

Climate Change, Clinton and Kyoto

THE NEGOTIATIONS OVER GLOBAL WARMING

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WHEN THEY MET in Rio de Janeiro in 1992, the world's governments agreed to try to stabilize emissions of the gases that can change the climate. But it was an agreement only to make an effort, with no binding commitments and no penalties for countries that failed to meet their goals. Since these gases are generated mostly by burning fossil fuel, as in power plants, factories and automobiles, it is not easy to reduce emissions in growing economies.

The Rio treaty set the "aim" of lowering emissions to the 1990 level by the year 2000. By now, five years later, it is clear that few countries will achieve that reduction. In the meantime, accumulating scientific evidence has tended to support the proposition that gases resulting from human activity are already changing the global climate. This evidence is not conclusive and much controversy continues among researchers, but it is fair to say that most scientists consider it at least probable that rising concentrations of these gases in the atmosphere are having an impact on temperatures and weather patterns.

In response, most of the world's governments are going to meet in Kyoto, Japan, from Dec. 1 to 10 to try to agree on another, stronger treaty on climate change. It has been under negotiation for two years and this time the industrial nations, including the United States, have agreed in principle to impose binding limits on emissions of the greenhouse gases—those that can change the climate.

As the Kyoto conference approaches, the concept of limiting emissions has become a political issue in many of the industrial countries. Here in the United States, ratification of any treaty emerging from Kyoto would have to have the support of two thirds of the Senate. On one side are fears that emissions limits will interfere with economic growth and the rise in standards of living. On the other are fears, expressed by President Clinton and Vice President Gore among others, that global warming will mean bizarre weather with disastrous flooding, droughts and epidemics.

Climate change is an unusually difficult issue for the people who make the decisions in democratic governments. First of all, the science is uncertain while governments have to make firm policy decisions — if only the decision to do nothing — long before these uncertainties can be resolved. Political leaders are already beginning to overstate the clarity of the science, in order to attract public support. A lot of money is now going into climate research, and new findings with varying political implications will continue to appear.

Any serious attempt to cut emissions will have clear and immediate costs, but the benefits may not appear for a long time. To the extent that the benefits may be disasters that didn't happen, they may never be obvious. But the costs will be. As the debate develops, much of it is being cast in terms of the restraint that the present generation owes to future generations.

The Negotiating Record Up To 1996

Climate change is a newcomer to the international political agenda, having emerged as a major policy issue only in the late 1980s. But scientists have been working on the subject for decades.

They have known since the 19th century that carbon dioxide (CO₂) in the atmosphere retains heat from the sun, and that temperatures on the Earth's surface are affected by it. CO₂ is generated by burning any fuel containing carbon, from coal and oil to wood and cow dung. With the industrial revolution, the world's consumption of these fuels has increased hugely.

For many years scientists ignored it because, they assumed, the increases in CO₂ were being absorbed by the oceans. But in the International Geophysical Year 1957-58, they decided to test that assumption with a series of measurements from the top of Mauna Loa, the Hawaiian volcano, chosen as a site far removed from the influence of any local smokestacks. The Mauna Loa readings quickly demonstrated that concentrations of CO₂ in the atmosphere were rising steadily.¹

That finding led to a series of scientific meetings, most of them organized by various United Nations agencies. Concern about the climate was reinforced by a number of events, particularly the devastating drought along the southern rim of the Sahara and the spread of the desert into previously arable land. As these meetings continued, scientists began to realize that in addition to CO₂, other common gases could also affect climate. Methane was one example, nitrous oxide another.

Until the mid-1980s, in most countries, environmental policy was focused on domestic action. The most obvious threats were at home and, in any case, in the context of the Cold War any serious international cooperation to curtail greenhouse gas emissions seemed unlikely. But attitudes began to change around 1985, as governments began to take seriously their scientists' warnings about the ozone layer. Ozone in the stratosphere, they said, formed a screen that blocked ultraviolet radiation that can cause skin cancers in humans. Chlorofluorocarbons, a class of manufactured gases widely used in refrigeration and air conditioning, were escaping into the upper atmosphere where they were eating holes in the ozone layer. In response, the governments of most of the industrial countries negotiated the Montreal Protocol of 1987 to restrict, and ultimately to ban altogether, the production of these gases. The success of international cooperation at Montreal greatly encouraged the prospect for similar cooperation on other environmental policies. The end of the Cold War then removed another longstanding impediment.

The year 1988 is the point at which climate change and global warming emerged as a major political issue throughout the industrial countries. In the United States, Sen. Timothy Wirth (D-Colo- rado) had been deeply exasperated by his inability to draw public attention to the subject. When summer arrived he waited for a day forecast to be spectacularly hot, and called a hearing at which several experts testified. With the temperature at 98 degrees and anxiety rising about the drought gripping the Midwest and South, one of the experts, James E. Hansen, told the senators that the world was warmer than at any time in this century. It was 99 per cent certain, he continued, that the cause was man-made gases and not natural variation. "It is time to stop waffling so much and say the evidence is pretty strong that the greenhouse effect is here," he told a reporter for the New York Times, which put the story at the top of page one.

