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EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

THE CHAIRMAN

Statement before the House Commerce Subcommittee on Energy and Power

Dr. Janet Yellen

Chair, Council of Economic Advisers

Tuesday, July 15, 1997

Good afternoon, Mr. Chairman and members of the Subcommittee. I appreciate the opportunity to discuss with you today the economics of global climate change.

Introduction

In his speech to the United Nations Special Session on Environment and Development in June, President Clinton emphasized that the risks posed by global climate change are real and that sensible preventive steps are justified. This assessment accords with the views of the more than 2300 economists, including 8 Nobel laureates, who signed a statement supporting measures to reduce the threat of climate change. The economists endorsed the conclusions from last year's report by the Intergovernmental Panel on Climate Change (IPCC), which said that governments should take steps to reduce the threat of damage from global warming, and went on to argue that market-based policies can slow climate change without harming the American economy.

At this time the Administration has not settled on a particular set of new policies to reduce greenhouse gas emissions. Instead, the President indicated in his U.N. speech that he intends to engage in a discussion with all interested parties about the problems posed by

greenhouse gas accumulations and the costs and benefits of corrective action. To this end, the President will hold a White House conference on climate change later this year, and Members of his Cabinet and other senior Administration officials will meet with Members of Congress, scientific and economic experts, environmentalists, local government officials, and business and labor leaders on a regular basis over the next several months to discuss issues related to climate change. This process is intended to inform the Administration's decision-making process, which will culminate in a U.S. policy position in the international negotiations in Kyoto in December of this year.

An important step in this -- and any -- policy process is determining the impact it will have on the American economy. President Clinton's top priority, since his first days in office, has been revitalizing the U.S. economy, creating jobs and investing in people and technology to enhance long-term growth. And, we have made tremendous progress. The President is not going to jeopardize that progress. Any policy he ultimately endorses on climate change will be informed by his commitment to sustaining a healthy and robust economy.

In my testimony today, I would like to describe some of the principal lessons that emerge from the voluminous literature, much of it relatively recent, on the economic impacts of policies to address global climate change.

Underlying Uncertainties

Before I begin my discussion of the economic literature, I would like first to acknowledge the uncertainties associated with estimating both the costs and benefits of reducing greenhouse gas emissions. To provide some perspective: as you all know, it is difficult to gauge exactly what impact the balanced budget agreement will have on the U.S. economy's growth rate, levels of employment, interest rates and consumption over the next five years. But with global climate change, it is orders of magnitude more difficult to gauge the effects on the economy: we are concerned with not just the next five years and not just the American economy, but, rather, we are dealing with economic and physical processes that operate globally and over decades, if not centuries.

Although a great many scientists believe that global climate change is already underway, the more serious potential damages associated with increasing concentrations of greenhouse gases are not predicted to occur for decades. This means that the benefits of climate protection are very difficult to quantify. And, while the potential costs of reducing greenhouse gas emissions may be more immediate, they too, as I will discuss below, are difficult to predict with any certainty. Many unanswered questions exist about the biophysical systems, potential thresholds, and economic impacts. In short, if anybody tells you that he or she has the definitive answer as to the costs and benefits of particular climate change policies, I would suggest that you raise your collective eyebrows.

Lessons from the Economic Literature

Let me now turn to the economic literature and try to summarize what I think we know so far about this difficult topic. Most economists have not addressed the benefits of climate protection, but rather have focused on the costs associated with alternative paths for reducing greenhouse gas emissions. The economic literature includes estimates using many different models to evaluate numerous alternative emission reduction strategies. In fact, because there are so many different models, economists initially faced difficulties in comparing results: they could not sort out the extent to which differences in results stemmed from differences in models and assumptions versus differences in baseline emission paths and policies. To solve this problem, thereby enabling meaningful comparisons, many economists have calibrated the various models by performing a standardized simulation. Specifically, they have assessed the consequences of stabilizing greenhouse gas emissions at 1990 levels by 2010 or 2020.

