be detectable" (Bolin 1997). We are plunging into the treaty process without even preparing an evaluation of the costs and benefits of doing so. The Congress has demanded that the Clinton administration provide them with figures on what might be the cost to the American people of the agreement, but no estimates have been forthcoming.

The Clinton administration has promised that no energy taxes are being planned. The most likely result will be a costly regulatory scheme designed to hide the deleterious effects of curbing energy consumption. Attempting to suppress the use of fossil fuels would be extraordinarily expensive and would reduce world growth significantly. The result would be mounting unemployment around the globe. Deprived of the prospect of rising incomes, the poor would feed unrest, exacerbating radical movements of all kinds. Violence would escalate. Countries buffeted between domestic demands for cheap energy and international pressures to slash the use of fossil fuels would cheat and avoid meeting treaty goals.

According to a Charles River Associates study, a cut of 10 percent from 1990 levels by the year 2030—a little more than was agreed to—would lower real national incomes from 3 to 4.5 percent in Canada, the United States, and Japan (Bernstein et al. 1997). Although Germany and the United Kingdom would be the least affected among the advanced countries, each would lose over 1.5 percent of its GDP by 2030. Oil- and coal-exporting countries also would suffer, since demand for fossil fuels by OECD countries would fall, reducing world energy prices. This study did find some winners: Jordan, Panama, South Korea, the Sudan, the Philippines, India, and Brazil, among others. Those countries gain because their emissions remain unconstrained and they are not energy producers but energy importers. Moreover, they export energy-intensive goods that would benefit from lower real prices of fossil fuels. Even those winners might lose if the wealthy countries of the world should resort to trade protection to save their energy-intensive industries from the competition of exempt Third World states. Unfortunately, given the combination of organized labor and American industries that would suffer, protectionist policies appear to be a very likely result and would aggravate any worldwide decline in incomes, doubling the loss for Asian, Latin American, and African countries.

An Australian study finds a somewhat different pattern of losses (Fisher 1997). All the OECD countries would lose; but Australia, New Zealand, and Japan would suffer the largest drops in per capita income. A 10 percent cut in emissions by Canada and the United States would reduce incomes for every man, woman, and child by roughly \$1,700 to \$2,000; a family of four might lose \$8,000 annually. The 7 percent cut would reduce that family's earnings by \$5,600 per

year. The European Union would suffer less. With the exception of South Korea, most Third World countries also would lose. With tradable quotas, the Australian paper finds that losses would be smaller and that the countries that made up the former Soviet Union and Eastern Europe would actually benefit from the sale of CO₂ reduction certificates. They would profit because their heavy, energy-intensive industry has collapsed, thus giving them large quotas of reduced carbon dioxide emissions to sell. In contrast, the United States will suffer a greater loss under tradable quotas than under fixed cutbacks, because its competitors in the world market will actually gain more than the United States, thus reducing the relative competitiveness of American industry.

If they ever agree to cutbacks in greenhouse gas emissions, which they would be unlikely to meet, many poor countries would require large handouts. Environmentalists would urge governments to punish countries that failed to cut back on energy use by imposing trade restrictions. Labor and industry would argue that it was unfair for firms facing much higher energy costs to compete with companies in areas not subject to restrictions; these firms in exempt states would be benefiting from reductions in fossil fuel prices. As mentioned above, the United States, Japan, and the European Union, to protect their energy-using industries, will likely impose import controls. Restrictions on foreign trade would precipitate a downward spiral in global income that could easily produce a worldwide depression. The consumers of the country imposing the restrictions would suffer from higher prices and inferior products. Under this dreary scenario, the result would be greater world poverty. Everyone would be a loser.

Moreover, unless India and China agree to cut their future emissions, any U.S. reduction in greenhouse gases will be largely fruitless. By 2050, the UN predicts that Third World countries, exempt from controls under current agreements, would emit three-quarters of all CO₂ emissions (National Center for Policy Analysis 1996). Reducing employment and incomes in the United States would do little to stave off any climate change but would give a significant relative economic advantage to the emerging economies of Asia. Notwithstanding their relative gain, the drop in GDP in the United States, Japan, and Europe may cut Western imports and consequently reduce Asian incomes as well.