Hansen's testimony had unusual force because he was director of the National Aeronautics and Space Administration's Institute for Space Studies, and the first scientist of that stature to declare flatly that the rising temperatures were related to burning fuel.

Four days later a conference opened in Toronto, attended by several hundred scientists, politicians and officials from 48 countries and the UN. It started the push for action by calling for a 20 per cent reduction in CO₂ emissions by the year 2005. Political leaders in several countries picked up the issue. One of them was Margaret Thatcher, the prime minister of Great Britain, who had been trained in chemistry as an undergraduate. In December the UN's General Assembly approved the establishment of an Intergovernmental Panel on Climate Change (IPCC) to review the science.

The following year at their annual summit meeting, the heads of the seven big industrial democracies' governments called for a treaty—a framework convention, as it became known—to limit the world's production of CO₂. Negotiations shortly got under way.

But strains between the United States and most of the western European countries soon became visible. The Bush administration was uneasy about the scientific base for policy, and wanted more time for research. It was also hearing from industries threatened by the prospect of limitations on fuel consumption. The Europeans wanted to begin to move immediately. In early 1990 Bush held a White House conference attended by most of the industrial countries, where this dispute was ventilated but not resolved.

Later in 1990 the first IPCC reports appeared, demonstrating a broad consensus among scientists in the field that the possibility of global warming had to be taken seriously. If warming had not yet started, the IPCC said, continuing increases in concentrations of greenhouse gases would certainly lead to it sooner or later. The Europeans cited the warnings in the report, while the Bush administration pointed to the uncertainties.

Throughout a long series of negotiating sessions, the United States flatly opposed any firm targets for CO₂ reduction in the emerging Framework Convention on Climate Change. The Europeans pushed and pulled vigorously, but got nowhere. In its final form the text gave them half a loaf, by acknowledging the desirability of reductions. It set a voluntary goal of cutting CO₂ emissions back to the 1990 level by the year 2000. Although that goal was merely an aspiration with no firm commitment or means of enforcement, it represented substantial movement from the United States's original inclination to do no more than study the situation. The text of the Framework Convention was completed in time to be signed with great ceremony by nearly every country on the Earth at the UN's huge and colorful Conference on Environment and Development in Rio de Janeiro in June 1992.

The 1992 elections brought to Washington an administration more sympathetic to action on environmental issues than its predecessor. It immediately signaled its intention of moving away from the Bush administration's position, and in February 1993 President Clinton proposed a broad tax on all energy consumption. It became known as the BTU tax, since it was to be based on each fuel's energy content measured in British Thermal Units. In April, to celebrate Earth Day, Clinton announced that he would reverse the government's previous position and adopt a program to stabilize greenhouse gas emissions at the 1990 level by 2000, as the Framework Convention suggested. But that was the high point of environmental concern in the first Clinton administration. The president was soon distracted by the great struggle over his budget. Congress, hostile to the idea of an energy tax from the beginning, whittled the original BTU proposal down to an increase of 4.3 cents a gallon in the gasoline tax. It was too little to have any significant impact on consumption. When the specific details of the president's Climate Change Action Plan appeared later in the year, they turned out to be entirely voluntary. They included the promotion of products and technologies that use energy efficiently, encouragement of industry to commercialize efficient technologies to bring down their prices through mass production, and review of regulatory rules affecting energy production and use. Many environmental advocacy organizations denounced the Action Plan as inadequate.

They turned out to be right. By 1996 greenhouse emissions in the United States were 8.3 percent above 1990 and continuing to rise steadily.² But the Bush administration also turned out to have been right about the Europeans when it accused them of making promises that they could not keep. By 1996 it was clear that, of the world's major industrial powers, only three would have their emissions under the 1990 level in the year 2000 — and none of them for reasons arising from environmental policy. Russia would make it because of the tremendous drop in industrial production there since the collapse of the Soviet Union. Germany would succeed because it had been closing down the grossly inefficient plants, mostly fueled by brown coal, that it had inherited from the defunct Communist regime in the former East Germany. Britain would also succeed, because the government was cutting off its subsidies to the obsolescent coal industry. But nowhere, in any of the large economies, was there any sign of a serious and purposeful effort to reduce CO₂ emissions for environmental reasons.

As 1996 began, the British Meteorological Office and the University of East Anglia, which is a central collector of global weather data, announced that the year 1995 had been the warmest in a record of temperatures going back to 1866.

The Science of Global Warming

At that point the IPCC published its second survey of the subject, three fat volumes of which the first was a review of the science markedly more decisive in its tone than its predecessor five years earlier.³ The statistical evidence, it concluded in a widely quoted line, “now points towards a discernible human influence on global climate.” But it followed that sentence with a warning about the limitations on present knowledge: “Our ability to quantify the magnitude of this effect is currently limited by uncertainties in key factors, including the magnitude and patterns of longer-term natural variability and the time-evolving patterns of forcing by (and response to) greenhouse gases and aerosols.”⁴

This report is, in effect, a textbook representing mainstream opinion among the specialists in climate change and the many sciences that it touches. It does not represent unanimous opinion. Some researchers believe that the case for human influence on the climate is still unproved. But the IPCC report is now at the center of the debate over the science of global warming, which at least in Washington goes forward largely in terms of what the report said, or did not say, or should have said. This report is not as sharply conclusive as many politicians would have liked. It strongly emphasizes the many questions not yet answered, and the uncertainties that make judgment difficult. But the appearance of this report marked the point at which it became clear that most of the scientists involved had concluded that, to one degree or another, human activity appears to be playing a part in global warming.