Within the Administration, a staff level working group -- the Interagency Analysis Team (IAT) -- has attempted to estimate some of the economic implications of climate change policies. They took the emissions scenario most often used in academic literature -- that is, stabilizing emissions at 1990 levels by 2010 -- as the starting point for their own analysis. I would emphasize that this scenario is not Administration policy; instead, it was picked to make comparisons with other models easier. The staff group employed 3 different models -- the DRI model, the Second Generation Model (SGM) and Markal-Macro model, all commonly available in the public sphere. In running these models, the staff adopted a common baseline and, to the maximum extent possible, similar economic assumptions. This modeling effort produced some

useful lessons, but as we found from the peer reviewers' comments, it also suffered from some serious shortcomings. Both the lessons and the shortcomings point to one clear conclusion: the effort to develop a model or set of models that can give us a definitive answer as to the economic impacts of a given climate change policy is futile. Rather, we are left with a set of parameters and relationships that influence estimates of the impacts. In my view, it is more productive to employ a broad set of economic tools to analyze policy options than to seek to develop a single definitive model.

I understand that a draft of the staff analysis was given to the Subcommittee this morning, along with the reviewers' comments. I would be happy to answer any questions you may have about this modeling effort.

The Lessons. Modeling efforts both inside and outside the Administration clearly indicate that economic analysis can do no more than estimate a range of potential impacts from particular policies and highlight how outcomes depend on underlying assumptions about how the economy works and the ways in which policy is implemented. However, the economics literature on climate change does point to several important lessons:

How the economy works. First, the magnitude of the costs of reducing greenhouse gas emissions in the various models depends crucially on a number of key assumptions about how the economy works. For instance:

- If firms in the economy can shift from high-carbon to low-carbon energy sources quickly, the costs of climate protection will be lower.
- If the economy has significant opportunities, even now, to employ energy-saving technology at low costs, the costs of climate protection will be lower.
- If technological change occurs at a rapid rate, or is highly responsive to increases in the price of carbon emissions, the costs of climate protection will be reduced.
- If the Federal Reserve pursues a monetary policy oriented toward keeping the economy at full employment, transitional output costs will be lower.

In short, the greater the substitution possibilities and the faster the economy can adapt, the lower the costs.

How the plan is implemented. Second, costs depend critically on how emission reduction policies are implemented. It boils down to this: if we do it dumb, it could cost a lot, but if we do it smart, it will cost much less and indeed could produce net benefits in the long run. The over 2300 signatories of the economists' statement argued that any global climate change policy should be rely on market-based mechanisms. Such mechanisms allow for flexibility in both the timing and location of emission reductions, thereby minimizing the costs to the U.S. economy. The economists concluded that "there are policy options that would slow climate change without harming American living standards, and these measures may in fact improve U.S. productivity in the longer run."

- The speed at which emissions reductions are required can have large effects on the estimated costs. It is important to allow sufficient lead-time for orderly investment in new equipment and technology. Alternatively, if emission reduction requirements are too far off in the future, the incentives to adopt energy efficient technologies are weakened because people may not view the policy as credible.
- A "cap and trade" system in which emission permits are issued and then traded among firms can substantially reduce the cost of meeting an emissions target by creating incentives for emissions to be reduced by those firms and in those activities where costs are lowest.
- International emission permit trading substantially lowers costs by applying the same cost-minimizing principle globally.
- So-called "banking" and "borrowing" of permits increases flexibility and lowers costs by allowing firms to change the timing of their emission reductions.
- Joint implementation, whereby US firms would receive credit for undertaking emission reductions in countries with low abatement costs, would also lower the domestic burden.

An additional aspect of implementation that profoundly affects the costs of reducing emissions concerns "revenue recycling." In many model simulations, emissions are reduced by using various market mechanisms. For many of these scenarios, the Federal government realizes an increase in revenues. Economic growth can receive a

long-term boost if these revenues are used to reduce distortionary taxes that diminish the incentives to invest, save or work, or if the revenues are channeled into deficit reduction, thereby lowering interest rates and boosting investment. In fact, in some models and scenarios, emissions reduction generates a net economic benefit when the revenues are recycled in a growth-promoting fashion.