The Costs of Acting

The costs of either the tax or the emissions certificates would depend on the levels imposed. Holding CO₂ emissions constant at some level, such as the output of 1990, or cutting emissions in the developed world by 5 percent (the Kyoto goal), would only slow the buildup of CO₂. To stabilize concentrations of CO₂ in the atmosphere at levels equal to or below twice the pre-Industrial Revolution concentration would require major cuts from 1990 emissions for the world as a whole. Even reducing emissions that far would not stabilize global temperatures until the 22nd century.

DRI/McGraw-Hill, a respected consulting firm, calculated that the government would have to exact taxes of \$100 to \$200 per ton of carbon to trim U.S. emissions to 1990 levels by the year 2010, depressing GDP by 2.3 to 4.2 percent—roughly \$1,700 to \$3,100 per household—with the higher estimate being more than twice the amount spent by the government and the private sector together on all other environmental issues (Horwitz 1995). If the tax were only \$100, and assuming that the revenues were recycled through lump sum cuts in personal income taxes, Lawrence Horwitz, who carried out the research, calculates that the real GDP of the United States would drop by 2.3 percent and about half a million jobs would be lost each year while the tax was being phased in. A peak loss of about 1 million would occur two years after the tax was fully implemented (Horwitz 1995). But probably more damning are the inequities of such a policy. The cost would be borne by all consumers, yet only income tax payers, who are the higher income consumers, would receive the rebate.

But even that major effort would only slow the growth of greenhouse gases in the atmosphere. Actually stabilizing the concentration of gases in the atmosphere would require losses to the economy of several times DRI's projections. Given political pressures to protect certain industries and some favored consumers, costs could well exceed even those staggering numbers.

Although no one can be certain of the burden, most respectable estimates indicate that the cost would be staggering. Yale's William Nordhaus, whose work was discussed in the previous chapter, concluded that the net discounted cost to the world of meeting the Rio agreement's goal of 1990 levels would be \$7 trillion—about the total of the United States' annual GDP (Nordhaus 1994, 82). This mind-blowing figure represents the cost to the world in excess of his

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estimate of the benefits from reduced warming! Moreover, returning to 1990 emission levels would fail to prevent a buildup of greenhouse gases; according to the models it would only slow climate change.

Gary Yohe of Wesleyan University estimates that it would cost \$260 per ton of carbon to reduce CO₂ to 1990 levels by 2010 and would lower the growth rate of GDP by one percentage point annually. Income and wages would drop 5 to 10 percent per year (Yohe 1996). Gas prices would soar about 75 cents a gallon while heating oil prices would more than double. Low-income families may have to choose between cold cuts and a cold house. All these predicted costs envision a less stringent program than agreed to at Kyoto. The costs also assume that the government imposes the most efficient scheme to slash emissions—taxes or emission certificates.

No matter which scheme is adopted to limit greenhouse gas emissions, the United States will be a loser. Restrictions on energy use in the United States will hurt our industries, especially those that are energy intensive, such as the auto industry, the coal and oil industries, the steel industry, and transportation generally. The cost of the programs will be reflected in every item bought in the supermarket. Every home in the country will pay more for electricity, hot water, heating, and air conditioning.

As indicated, only the OECD countries have committed themselves to abide fully by any restrictions; the Third World states remain free to develop their economies in any way they see fit. Supposedly, those countries that had been part of the Soviet empire—Eastern and Central Europe—will also have to limit their production of CO₂, but they face less stringent requirements that, given their weak economies, will probably be waived. As a consequence, our industry and our economy will bear the brunt of the agreement.