The concentration of CO₂ in the Earth's atmosphere, the report said, was about 280 parts per million (ppm) in 1750, before the Industrial Revolution began. By 1994 it was 358 ppm and rising about 1.5 ppm per year. If emissions continue at the 1994 rate, the concentration will be around 500 ppm, nearly double the pre-industrial level, by the end of the 21st century.

Other greenhouse gases like methane and nitrous oxide have also been rising. The effect is that the atmosphere retains more of the sun's heat, warming the Earth's surface. Not all man-made additions to the atmosphere increase warming. Aerosols, tiny particles of solid or liquid suspended in the air, tend to reflect heat and diminish warming. But aerosols are mostly short-lived while the CO₂ thrown into the atmosphere will stay there for decades.

While the pattern of future warming is very much open to debate, it is indisputable that the surface of the Earth has warmed, on average, 0.3 to 0.6 degrees Celsius since the late 19th century when reliable temperature measurements began. Recent decades appear to be the warmest since at least 1400, according to the fragmentary evidence available. (Too little is known about the world's climate before 1400 to allow generalizations.)

The warming has not been uniform across the Earth's surface. It has been greatest in the mid-latitudes in winter and spring. Night temperatures have increased more than daytime highs. Patterns of precipitation have also changed, with greater rain and snow fall in the high latitudes of the Northern Hemisphere, and less in the subtropics from Africa to Indonesia. Global sea level has risen 10 to 25 centimeters over the past century.

The IPCC panel estimates that, on a worldwide average, temperatures will rise by 1 to 3.5 degrees Celsius by the year 2100, and sea level will rise another 15 to 95 centimeters.

Warmer temperatures could mean more droughts and floods. But the IPCC report states that present data are inadequate to judge whether climate is becoming more unstable, with bigger and more destructive storms.⁵

To try to identify the human contribution to warming, scientists construct mathematical models of global climate. The IPCC report's conclusion is based on a finding that those models that take account of human activities run closer to the observed data than models based solely on natural factors. The early models predicted warming rates that were clearly too high, but in the 1990s the model-makers began to include the aerosols and their cooling effects, bringing their results into closer conformity with actuality. The fit is still far from perfect, and large uncertainties remain.

As the scientists put it, their models seek to identify the "signal" of human causation from the background noise of purely natural fluctuation in a climate that, over geological time, has changed continually and drastically. The test is statistical. Proof is never certain. Attribution can only be stated to a given confidence level. Different scientists have different views about the confidence level necessary to support conclusions about greenhouse warming — whether it should be 95 per cent, or 99 per cent, or 99.5 per cent. Here one's judgment is necessarily subjective. The IPCC report itself takes up the question as to when science will identify a positive anthropogenic effect (that is, an effect caused by human activity) on climate. It gives this answer: "Detection of a human-induced change in the Earth's climate will be an evolutionary and not a revolutionary process. It is the gradual accumulation of evidence that will implicate anthropogenic emissions as the cause of some part of observed climate change, not the results from a single study."⁶ A few paragraphs later, the report comes to its conclusion that the "body of statistical evidence" points toward human influence. As many people have pointed out, the IPCC report neither claims absolute proof, nor does it deny that other, purely natural, forces may also be at work in the warming trend.

Within the span of recorded history, the report observes, there is no time when the climate has been changing as rapidly as it now appears to be doing. That means that historical experience is not a reliable guide. That's why it's necessary to rely on the models, although they still show systemic errors.⁷ There are also uncertainties about natural variation, since accurate records go back less than 150 years.

The IPCC report clearly warns that the current models are unlikely to include all of the feedback mechanisms in the planet's highly complex climate system. This point is highly important, and cuts both ways in the political debate. It means that there may be triggers hidden in the system, visible only in retrospect, that could change the warming trend line suddenly and sharply. To people who want quick

and vigorous action to limit greenhouse emissions, it seems intolerably dangerous to run the risk of a feedback that might start the warming process compounding itself rapidly. But the possibility of feedbacks working in the other direction, to stabilize the climate, are the basis for the most substantial criticism of the IPCC panel's work. Some highly qualified scientists point out that the most important of all the greenhouse gases is water vapor, and the physics of clouds is currently not sufficiently well understood to permit precise descriptions of the circulation of greenhouse gases or the way any feedbacks might operate.⁸

An issue of a different kind has arisen over the data from satellites measuring the temperatures of the atmosphere at various altitudes. These readings have been taken by some commentators to indicate that, contrary to the surface-level readings, the atmosphere has actually been cooling in recent years. But the scientists carrying out this work have argued that, when the satellite readings are corrected for the cooling effects of volcanic eruptions and for shifts in tropical ocean currents, they show a warming trend. It is a warming trend, however, somewhat slower than that which the IPCC report suggests.⁹

In its general outline and tone, the IPCC report gives great prominence to the uncertainties and gaps in the present scientific understanding of the climate. As it notes, politicians will have to make decisions on climate policy without waiting for conclusive scientific evidence on the key questions.