Which countries participate. The third lesson that emerges from a study of the economics of climate protection is that developing, as well as developed, countries must be part of the process. While developed countries are responsible for most of the greenhouse gas currently in the atmosphere, developing countries are starting to catch up. By 2040, the largest fraction of emissions is estimated to come from developing countries. Thus, any comprehensive plan to deal with this global problem must include a mechanism to bring developing countries into the process.

The timetable for the inclusion of developing countries is also important. The sooner that developing countries face incentives to move away from carbon intensive energy sources, the less likely it is that they will become dependent on those types of fuels to spur their economic growth. In short, global problems require global solutions. We must find the technologies and solutions to lead the way.

Conclusion

Let me conclude. Policies to promote economic growth, create jobs, and improve the living standards and opportunities of all Americans have been and always will remain the top priority of the President and his Administration. In his remarks to the Business Roundtable on global climate change, the President said "[l]et's find a way to preserve the environment, to meet our international responsibilities, to meet our responsibilities to our children, and grow the economy at the same time."

Some of the key economic lessons we have learned that will help us achieve the President's goal include:

- Inherent uncertainty dictates that models should be expected to generate only a range of economic impacts, not definitive answers.
- Key assumptions about how the economy works directly influence the estimated costs of climate protection.
- Implementation of any policy needs to be market-based and flexible over time and space to achieve the lowest cost reductions.
- All nations, both developed and developing, need to participate.

Thank you. I would be happy to answer any questions you may have.

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Statement of Kathleen A. McGinty, Chair
Council on Environmental Quality
Executive Office of the President
Before the
House Science Committee
February 4, 1998

Mr. Chairman, and Members of the Committee:

I am pleased to be here today to describe the agreement reached in Kyoto and our activities, both at home and abroad, to follow-up on the substantial progress achieved in these negotiations. The Kyoto Protocol is an enormous step forward in what will undoubtedly be a long term global effort to safeguard our earth's climate system from unprecedented human-induced harm and to protect our children and grandchildren from the dangerous consequences that could unfold if we fail to heed the warnings from the world's leading scientific experts.

I am very pleased to report that we made tremendous progress in putting into place most of the key building blocks for a sustainable, market-based system for achieving reductions in greenhouse gases. All Americans can be proud of our achievement: U.S. leadership made the difference; the power and integrity of U.S. ideas won the day. On behalf of the President and Vice-President, I would like to commend the skills, perseverance, and dedication of the United States delegation at Kyoto. Nine agencies were represented in Kyoto. Led by our very able State Department team and Under Secretary Eizenstat, the U.S. delegation served our country well and honorably.

Our efforts following up on Kyoto are directed at achieving further progress in obtaining meaningful participation by developing countries and in implementing the President's plan to harness market forces at home and abroad to enhance energy efficiency, environmental quality, and economic prosperity.

Because this committee's jurisdiction focuses on science, I thought it would be useful, before discussing the outcome in Kyoto, to focus briefly on two noteworthy scientific developments that occurred at the end of last year. Based on extensive ground-based measurements, the National Oceanic and Atmospheric Administration (NOAA)-- our lead national agency for collecting weather statistics -- reported that 1997 was the warmest year based on records that date back over a century. While the temperature in any one year cannot prove or disprove anything about global warming, this year's statistics, further confirmed by two other sources of information about global surface temperatures (the Goddard Institute for Space Studies/NASA and the researchers at East Anglia University in the U.K.), follow a clearly emerging pattern. The nine warmest years of the century have occurred in the past 11 years. This pattern of warm years led one of NOAA's leading climate scientists to issue a statement that reaffirms a key conclusion contained in the latest international scientific assessment prepared by

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the Intergovernmental Panel on Climate Change -- that "the balance of evidence suggests a discernible human influence on global climate." Put another way, in the view of the vast majority of U.S. and international climate scientists, it is highly unlikely that the trends in global temperatures we have experienced are the result of the natural variability inherent to our climate system.