The industries that are particularly vulnerable to higher energy costs will be tempted to move abroad, to parts of the world not subject to controls. Although Ross Perot was wrong when he said that NAFTA would produce a sucking sound as jobs moved south, one can hear echoes of that noise emanating from these agreements. As the AFL-CIO said in its February 20, 1997 statement: “The exclusion of new commitments by developing nations under the Berlin Mandate will create a powerful incentive for transnational corporations to export jobs, capital, and pollution, and will do little or nothing to stabilize atmospheric concentrations of carbon. Such an

uneven playing field will cause the loss of high-paying U.S. jobs in the mining, manufacturing, transport, and other sectors.”

The Clinton administration’s own Department of Energy (DOE) reports that attempting to comply with any of these scenarios would be disastrous for American industry. To study the potential impact of the restrictions on energy-intensive industries, the DOE commissioned a study by the Argonne National Laboratory. The resulting paper focused on six sectors: chemicals, petroleum refining, paper and allied products, iron and steel, aluminum, and cement (Sutherland 1997). To model the effect of policies designed to reduce greenhouse gas emissions, the researchers added a premium to the prices of fossil fuels based on their carbon content. Carried out before the last election, when tax increases were not considered “politically correct,” the study assumed that the price of the fuels would be uplifted magically without hiking taxes. The nontax add-ons to fuel costs, dubbed “price adders,” had the effect of boosting electricity rates by slightly more than 50 percent from the year 2000 to 2010, tripling coal prices, inflating natural gas charges by about 80 percent, and pushing up fuel oil costs between 70 and 90 percent.

The department’s research team at Argonne found that “the policy constraints placed on these six large industries in developed countries, but not on their less developed trading partners, would result in significant adverse impacts on the affected industries.” The study went on to emphasize that “furthermore, GHG [GreenHouse Gas] emissions would not be reduced significantly. . . . Price increases based on carbon content, [are] neither effective, nor cost-effective in encouraging a reduction in GHG emissions. Some substitutions encouraged by fuel price increases could actually increase GHG emissions.”

To conduct the study, the Argonne National Laboratory established six working groups, one for each of the six industrial sectors, consisting of eight or nine experts from industry, trade associations, environmental groups, academe, the financial community, labor unions, and the government. The conclusions of all six groups were surprisingly consonant and gloomy. The working group on iron and steel, for example, stated categorically:

The imposition of increased energy costs will devastate the U.S. steel industry without a significant decrease in worldwide energy related emissions from steel making. Production

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will simply be shifted to developing countries and may possibly lead to higher levels of overall pollution due to lower standards in those countries.

The Petroleum Refining Industry working group emphasized that

[the] application of add-factors [taxes or imposed costs] on OECD refiner production (or crude input) would devastate and probably eliminate the OECD refining sectors. Moreover, the resulting realignment of supply into non-OECD regions . . . would probably not cut and would probably raise net GHG emissions from the global petroleum supply industry.

Each of the working groups found that higher energy outlays would boost the cost of production, lead to increased imports, and slash employment and domestic output. In some cases, higher energy costs might eliminate all U.S. production. The groups also agreed that the “policy scenarios would not produce a reduction in global emissions and these emissions could actually increase.” The study concluded that employment in the steel industry would fall by about 65 percent, meaning that about 80,000 highly paid workers would lose their jobs. Employment in cement would be slashed by one-third. The United States would have to sacrifice its entire primary aluminum industry, abolishing all 21,000 jobs and liquidating an industry essential to American security.

The conclusion of the DOE report is worth quoting at length:

Higher fuel costs imposed on domestic energy intensive industries would result in an increase in production costs in these industries. The consensus of the six working groups . . . is that imports from nonparticipating countries would displace a significant amount of U.S. industrial output and employment. A substantial amount of existing capacity in several of these industries would become noncompetitive. Future investment in plant and equipment would be redirected from the United States . . . towards nonparticipating countries. *This conclusion is more general: all participating countries that agree to binding constraints will experience an economic decline relative to nonparticipating countries* (Sutherland 1997, 21, emphasis added).