If the physical science of this subject is uncertain, the economics is even more so. The third volume of the IPCC's report is devoted to the economic and social consequences of warming. The right approach to policy, the report proposed, is to ask what actions to take over the next decade or two to position the world to act on new findings as they appear. "Climate change demands a decision process that is sequential and can incorporate new information."¹⁰

If the uncertainties are prominent in the physical science, they are even greater in the economic analysis of global warming. The purpose of analysis is, or ought to be, to weigh the costs of mitigating the warming process against the costs of doing nothing.

In the present state of knowledge it is impossible to quantify the costs of doing nothing. A large factor is the risk, which is unknown, of catastrophic consequences of warming. Another factor, which usually goes unmentioned in the current debates, is the possibility of off-setting benefits of warming. One example is the prospect of longer growing seasons in northern countries like Canada and Russia.

A good deal of work has been done on the costs of mitigation, but it has resulted in a range of estimates too wide to be of much use in making policy. Many models have been constructed, but their results reflect the assumptions on which they rest.¹¹ The models generally fall into two categories. Some are built, in effect, from the bottom up, based on the prospect of new technologies and the benefits in conservation and emissions that they could theoretically bring. Others are built from the top down, using conventional macroeconomic experience to estimate the costs of writing off and replacing a generation of producers' equipment. It is not astonishing to learn that the first method generally produces low — often implausibly low — estimates of the costs of mitigation, while the second produces high — often implausibly high — estimates.

One of the strongest reasons for getting started on at least a small scale with some mandatory mitigation programs is to begin to accumulate reliable data based on actual experience.

Recent Negotiations

In early 1995, the UN had held in Berlin a conference of the parties to the Rio de Janeiro meeting — in the jargon of the negotiators, COP-I. The idea was to assess progress on the grand promises made there. The 120 governments represented at COP-I agreed to a plan, known as the Berlin Mandate, to pursue over the next two years an attempt to set specific and binding targets and timetables to reduce greenhouse gas emissions. These targets and timetables were to apply to the industrial countries, but not the developing countries. Although that provision seemed innocuous at the time, it became increasingly controversial as time passed.

The negotiators met again for COP-II in Geneva in the summer of 1996. At that session Wirth, the former senator, now under secretary of state for global affairs and the chief American spokesman in this process, announced that the United States would support legally binding limits on emissions if other countries also did so. That was a clear and important reversal of longstanding American policy.

But there was still friction between the Americans and the Europeans. In December 1996, at an interim meeting, Wirth emphasized that the United States favored great flexibility in setting targets. Here he was following the advice of economists, who argue that flexibility means greater efficiency and lower costs in reaching targets. But in the international talks as in American domestic environmental politics, there is sharp debate between economists seeking efficiency and regulators who suspect that flexibility is merely a synonym for loopholes.

While the international talks trundled along through endless meetings, there was little sign that the subject of climate change was getting much attention at the White House. The President gave it part of one sentence in his 1997 State of the Union Message: “We must also protect our global environment, working to ban the worst toxic chemicals and to reduce green house gases that challenge our health even as they change our climate.” That constituted a tip of the hat, but nothing substantial.

The Europeans meanwhile were trying to turn up the pressure for action. On March 3, 1997, the 15-nation European Union called for a reduction of emissions by all industrial countries of 15 per cent below the 1990 level by the year 2010. In Britain, where an election campaign was under way, the Labour Party pledged in its manifesto to put Britain at the front of the world environmental movement by supporting a 20 per cent reduction in CO₂ by 2010. Labour’s huge win in May gave further momentum to its demand.

While the United States was committed in principle to binding limits, the Clinton administration was having trouble deciding exactly how much to reduce and over what period of time. Those questions were being hotly debated in endless meetings in Washington. The debate was being forced not only by criticism from abroad but by a deadline. A third meeting of the conference of parties, COP-III, was scheduled to be held in Kyoto in December 1997 and the negotiators hoped to sign a treaty there that would set the promised legal limits.

In June, at the annual meeting of the world’s leading industrial powers, the Europeans began to press Clinton personally and publicly. Clinton agreed that global warming is a serious issue, but avoided specific numbers for the emissions ceilings. The president of France, Jacques Chirac, chided the Americans as “great polluters” and said that they generate three times as much CO₂ per capita as the French do.

Immediately after the Denver meeting the UN’s General Assembly convened a special session in New York to assess the progress on the Rio pledges. The progress, it found, was minimal. The Europeans continued to assail the United States for failing to join them in supporting a sharp rollback in emis-

sions. Britain's new prime minister, Tony Blair, offered the comment that "the biggest responsibility falls on those countries with the biggest emissions." The United States's emissions are the largest of any country, by a wide margin.