A second development relates to a study published in November in the medical journal Lancet. Most studies have examined the impacts of climate change on human health in terms of increased fatalities due to heat stress or the spread of infectious diseases. While by themselves, these areas represent considerable human health risks, this new study by the Working Group on Public Health and Fossil Fuel Combustion looked at the short-term impacts on mortality from air-borne particulate matter assuming no changes in estimates of energy use from fossil fuels. The analysis found that an estimated 8 million deaths globally due to exposure to fine particulates could be avoided between 2000 and 2020 if substantial steps were taken to limit greenhouse gas emissions from burning fossil fuels. In the United States alone, the study reports that thousands of deaths annually could be avoided during the 2000-2020 period. This study presents an important near-term benefit from actions to reduce greenhouse gas emissions that must be considered in addition to the long-term benefits of avoiding climatic disruptions. EPA's recently promulgated fine particulate standard begins to address this public health concern and should result in both some reductions in greenhouse gas emissions along with reducing the number of deaths associated with exposure to fine particulates.

THE KYOTO PROTOCOL

Although the agreement reached in Kyoto will not reverse the build-up of greenhouse gases in the atmosphere, it will begin slowing the rate of increase. Equally important, it puts in place a solid foundation upon which the global marketplace can increasingly be engaged in reducing greenhouse gas emissions. The agreement draws heavily from the proposals advanced by the United States and effectively rejects alternatives proposed by others that would have substantially increased the costs of action.

In October of last year, the President outlined a number of elements critical to achieving an effective agreement. He underscored that any agreement had to contain: 1) realistic medium-term, legally binding targets for developed countries; 2) flexible, market-based implementation mechanisms; and 3) measures to secure the meaningful participation of key developing countries. I am pleased to report that we fully achieved our first two objectives, and through the innovative clean development mechanism made a down payment on the third. Next steps must include further work on operational details of international emissions trading, compliance mechanisms, and developing country participation. The President has made it clear that he does not intend to send the Kyoto Protocol to the Senate for ratification until we have achieved meaningful participation by key developing countries.

Even with the complexities of climate science and the challenge of crafting policy solutions, we found in Kyoto a new spirit of resolve, a new openness to market-based approaches, and a new hope for global cooperation.

Key elements of the U.S. proposals that were adopted as elements of the Kyoto Protocol include the following:

-- Legally binding emission targets: The agreement establishes legally binding targets for developed countries. By advancing from the existing non-binding aim contained in the Framework Convention to a binding target, we believe efforts to address global warming will take on greater significance and commitment. Moreover, our insistence on a legally binding regime encouraged other countries to think more soberly about their reduction proposals. Ultimately, the U.S. agreed to a target of a 7% reduction from baseline levels. Given the changes in the definition of the baseline for the three long-lived chemical compounds (HFCs, PFCs and SF6) from 1990 to 1995 combined with a change in the way sinks are accounted for in the baseline, the actual reduction required in the U.S. is no more than 2-3% more than the President originally proposed as the U.S. negotiating position.

-- Budget periods spanning five years: The U.S. proposal for a five-year budget period was adopted rather than the single-year target proposed by others. Allowing nations to average over five years increases flexibility and lowers costs by smoothing out any short-term variations in emissions based on fluctuations in energy prices, economic activity, business cycles, or weather.

-- First budget period beginning in 2008 and ending in 2012: The U.S. proposal for a budget period beginning in 2008 was accepted. This provides a full decade for redirecting efforts toward greater energy efficiency, allowing for substantial changes in investment decisions and turnover in capital stock. Other proposals calling for reductions to begin as early as 2003 were rejected. Action during this time period appears critical to redirecting emissions toward a pathway that allows for stabilization of greenhouse gases at a doubling of prehistoric levels.

-- Market-basket approach including all 6 gases: The U.S. proposal held sway on including all 6 major greenhouse gases in the calculation of a target. Moreover, we secured trading among these gases so that the lowest cost reductions can be secured.

-- Inclusion of sinks: The U.S. also urged, and the Parties agreed, to allow actions that capture and sequester greenhouse gases (sinks) to be included as part of meeting the target. Carbon sequestration, through activities such as reforestation programs, offers potentially attractive low cost opportunities to reduce net greenhouse gas emissions.

-- International Emissions Trading: The U.S. secured acceptance of emissions trading as a flexible, market-based approach to lowering the costs of meeting a target. While the U.S. has experience with emissions trading in the acid rain and lead phase-out programs, it was a new concept to the international community and incorporated for the first time in the Kyoto

agreement. A number of studies have suggested that the costs of compliance can be significantly reduced if flexible implementation is permitted.