Although the DOE study concentrated only on major industries, the public should be aware of the effect on daily life of mandatory

restrictions on greenhouse gas emissions. The price increases necessitated by the agreement would inflate the cost of virtually everything they buy, leaving consumers much worse off. If fuel oil goes up by 70 to 90 percent, the price of gasoline at the pump will rise—before taxes—a comparable amount, roughly 50 to 60 cents per gallon. Trucking costs will go up roughly 12 percent, making everything the housewife buys more costly.

The Tradeoff

The previous chapter indicated that the effects of global warming would probably be positive for the United States and for much of the rest of the world. At most, in a hundred years (assuming the most pessimistic view), climate change might impose costs of around 1 to 2 percent of world GDP. The cost of preventing a buildup of greenhouse gases would be much larger than even the darkest estimates of a warmer world. True, a few poor countries might suffer from rising sea levels or be unable to adjust their agriculture and so would suffer significantly. If emission controls are intended to protect those countries, then this kind of foreign aid might be better targeted to promoting their economic development. Since the cost of slowing warming exceeds the projected benefits by a substantial margin, however, the right strategy is to do nothing, except perhaps to help poor countries improve their economies. That way there will be no regrets.

As mentioned, Bert Bolin, former chairman of the IPCC, in the IPCC Report to the Ad Hoc Group on the Berlin Mandate, concluded that “no reasonable future reductions by Annex I countries [OECD and countries in transition to a market economy] would stabilize global emissions.” Is it reasonable to cut our GDP by 2 or 3 percent, or maybe even more, when the best that could be accomplished would be to shave the average global temperature by less than 0.1 degree Celsius (0.2°F)? Should the United States and other OECD countries decimate their aluminum, steel, chemical, oil refining, paper, and cement industries for such a paltry outcome?

Even in the unlikely event that all countries around the globe agreed to cap CO₂ emissions at levels that would prevent warming—some 50 percent or 60 percent below current emissions—the gain would be small or nonexistent while the cost would be staggering. If returning emissions to 1990 levels would cost the economy of the

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United States and the world somewhere around 2.5 to 3.5 percent of income, slashing emissions well below that would be catastrophic. Fortunately, since most people will benefit from a warmer globe, such steps are unnecessary.

However, if the world were to act to cap concentrations of greenhouse gases, the cost of doing so would depend on how soon emissions were cut. Following a business-as-usual policy for the next few decades would actually be the cheapest alternative. Scientists have calculated the effects of waiting until 2010 or 2020 before capping emissions; in general, they conclude that waiting would be less costly than acting now (Wigley et al. 1996). Researchers give four reasons for delaying action: (1) an expenditure that must be made decades hence is less burdensome than outlays made now; (2) the capital stock invested in power plants, houses, and factories needs time to be amortized since such facilities are long-lived; (3) technological progress should improve the efficiency of energy supply, reducing the costs of substitute, carbon-free energy sources; (4) natural sinks absorb CO₂ emissions over time, so a larger cumulative emissions budget would be possible, reducing our dependence on higher-cost low- or no-carbon alternatives. In addition, the United States and the rest of the world would be richer a few decades hence and better able to bear any burden from cutting carbon emissions or mitigating any harm from climate change.

Since climate change will have only a very small effect on most of the world, why are so many rushing to impose onerous taxes and controls on U.S. industry? The carbon tax that the administration suggested and then withdrew would cost Americans about \$180 billion per year. Spending only one-tenth of that to provide clean water or mosquito netting would contribute far more to the world's health than attempting to reduce greenhouse gas emissions. If preventing an increase in disease in poor countries or rising seas from inundating Bangladesh is the purpose of restricting those emissions, then it would be much more effective to deal with those problems directly than to put constraints on our energy use.