The reasons for the tension between the Americans and the Europeans are rooted in deep differences between the economies and politics of the two continents. Only a few of the European countries have substantial energy industries under private ownership. Both the United States and Canada have hugely important energy industries with great political influence, not only through corporations but through the labor unions. By 1997 a number of American unions, led by the United Mine Workers, were fiercely hostile to any treaty on global warming. Europeans have a stronger conservation tradition, and already have energy prices much higher than those in the United States. Some of them would also point out that they live much closer to the horrific pollution that the former Communist governments of Eastern Europe created in their desperate efforts to wring faster growth out of their badly run industries. In some European countries there are vigorous Green parties nipping at the heels of their governments.

In addition to the disputes between Americans and Europeans, the UN session also displayed a broader range of differences between North and South — the rich countries and the poor. At Rio the rich had promised new aid, amounting to about \$6 billion, to the poor to help them toward more efficient use of energy. Very little of that money had actually been forthcoming. Some of the oil-exporting countries were beginning to claim compensation for any world-wide attempt to drive down energy consumption, and with it their incomes. A group of small countries inhabiting low-lying islands plaintively observed that continued rises in sea level threatened to sweep them and their people off the map altogether. More important, many people in the big countries well embarked on industrialization, such as China and India, suspected that the whole idea of global warming was a device invented by the rich countries to hold down growth among their newest competitors. In general the Third World regarded the threat of global warming, if it actually existed, to be a creation of the rich countries and felt that it was up to the rich countries to deal with it.

In this atmosphere President Clinton went to New York to address the UN's special session. "The science is clear and compelling," he said. "We humans are changing the global climate." He spoke of new technologies and economic strategies like emissions trading that would, he argued, allow reductions in greenhouse gases without damaging economic growth.

For the first time the president personally declared himself in favor of limits: "We will work with our people, and we will bring to the Kyoto conference a strong American commitment to realistic and binding limits that will significantly reduce our emissions of greenhouse gases." But, as all his critics immediately observed, he again declined to say where the United States wanted to put those limits. The American position remained undefined.

Clinton clearly felt that, before he proceeded to any serious action, he would have to get more Americans focused on the subject. On July 24 he held a White House conference in which he and Vice President Gore, the administration's ranking environmentalist, opened a campaign for greater public awareness. "We see the train coming," the president said, "but most Americans in their daily lives can't hear the whistle blowing."

On the following day, as though in response, the Senate passed, 95 to 0, a resolution telling the president not to sign at Kyoto any treaty putting limits on the developed countries' emissions unless it also committed the rest of the world to take action. While lobbyists for some of the energy companies

had been pushing this idea, it spoke to much wider concerns in Congress. Specifically, the Senate feared, the treaty might hamper American industrial expansion to the benefit of China, with which this country is already running a very large trade deficit, and other newly industrializing economies.

Pursuing his effort at public education, the President held another White House conference on Oct. 6. Vice President Gore was again there, along with much of the Cabinet. Clinton set out four principles to guide policy. Three repeated past statements. “First, I’m convinced the science is real.” Second, the United States must be prepared to commit itself to “realistic and binding” goals. Third, those goals must permit the economy to keep expanding.

And fourth, he continued, all the world’s nations must participate. At Kyoto, the president said, the United States wants “meaningful, but equitable” contributions from all countries. That was new, and meant that he had decided against fighting with the Senate over China’s role. But it raised severe difficulties for the negotiators working toward a treaty text for Kyoto. Most of the developing countries were adamantly against any restrictions on their emissions until they had seen a serious and substantial effort by the rich economies. In addition, the Europeans complained that Clinton was changing the terms that had been agreed in the Berlin Mandate two years earlier. This new requirement has been introduced by the United States in the final weeks of a cumbersome negotiating process, involving more than 140 governments, that had been going on for two and a half years.

Japan’s government, as host of the Kyoto conference, was deeply anxious that it not become a fiasco. On the same day as Clinton’s White House conference, the Japanese brought out their own proposal for emissions goals: reduction to 5 per cent below 1990 levels by 2012. The proposal, intended as a compromise, also included complex formulas for differentiation — that is, for varying the goal in response to each country’s particular circumstances. For Australia, a major coal exporter and a prominent exponent of differentiation, it would work out to a reduction of 1.8 per cent.

The lower Japanese targets drew jeers from some environmentalists and reproaches from the Europeans. But then some Americans began pointing out that the European Union’s plan, when read closely, was revealed to provide wide differentiation among the EU’s member countries while firmly opposing any differentiation at all outside the EU. Critics also observed that the Europeans had had very little to say about the policies and methods by which they might actually achieve the targets that they were proposing. By this time even those politicians around the world who hadn’t been following global climate policy very carefully were becoming aware of the political and economic implications of a possible Kyoto treaty.

But up to this point the debate had a loose and slightly unrealistic quality, because the country with the greatest influence had not yet disclosed its position. That changed on Oct. 22, when the president went to the National Geographic Society in Washington, the proper setting, he thought, for an address on global climate change.

The President’s Oct. 22 Program

In the key line of his speech, the president said that the United States would commit itself at Kyoto to “the binding and realistic target of returning to emissions of 1990 levels between 2008 and 2012. And we should not stop there. We should commit to reduce emissions below 1990 levels in the

five-year period thereafter, and we must work toward further reductions in the years ahead.” That schedule is slower than the one proposed by the EU although, the administration argues, stronger than the Japanese position because it includes a longer list of greenhouse gases.