-- Clean Development Mechanism: Under this innovative provision, developed countries will be able to use certified reductions from project activities in developing countries to contribute to compliance with greenhouse gas reduction targets. This provides both a mechanism to secure low cost reductions throughout the world and a powerful economic incentive to lead developing countries toward more climate-friendly technologies. This represents an important avenue for developing country actions to reduce emissions in cooperation with U.S. private sector firms that have the technology, resources and know-how to make such reductions in ways that save energy, reduce emissions and improve performance. This provision effectively embodies the U.S. proposal for joint implementation with credit for activities in developing countries. It also provides, again at U.S. insistence, an incentive for early action by permitting credit for reductions that occur beginning in the year 2000.

-- Emissions from the Military: The U.S. obtained agreement on its proposal for an exemption for emissions from multilateral operations pursuant to the United Nations charter. This decision will ensure that nations do not hold back from participating in humanitarian, peacekeeping and other operations due to concerns about greenhouse gas emissions.

NEXT STEPS -- INTERNATIONAL ACTIVITY

While the Kyoto agreement secures major elements that the U.S. sought to ensure such as flexible, market-based mechanisms for addressing concerns about global warming, future negotiations will still need to address several important issues. The Parties now move forward with working group meetings scheduled for June and the next meeting of the Parties to the Climate Convention scheduled for November in Buenos Aires. Issues that will be addressed at that and subsequent meetings include the following:

- -- guidelines for implementing the international emissions trading provisions included in the Protocol;
- -- guidelines for implementing the clean development mechanism;
- -- further refinement of how sinks will be treated;
- -- participation of developing countries; and
- -- additional provisions related to compliance and enforcement.

NEXT STEPS -- DOMESTIC ACTIONS

In his State of the Union message, and just last Saturday in his radio address, the President described his proposed tax cut and technology initiative aimed at jump-starting efforts to enhance our nation's energy efficiency and economic competitiveness. This program was laid out in detail on Monday with the release of the President's Budget. It targeted $6.3 billion over the next five years -- will provide incentives for our industry, businesses and consumers to make and purchase

more energy efficient products. It challenges the innovative abilities of the private sector and helps ensure that those firms that succeed in developing energy saving products will have a substantial market in which to sell those products. For consumers, it provides a double bonus. First it helps reduce the initial costs of purchasing energy saving products. Second, throughout the lifetime of the product, consumers will benefit from reduced energy costs. The President's 1999 Budget includes $3.6 billion over five years in tax credits aimed at encouraging broader use of existing energy saving technologies and spurring further innovations. It also includes $2.7 billion in new research and development investments to ensure that innovative greenhouse gas reducing products continue to flow through the pipeline and into the market-place in the coming years.

Examples of specific provisions contained in the President's budget include the following:

-- Tax credits for highly fuel efficient vehicles: This credit would be $4,000 for each vehicle that gets three times the base fuel economy for its class beginning in 2003. A credit of $3,000 would be available beginning in 2000 for vehicles that get double the base fuel economy for its class. These credits would be available to jump start these markets and would be phased out over time.

-- Tax credits for energy efficient equipment: These credits (all of which are subject to caps) would include a 20% credit (subject to a cap) for purchasing certain types of highly efficient building equipment, a 15% credit for the purchase of solar rooftop systems, and a 10% credit for the purchase of highly efficient combined heat and power systems.

-- Research and development support: Additional resources are provided for key areas of renewable energy and for carbon sequestration. Activities related to the Partnership for a New Generation of Vehicles include expanded research in fuel cells, batteries and ultra-clean combustion engines. Two new partnerships are proposed for heavy trucks and light trucks, including sport-utility vehicles.

These budget proposals implement one of the key commitments made by the President in his October 22nd speech at the National Geographic Society. In that speech the President also pledged: that the federal government, as the largest user of energy, would take the lead in enhancing our efforts at improving energy efficiency; that we would work closely with the private sector in developing voluntary programs to reduce emissions; that we would grant early credit for reductions that occur prior to a binding target; and that we would help shape utility restructuring in ways that contribute to reductions in greenhouse gas reductions. We are working today to make all of these commitments real.