A cynic might claim that the proponents of signing an agreement in Kyoto aim to force the private sector to subsidize other countries by crafting a mechanism to induce U.S. companies to purchase CO₂ rights from other nations. Given the collapse of the Soviet Union's heavy industries, Russia and other former Soviet bloc states would have ample CO₂ reductions from 1990 levels to sell to the West.

CLIMATE OF FEAR

The ability to buy emission reduction certificates from Eastern Europe and perhaps from some Third World countries means that the U.S. plan would reduce emissions significantly neither in the industrialized world nor elsewhere. As a scheme to halt global warming, it is a sham. It will, however, produce a huge and expensive international bureaucracy, impose an implicit tax on industry, especially on energy-intensive industry, and significantly raise gasoline taxes, electricity costs, and heating and cooling costs for all Americans. It will cost Americans income, jobs, and prosperity. The only benefit, if you consider it a benefit, will be to extract some resources from American and European companies and transfer them to Russia, Ukraine, China, India, and Brazil. Two Brookings Institution economists estimated that the U.S. proposal of tradable certificates would require that U.S. companies spend around \$27 billion or more annually to purchase the rights to emit carbon from Third World or former Soviet bloc countries (McKibbin and Wilcoxon 1997). That sum is nearly four times the U.S. government's annual budget for foreign economic aid.

Ratification of a treaty that caps U.S. emissions at a level significantly below 1990 appears to be remote. However, Clinton and Gore have been politically astute in past bargaining with the Congress and usually get their way over international negotiations. Al Gore, who boasts a reputation as a dedicated environmentalist, must deliver or lose his credibility. The administration has asserted that it will not submit the Protocol for Senate consideration until after it has secured "meaningful participation" by major developing countries. Officials hope to get China and others to agree to something in 1998 in Buenos Aires. At that point, the Congress would have to face rejecting a treaty and supposedly losing the U.S. leadership on the environment or going along with Clinton and the environmentalists, knowing that a distant future Congress would have to legislate the onerous energy taxes and stringent regulations necessary to meet the protocol's mandates. Let us hope that the public and the Congress will be able to see through this charade.

If We All Cooperate

Worldwide cooperation would be the only effective way to curb greenhouse gas emissions; but even if the advanced nations could get China, India, and Brazil to agree, would it be good policy? As

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indicated above, the cost of curbing emissions significantly around the globe is on the order of several percentage points of world income. The gain from slowed or avoided climate change would be much smaller. Moreover, for most people, in most of the world, a warmer world would be a better world. The only significant costs from global warming would be higher sea levels; but even these burdens would be spread out over the next 100 years, providing ample opportunity to construct dikes and take other steps to mitigate any damage.

Let us assume that the IPCC is right and that, by the year 2100, greenhouse gas concentrations in the atmosphere will rise significantly, driving up worldwide temperatures by 4.5° F. In all probability, if such a warming does take place, most people will be better off. On the other hand, if we take the pessimists' view, the costs to the United States might be as high as 1.5 percent of our GDP, although most estimates of the damage from climate change are considerably less than that figure (Chapter 5, Table 5-4). As reported earlier, however, DRI estimates the cost to Americans of reducing greenhouse gas emissions to 1990 levels as 2.3 percent of GDP, a very bad benefit/cost ratio.

The IPCC's Working Group III reviewed various estimates of GDP losses, not including DRI's, from stabilizing emissions at 1990 levels and concluded that the average projected loss would be 1.5 percent of U.S. GDP by the year 2050, with the costs increasing more or less linearly with time (IPCC 1995c, 307). The IPCC's forecast of a 4.5° increase in temperatures is for the end of the next century, not the middle (actually, they are now projecting something less than that for the year 2100). If we assume that the temperature will go up by only half as much over the next 50 years (actually, temperatures should rise more in the second half than in the first half because of lags between carbon buildup and ocean temperatures), then the cost to the United States from warming would be, at most, only 0.75 percent, meaning that the costs of holding CO₂ to 1990 levels of 1.5 percent would be twice the gain from preventing any climate change!