Clinton repeated his position on the developing countries, to leave no doubt regarding the American position at Kyoto. “...both industrialized and developing countries must participate in meeting the challenge of climate change. The industrialized countries must lead, but developing countries also must be engaged. The United States will not assume binding obligations unless key developing nations meaningfully participate in this effort.”

The American proposal is drafted to address the long term. As the administration conceives it, this program falls into four five-year phases. In the first, from now until 2002, the inducements will be all carrots and no sticks. The federal government would provide \$5 billion in incentives, including tax preferences, to encourage the development and installation of new technologies to produce and use energy more efficiently. To industrial plants that reduce their greenhouse gases now, the government will offer special credits to be cashed in when the mandatory restraints on emissions take hold later. As Gene Sperling, the president’s assistant for economic policy, put it in a press briefing, this first phase will be devoted to “the things America can do without waiting, without, we think, conflict.” The concept is to exploit first the technologies that already exist.

The second phase would be devoted to evaluation what has been accomplished and taking account of new developments in science. Nothing envisioned in these first stages would require congressional action. The method would be, again, carrots alone.

The binding and mandatory limits would be applied in the third phase, from 2008 through 2012, with the intention of getting the country’s greenhouse gas emissions back down to the volumes of 1990. As noted earlier American emissions in 1996 were 8.3 per cent above 1990, and by the administration’s calculation, by 2010 they would be 34 per cent above 1990 if they continued on the present track. As the president described it, voluntary reductions might well bring emissions close to the necessary 1990 target even before the mandatory limits go into effect. The enforcement system, he suggested, might follow the model of the present market for sulfur dioxide rights to control acid rain. That mechanism applies only to large industrial power plants, most of them run by electric utilities.

The suggestion here is that the future emissions reduction regime would operate mainly, if not exclusively, through the large industrial sources. Through two decades of experience, environmental policy makers have discovered that the American public has a fairly high tolerance for costs of protection as long as they are filtered gradually through utility bills. But it has very little tolerance for directly imposed costs, as in higher costs for gasoline. There is nothing in the president’s program that remotely hints at restraints on individual citizens’ activities, such as driving.

Nor is there any reference to nuclear power or hydropower, at present the only technologies that generate electricity on a large scale without producing carbon dioxide. Any indication of an expansion of either would incense much of the environmental movement, illustrating one of the many hazards in climate politics.

In the fourth phase of this program, the years after 2012, president said, the country would push its emissions down below the 1990 level to a target not yet specified.

Another notable omission in the president’s plan is any discussion of preparations for life in a somewhat warmer world. If the president is correct in believing that CO₂ emissions are raising tempera-

tures, some measure of warming is going to be inevitable in the 21st century. No one in political office, in this country or any other, is talking about the kind of draconian reductions in current emissions that would be required to hold the concentrations of CO₂ in the atmosphere at their current levels. The question is not whether the world will get warmer, but only how fast it will happen. Adaptation to a changing climate will be unavoidable. But it is a subject that carries a heavy ideological freight, for many people in the environmental movement suspect that any discussion of adaptation can only distract attention from the efforts to cut emissions.

The president's purpose in his Oct. 22 address was less to lay out a detailed program than to get Americans thinking about climate change and to take the prospect seriously. Before anything else can be done, he has evidently concluded, he has to build a political base for action. Throughout his address the president sought to elevate the issue of global warming without getting entangled in the difficult and controversial choices that a serious policy will, sooner or later, require. The time for vigorous administrative and regulatory blueprints will come only when, to use his metaphor, Americans have begun to hear the train's whistle. In the present sketch of a program, he chiefly wanted to get Americans into the habit of making a connection between changes in the weather and their own use and misuse of fossil fuel. Beyond that, he wanted the engineers and boards of directors running utilities to begin routinely taking into account the idea that at some point the equipment they install today may have to meet new and much tighter emissions standards.

His climate change program shows that his administration has learned from two notable defeats. From the fiasco of the BTU tax in 1993 it has learned not to try to impose on American consumers, and on the Congress that represents them, burdens for which few see the need. From the collapse of its health insurance reforms in 1994 it has learned not to try to articulate every detail of a large, new and intrusive program, but rather to start gently with only the roughest outline and leave most of the specifications to be filled in as necessity and experience dictate.

To those critics who find the administration's emissions targets too distant and too modest, it can reasonably be said that a more forceful effort would be unlikely to get through Congress and, in failing, might well kill the chance for any further action for years to come. The Europeans in particular, accustomed to parliamentary democracy and party discipline, sometimes have trouble understanding the constraints that the U.S. Congress puts on a president — and there is little reason to think that Clinton could get substantial emissions control legislation through the present Congress. Even getting a moderate Kyoto treaty — if there is one — through the Senate is likely to be difficult.

Whether the Kyoto conference produces a treaty or not, the negotiations will continue. Clinton is convinced, he declared, that the relationship between emissions and climate is real. But the scientists have also said that it's not the immediate response but rather the long term that counts. In the IPCC's reports and elsewhere they have warned governments that the mechanisms of the planet's climate are not yet well understood, and future findings may have unexpected implications for policy. Making a beginning is important but, according to this view, it needs to be a cautious beginning with plenty of latitude for course corrections. If the next decade sees a rising incidence of droughts and deluges, and a spread of tropical diseases, as the president has suggested, political support for his program will swell. If few of those climatic catastrophes actually develop, the program will fade and no harm will have been done.