Beyond the President's budget proposals, a number of encouraging developments have taken place in both the public and private sectors in the short time since Kyoto. Let me briefly mention four of them today.

1. Fuel Efficient Vehicles: At the recent automobile show in Detroit, General Motors (GM) announced four passenger hybrid electric and fuel cell vehicles that can achieve fuel efficiency of up to 80 miles per gallon -- production prototypes of which could be available in 2001 and 2004. Ford also unveiled a prototype of a mid-size high efficiency sedan that achieves 63 miles per gallon using an advanced diesel engine. Ford also plans to develop hybrid electric and fuel cell versions of this prototype. Chrysler unveiled its full-size experimental hybrid electric vehicle with a projected 70 miles per gallon fuel economy. These technological advances were made possible through the efforts of the Partnership for a New Generation of Vehicles between the Administration, U.S. auto companies, and their suppliers.

2. Compressed Air Challenge: Air compressors represents about 3% of total industrial electricity use and 1% of total U.S. electricity consumption. In mid-January, DOE and major equipment manufacturers announced a new agreement aimed at significantly enhancing efficiency in this sector. Under the agreement, changes in equipment and operating practices are anticipated to reduce energy use in this category by 10% by 2010 at a cost savings of $150 million per year while reducing greenhouse gases by 700,000 metric tones of carbon.

3. BP Solar Opening: Last Friday, BP Solar opened its first manufacturing plant in the United States. Located outside San Francisco, the Vice President flipped a switch to start the plant. This facility will produce a new generation of thin film photovoltaic cells. Spurred by DOE's recently announced Million Solar Roof Initiative, planned plant expansions and openings by other solar cell manufacturers, as well as the President's budget request for enhanced funding for renewable technologies, demonstrate that efforts to increase market penetration based on harnessing the sun's energy are now making significant advances. In fact, the Vice President was able to announce that the private partners in the Million Solar Roofs Initiative have already announced plans for well over half the solar panels needed to get to our goal--a full ten years early.

4. VCR/TV Energy Star Program: TV and VCRs represent one of the fastest growing sources of electricity demand. Consumers spend over $1 billion annually to power VCRs and TVS that are switched off. In early January the Vice President announced a pathbreaking partnership between EPA and the major manufacturers of these electronic goods. The program is quite ambitious with a goal of achieving up to a 70% reduction in energy use when the equipment is turned off without sacrificing product quality, utility or increasing costs. The average household could cut its energy bills by 30% or $400 per year by switching to the full line of Energy Star products.

These examples further underscore the potential for energy and cost saving opportunities to reduce our emissions of greenhouse gases. The Administration is working on a more detailed economic analysis of the impact of the targets reached in Kyoto. Council of Economic Advisers Chair Janet Yellen will be prepared to discuss the analysis at a hearing next week before the Senate Foreign Relations Committee.

In sum, the Kyoto Protocol represents a significant diplomatic achievement for the United States and a key contribution to the critical effort to safeguard our children from the effects of potentially severe climatic disruption. At the same time, this effort is a work in progress. Much remains to be done if we are fully to seize the environmental and economic benefits of action on this pressing issue. We in the Administration look forward to working with Congress in the months and years ahead to further our efforts to address the risks associated with global warming in a way that enhances our environmental and economic well being.

I welcome the opportunity to visit with you today and look forward to our continued dialogue and exchange.

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Statement of the
Global Climate Coalition
Before the
House Committee on Science
February 4, 1998

Constance D. Holmes
Chairman, Global Climate Coalition
Sr. Vice President, Policy, The National Mining Association

Mr. Chairman and members of the Committee, I am Connie Holmes, chair of the Global Climate Coalition (GCC). GCC has been actively engaged in both the international negotiations and the domestic debate on climate for over 8 years. Our members form the backbone of the American economy and represent more than 230,000 companies from manufacturing, agriculture, forest management, transportation, energy, utilities and mining. Our members range from the smallest companies to major industry.