But the benefit/cost calculus is even worse! Returning worldwide emissions, including the United States', to 1990 levels will *not* stabilize greenhouse gas *concentrations*. Since more CO₂ will be added annually for many decades to the atmosphere than the sinks can absorb, the buildup would only slow. Consequently, temperatures

would continue to go up but by less than if no steps were taken to reduce CO₂ emissions. Therefore, instead of saving the full 0.75 percent of our GDP by keeping emissions at 1990 levels, we would be saving much less, perhaps half as much or 0.375 percent of our GDP, hardly anything worth worrying about.

The Precautionary Principle

Many advocates of acting now assert that, since there is some unknown but possibly great danger, governments should, on the basis of the precautionary principle, take steps now to reduce the specter of damage. This principle is valid only if such measures in and of themselves do not impose any risks or costs. But curbing CO₂ emissions would be very costly. As has been shown above, it would reduce incomes and wealth. Moreover, since the costs of higher energy prices would be passed on to the items that all consumers buy, it would affect most adversely those with low incomes. If, as has been proposed, carbon taxes were returned through cuts in the income tax, the adverse distributional consequences would be severe. Rich people would enjoy lower taxes while poor people would pay more for goods and services. Gary Yohe has shown that the lowest quintile in the income distribution would be most severely distressed while the highest quintile would actually benefit (Yohe 1996). Alternatively, the government might keep the revenues and spend them, with foreseeable results. An increased portion of the economy being allocated by politicians would depress growth rates and increase the costs of such policies.

As many economic studies have shown, being rich is healthier; being poor shortens one's life (Chapman and Hariharan 1994; Duleep 1986). A program that reduces incomes will increase mortality. Researchers have estimated that a loss of \$5 million to \$10 million in U.S. GDP would lead to one extra death (Cross 1995). Assuming that the cost of reducing greenhouse gas emissions to 1990 levels—not enough to prevent climate change, only to slow it—were 1.5 percent of GDP, the loss in today's income for the United States alone would be about \$120 billion. Using the more conservative estimate of the effect of income on deaths implies that about 12,000 Americans would die prematurely each year.

Rich nations also suffer less from natural disasters, especially in human lives, than do poor regions. When the Loma Prieta earthquake

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struck northern California, 67 people lost their lives. A year earlier, a slightly weaker earthquake ravaged Armenia with a death toll of nearly 25,000. Slowing economic growth of poor countries, as measures taken to cap CO₂ emissions would do, would mean that underdeveloped nations would remain more exposed to damage from inevitable natural disasters. Higher worldwide mortality would be the result.

In addition, higher energy costs, plus any strengthened CAFE standards, would push consumers into buying still smaller, lighter, and more dangerous autos. Although we cannot be sure how many extra highway fatalities would result, they would be in the thousands. Higher heating costs would also increase the use of insulation and more airtight buildings, reducing ventilation and trapping more air pollution indoors. Such hazardous chemicals as formaldehyde, carbon monoxide, nitrogen oxides, volatile organic compounds, and particulates would build up inside the structures. Since people spend most of their time indoors, the quality of the air in houses and offices is important to maintaining health. Without doubt the more energy-efficient structures would cause some increase in sickness and perhaps an unknown number of early deaths.

Government regulations often, if not always, have unfortunate, unintended consequences. The effort to protect the ozone layer provides a recent example. Under the Montreal Protocol, chlorofluorocarbons (CFCs) have been banned in the industrial nations and will be phased out in the rest of the world over the next decade. CFCs are relatively inert, benign, nonpoisonous substances that provide excellent cooling. Not only do the substitutes fail to work as well, they turn out to be dangerous to people's health. Scientists have confirmed that workers accidentally exposed to substitute chemicals, such as HCFC-123 and HCFC-124, have developed acute hepatitis (*Washington Post* August 22, 1997, 14A). Moreover, two other substitutes are to be banned under Kyoto for contributing to global warming. The banned CFCs, on the other hand, produced no known cases of harm to any men or women.