But there is another side to this subject. However persuasive the administration's political calculations may be, certain economic realities also apply. In particular, the administration is caught in two dilemmas.

The first involves prices. Far from talking about increased energy prices, the administration has been saying that under its plans they would stay low or perhaps even fall. For example, the president spoke enthusiastically of unleashing powerful new forces for efficiency by deregulating the retail electric power industry. But the deregulation bills are being pushed through Congress chiefly by hopes of lower prices. Lower prices almost always means higher consumption and higher CO₂ emissions. The administration does not deal with this contradiction but merely defers it, with much else, to the future. That leads to the second dilemma.

The president's program depends heavily on the credibility of its promise that, a decade from now, mandatory reduction in emissions will be enforced by federal law. If people do not believe that — especially the people making decisions on the design of long-lived industrial equipment and consumer goods — they are unlikely to begin making the substantial investments that a low-emissions regime requires. The administration's offer of \$5 billion in subsidies and tax breaks does not begin to cover the enormous costs of shifting to that regime. To have any significant effect without greater outlays of federal money, it is necessary that both industry and, ultimately, consumers consider it highly probable that a time will come when cooperation is not longer voluntary.

The sketchiness of the Clinton program, its evasiveness on pricing and its very long timetable all militate against its credibility. Whether enforced requirements come into effect in 2008 will depend on the president and Congress in office in 2007. That, by any political calendar, is a very long way off. Two presidential elections will be held, under that schedule, before the final decisions are made on mandatory greenhouse emissions rules.

If the Kyoto conference fails to produce a treaty, it would be a serious blow to the credibility of Clinton's program. If it produces a treaty that the Senate refuses to accept, the blow would be even more serious.

Negotiating Issues at Kyoto

At Kyoto, the most difficult issue is likely to be the commitments that the United States wants from the key developing countries. On the basis of the Berlin Mandate the negotiators had assumed, until this summer, that commitments would be asked only of the two dozen or so developed countries plus the formerly Communist countries of eastern Europe and the Soviet Union. A negotiation involving more than 140 governments is necessarily a slow and ponderous affair. The United States, by throwing a new demand onto the table in the final weeks, has severely disrupted it.

The crucial respondent is China, and Clinton discussed climate change with China's president, Jiang Zemin, during his visit to Washington at the end of October. But nothing publicly disclosed so far suggests that Jiang is prepared to accommodate the American requirements.

At first it had seemed that the key issue would be targets and the timetables on which they would take effect. But that is not likely to be, in reality, a major debate at Kyoto. The issue has been effectively closed by Clinton's Oct. 22 address. The Europeans can grumble, but they cannot force the United States to move to a more drastic schedule.

A more troublesome question may be the one that goes under the label of differentiation. It asks whether the same target should apply to countries with different economies, in different stages of adjustment to lower emissions. To take extreme examples, should Japan, which already has taken many

steps to hold down fuel consumption including imposing high energy prices, now be held to the same standard as Russia, where the revolutionary advance from Soviet industrial management to a profit-driven economy is producing huge gains in efficiency? Should the same percentage reductions apply to countries with rapidly growing populations as those where the population is constant? Hardest of all to answer, should the same reductions be required of a country where the Gross Domestic Product is \$30,000 per capita a year, like the United States, as in one where it is \$3000, like China — let alone one where it is \$1400, like India? The many long preparatory negotiating sessions have not made much progress on that one.

President Clinton has emphasized the American interest in what's known as joint implementation. That means allowing a company in one country, like the United States, to earn emissions credits wherever they may be cheapest to obtain — in China, for example. It's an excellent idea, providing great efficiency and flexibility in a worldwide effort to reduce the production of greenhouse gases. But it's not simple to administer. It requires, among other things, agreement on the baselines from which credits are to be measured. That means that developing countries have to agree to accept the concept of baselines which, again, draws them into a treaty in which they expected to have no part. Another consideration is the size of financial flows from one country to another under joint implementation. One calculation suggests that, if the system is strong enough to have a significant effect on worldwide emissions, it will also create financial flows large enough to distort currency exchange rates and world trade.¹²

Any treaty setting international rules for emissions also has to decide who is going to measure those emissions and verify the reductions for which governments claim credit. At present measurement is done by some of those national governments and by UN agencies. But under a mandatory system, there will have to be agreement on a central data collector with authority to check the various governments' numbers.

Another major issue on which there's no agreement yet is sanctions — that is, penalties for countries that fail to meet their goals. If the mandatory goals are postponed to 2008, as the United States wants, perhaps the matter of sanctions could be postponed as well at Kyoto. But if it isn't addressed at all, it will undermine the credibility of the whole treaty.

A Final Comment

To be realistic it is necessary to view the Kyoto conference as the beginning, not the culmination, of the first serious international attempt to address greenhouse emissions and the prospect of climate change. Whatever happens at Kyoto will not be the last word but rather only a stage in working toward genuinely binding international agreements. That will disappoint those people who had hoped for dramatic action. But it will be consistent with the advice that scientists are still far from a reliable grasp of the planet's climatology, just as its diplomats and politicians are far from a consensus on dealing with it.