At the outset, let me express our appreciation to the members of the House, and especially to you as chair of the House Climate Observer Group appointed by Speaker Gingrich. Your presence at the recent Kyoto negotiations was invaluable, Mr. Chairman and we hope that the Observer Group remains as active in 1998 as you were in 1997. I do not need to try to recount the Kyoto experience to you except to note that as unusual an event as it might have appeared to you and others, it was, in fact, very similar to the negotiating conference in Berlin in 1995 and the decisions that led to Kyoto. There is one major difference however, the outcome of Berlin was a mandate to negotiate. The outcome of Kyoto is a protocol that will ultimately be presented to the Senate and, if ratified will be a legally binding treaty with which the American people must comply - no matter what the effects on our economy, our international competitiveness, our employment level or our national sovereignty.

The GCC welcomes this opportunity to offer the Committee its views on the Kyoto Protocol and its very real implications for the United States.

what constitutes responsible action and the Kyoto Protocol is not responsible action. It is a flawed agreement and cannot be salvaged with bilateral Band-Aids or further negotiations in Bonn, Buenos Aires or elsewhere. It is not a global agreement and will not work. Thus, we recommend that the President not sign and that the Congress not approve the Kyoto Protocol.

The Protocol is flawed for several reasons.

First, the agreement reached in Kyoto on December 10-11, 1997 is not an effective or equitable climate policy and may never be regardless of U.S. efforts. Major elements remain to be negotiated, and until those elements are known and analyzed, the full impor of this proposed protocol can not be understood.

Just a few examples of the major decisions outstanding, and left to further negotiation illustrate the difficulty of obtaining a workable agreement: rules for international emissions trading; the rules for the Clean Development Fund; and the methodologies for measuring emissions from sources and removals by sinks. These will apparently be done as "decisions" of the Conference of the Parties since it is not possible to "amend" a protocol that is not yet in force. These COP decisions made by some 160 nations, which at the bottom line will be a big determining factor in US economic and energy policy in the future, may evade the Senate's review.

Compliance and enforcement are yet other questions that have been deferred until after ratification of the Protocol. So again, Congress is being asked to approve an incomplete package.

These are fundamental flaws, Mr. Chairman, whether or not the science of climate change gets any more certain.

Secondly, implementing the Kyoto Protocol would result in serious harm to the U.S.

production of goods and services, and the creation of new jobs. This form on unilateral economic disarmament makes no sense.

Third, as costly as the regulatory regime that would be created by the Kyoto Protocol in its present form might be, it would produce little or no discernible environmental benefit, as the Chairman Emeritus of the UN Intergovernmental Panel on Climate Change, Bert Bolin, pointed out again in an article in SCIENCE on January 16, 1998.

Fourthly, even the Administration agrees that the Kyoto Protocol in its present form does not meet the requirements of S. Res. 98 with regard to participation by developing nations. Knowing that, the Administration had the choice of walking away from the negotiating table in Kyoto. Instead, it said it will not accept binding commitments until "meaningful" participation of developing nations is achieved. Mr. Chairman, you know from your own conversations with other delegates in Kyoto, the likelihood of that happening is extremely small. Nevertheless, the Administration has also announced, and the President reaffirmed in his State of the Union message, that it will start right now to take steps to meet the goals of the Kyoto Protocol regardless of S.Res.98. In light of this, one can only wonder how any more seriously developing nations will take future efforts by the Administration to obtain their participation. This is unlikely to be viewed as negotiating from a position of strength.

S. Res. 98 does not endorse binding commitments for the U.S. unless a protocol also includes binding commitments for all other parities. This is not a case of "rich" nations versus "poor" nations, some of whom are not particularly poor. A two-tier system, as currently envisioned by the Kyoto Protocol is unworkable, economically or environmentally.

The Kyoto Protocol is Fatally Flawed

As noted at the outset, the Kyoto Protocol is fatally flawed and may not be "fixable." It is the product of a negotiating process, begun three years ago in Berlin, that [illegible]

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emissions. Since Berlin, some Administration officials have privately admitted that the Berlin Mandate was a bad agreement. But now we have a protocol that will never produce cost-effective equitable policies.