This analysis has been based on the IPCC's best estimate of the rise in temperatures by the end of the next century and the average expected costs to the United States of such a change. But what if the cost should turn out to be much worse than the pessimists expect? What if the costs from global warming were to be 10 times

higher than the forecast? As Wilfred Beckerman has pointed out (1996, 112), this would imply that the average person's income in 2100 would be only 3.96 times higher than it is today, rather than 4.4 times higher! Would this slight reduction in future income for the world's population warrant the risk to our economy now of stringent caps? Lowering current income to slow greenhouse gas emissions also would reduce future earnings, offsetting at least partially the "savings" from reducing possible future damage stemming from climate change.

In other words, policymakers must weigh the costs of acting to slow greenhouse gas emissions against the costs of maintaining current policy. Neither is without risk, but claiming that the precautionary principle requires action to curb CO₂ is nonsense. Under the most efficient possible policy to curb CO₂, one under which all countries cooperate to reduce their emissions, people will die, growth will be slowed (leading to more damage and fatalities from naturally occurring disasters), and the poor will suffer the most. But the politicians have signed a treaty that would be even worse. It would impose these costs yet produce little in the way of curbed emissions. That is folly.

Where Are We and Where Should We Be Going?

There is no need to rush into a hasty treaty that would produce little benefit but high costs. If climate change becomes a real problem at some future time, many steps can be taken without crippling our economy. Ocean scientists have shown, for example, that if the seas were "fertilized" with iron filings, phytoplankton (algae) would bloom and absorb vast quantities of CO₂ (*Washington Post* October 14, 1996, A3). The minuscule plants are nutritionally starved for iron and, when provided with that metal, multiply rapidly, absorbing large amounts of carbon. Kenneth S. Johnson of Moss Landing Marine Laboratories has estimated that iron supplements might offset 15 to 20 percent of man-made carbon dioxide over the next few decades (*Washington Post* October 14, 1996, A3).

In addition, harvesting and replanting timber could sequester a good bit of carbon. Forest researchers have concluded that an active program of cropping and replanting fast-growing forests, then turning the lumber into housing and other long-term products, together with reforestation, could offset 12 to 15 percent of human greenhouse

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gas emissions (Moffat 1997). Those two steps—iron filings in the oceans and forest management—could by themselves do as much to slow climate change as capping greenhouse gas emissions at 1990 levels. Over the next few decades scientists may develop other strategies that do not significantly lower the world's living standards.

As mentioned, the administration is under tremendous pressure from all sides to act *now*. To keep its credibility with environmentalists, many politicians, European and Japanese leaders, and leading journals, it must take steps to cut back CO₂ emissions even if the limitations would have no benefit and would potentially impose high costs. To succeed in this high-wire act, President Clinton probably will propose new regulatory steps, such as higher fuel efficiency standards for new cars, more stringent restrictions on appliances, the mandating of strict insulation levels for new buildings, and more spending on mass transportation. Most of those regulations would be phased in slowly, that is, after President Clinton leaves office and after many of the current members of Congress retire. The actual legislation required to meet the goal might even await a future Congress. Whatever the difficulties or hurdles, the administration will negotiate some formula so that Clinton, Gore, and their supporters can claim that all the world, including China, is participating in the cutback of greenhouse gases.

All of this is unnecessary, expensive, and crippling to our economy. For most of the world, the cost of warming over the next 100 years would be either very small or an actual benefit. As noted earlier, most people in most places will be better off in a warmer world. Those poor parts of the world that might suffer the most should have help. In any case, delaying action by 20 to 30 years appears to be the only truly prudent, "no-regrets" policy. Technology will advance. Incomes in Third World countries will multiply. The world will be more capable of coping with change, whatever vicissitudes may occur. Except for those measures that make sense in any case, such as eliminating subsidies on energy and energy use, the Congress should stand fast against any steps to limit greenhouse gas emissions.