The climate is not the only factor affecting the quality of life on this Earth that will change in the 21st century. The population of the world is also rising rapidly. Its rate of growth has slowed over the last several decades, but it is still rising several times as fast as the CO₂ concentrations in the atmosphere. The world's economic output in recent years has been rising half again as fast as its population and there are few people — certainly not Clinton — who are prepared to slow down productivity in order to protect the climate. Global warming, population increase and economic expansion are all related to each other.

“It is our solemn obligation to move forward with courage and foresight to pass our home on to our children and future generations.” Clinton said at the National Geographic Society. But because of all that a restless and creative humanity does from day to day, our children and future generations are going to live in a world very different from the present one. A changing climate will be only one of those differences.

Endnotes

¹ A useful summary of this history is provided by Matthew Paterson, *Global Warming and Global Politics*, London and New York, 1996. See Chapters 2 and 3.

² U.S. Department of Energy, *Emissions of Greenhouse Gases in the United States 1996*, Washington, DC, Oct. 22, 1997.

³ While the reports were actually published in book form in 1996, their conclusions had become widely known in late 1995 as various meetings approved the texts. The section on science became public Nov. 30, 1995, at a meeting in Madrid.

⁴ Houghton, J. T., and others, eds., *Climate Change 1995: the Science of Climate Change*, Cambridge, 1996, p. 439.

⁵ This summary of the report’s summary comes from op. cit., pp. 1-7, 28.

⁶ Op. cit., p. 438.

⁷ Op. cit., p. 413, 416.

⁸ See, for example, the testimony of Ronald G. Prinn, director of the MIT Center for Global Change Science, before the subcommittee on energy and environment of the Committee on Science, U.S. House of Representatives, Oct. 7, 1997. Prinn told the committee that forecasts of slow or rapid growth are equally defensible, in the present state of knowledge, and in his view it would be as irresponsible to overreact as to do nothing.

⁹ See, for example, the testimony of John R. Christy, University of Alabama, Huntsville, before the Committee on Environment and Public Works, U. S. Senate, July 10, 1997.

¹⁰ Bruce, James P., and others, eds., *Climate Change 1995: Economic and Social Dimensions of Climate Change*, Cambridge, 1996, p. 26.

¹¹ Repetto, Robert, and Duncan Austin, *The Costs of Climate Protection: a Guide for the Perplexed*, World Resources Institute, Washington, 1997.

¹² McKibbin, Warwick J., and Peter J. Wilcoxon, *A Better Way to Slow Global Climate Change: Brookings Policy Brief No. 17*, The Brookings Institution, Washington, 1997.



As policymakers prepare for the upcoming meeting of the Conference of the Parties, Resources for the Future (RFF) recently launched *WeatherVane*, an internet forum dedicated to climate change policy. Published at <http://www.weathervane.rff.org>, *WeatherVane* is designed to provide the news media, legislators, opinion leaders, and the interested public with analysis and commentary on U.S. and international policy initiatives designed to reduce emissions of greenhouse gases.

Just as a traditional weathervane tracks the direction of the wind, *WeatherVane* tracks the developments in climate change policy, both internationally and within the United States. And, just as one of the basic rules for designing a weather vane is that there must be equal mass on either side of its center, its editorial aim is to present balanced and objective information, with no one perspective or viewpoint dominating our analysis and reporting. With the stakes potentially enormous on all sides of this complicated issue, *WeatherVane* strives to provide a neutral forum for careful analysis to complement the political calculations that so often drive decisions.

WeatherVane includes feature articles and news commentary written by the online publication's staff, RFF researchers, and invited policymakers and opinion leaders. The site also contains a number of departments. These include:

P O I N T ▶
◀ **C O U N T E R P O I N T**

An opinion forum for invited players in the climate policy debate. It gives experts from every corner — business, government, environmental groups, and academia — an opportunity to weigh in with their opinions on a selected topic. The essays solicited are “quotable,” on-the-record statements by the people most intimately involved in climate change policy.

W W W . W E A T H E R V A N E . R F F . O R G

A regular column by RFF's Ray Kopp to help decode and demystify energy and environmental data and create a better understanding of the link between economic data and policy formulation.



AT THE NEGOTIATING TABLE

At the Negotiating Table, a running column devoted to tracking developments in international policy, the key players in the debate, key reports issued by various government and intergovernmental groups, and international meetings.

Other features include: **Research Spotlight**, which sheds light on new climate findings and projects; **Sounding Off**, an open forum for site visitors to voice their opinions on a variety of topics related to climate change; and, an expanding glossary of economic, environmental and ecological terms often used in climate change negotiations.

Since its launch in mid-July, *Weathervane* has, as of November 1, hosted more than 12,250 site visitors who have logged nearly 212,000 hits to individual pages. In addition to the U.S., site visitors have logged in from Canada, Australia and New Zealand, Japan, France, Denmark, Norway, the Netherlands, the UK, Austria, South Korea, Taiwan, Italy, Malaysia, and Brazil, among other countries.

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