- It sets a U.S. emissions target, which cannot be met without causing severe economic and social dislocation.
- It transfers power to UN bureaucrats who could intrude into U.S. legislative and Constitutional processes by controlling U.S. economic growth, limiting the conduct of foreign policy by exempting only those greenhouse emissions that occur from UN sponsored "multilateral operations."
- It prohibits Senate reservations and modification to the Protocol, and potential allows for future tightening of emissions targets without explicit Senate approval.
- Its costs are a "stealth tax" on American consumers and businesses and it creates a UN bureaucracy that likely would be dominated by countries quite willing to use provisions in the Kyoto Protocol to impose economic and social change on U.S. families, workers and businesses--for little, if any, environmental gain.

Americans need to be informed. People need to know that the U.S. Energy Information Administration (EIA) estimates that 2010 U.S. carbon emissions will be 44% above the Kyoto target. And they need to know that compliance with the Protocol could:

o Cost the American economy about 3% of GDP or about $300 billion per year in lost economic activity by 2010.
o Cut the average household income $2,000--annually;
o Produce 2.5 million fewer jobs in 2010 than now projected;
o Reduce business investments by $35 billion/year; and
o At least double U.S. environmental compliance costs.
(Please see Appendix B.)

U.S. officials claim that "market-based instruments," such as Joint Implementation (JI)

Projects within the developing world must now be accepted by a "Clean Development Mechanism". The final design of both JI and the CDM --and the issue of costs and credit--will be determined later by a new UN bureaucracy, which also must be created.

Emissions trading suffered a similar setback. Administration officials had argued that the sulfur dioxide trading program, a part of the Clean Air Act Amendment, provided an effective model for trading greenhouse gas emission permits. The SO2 program covers one gas, only part of one industry, and is entirely domestic. Further, the "jury is still out" with respect to permit costs. They are lower today than expected, but when phase two of the Clean Air Act takes effect in 2000 with broader more stringent restrictions on SO2 emissions, and when the emissions that have been "banked" are used, prices are likely to rise significantly.

Creating an effective international emissions trading program covering six gases and all household, commercial, industrial, agricultural, forestry and related sources of greenhouse gas emissions is a far greater challenge. The difficulties experienced by the UN weapons Inspection Program in one nation alone - Iraq - and the routine piracy of American intellectual property despite international trademark and copyright laws are better analogies of the prospects, and difficulties, of a UN emissions trading program.

Apparently, we are supposed to overlook the fact that no international body exists to allocate, monitor and enforce such a program. Nor, if everything fell perfectly in place, would the trading concept outlined in the Kyoto Protocol achieve its original goal--dramatically cutting costs as well as emissions. Instead, the Kyoto agreement limits trading to Annex I, or industrialized countries only. This means that the least costly opportunities to reduce emissions--opportunities located largely in developing countries--are off the table. As now envisioned, the trading program outlined in the Kyoto Protocol could cost the United States two or three times what the Electric Power Research Institute estimates would be case if all nations freely traded.

The GCC could list other concerns and areas of misinformation [illegible]

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to a few countries. (The EIA report is attached as Appendix C.)

The closest example we have is the energy price shocks of the 1970s and early 1980s. During the 13 years between 1973 and 1985, real U.S. energy prices quadrupled. We experienced three recessions and GDP declined in four years. Because of these changes, energy use merely stabilized over a 10 year period as the ratio between carbon input and GDP declined about 2.3% per year [See Appendix D]. To cut U.S. emissions during a similar period of time ahead of us--from 1998 to 2010--the U.S. carbon to GDP ratio will have to decline 3.8% per year. Let me emphasize: to meet the Kyoto target, the U.S. carbon/GDP ratio must decline 70% more rapidly than in a period when real energy prices quadrupled and U.S. economic growth collapsed. In short, history informs us that if regulation or legislation is used, in the name of the Kyoto Protocol, to sharply increase the price of coal, home heating oil, gasoline and diesel and aviation fuels, the U.S. economy will be destabilized and a prolonged recession could follow. The gas lines and rationing of the 1970s pale by comparison.

It's worth repeating that government--not industry--analysts conducted this study. And it's worth remembering the impact on personal lives of the 1970 and 1980 energy price shocks. Some may try to avoid these unpleasant truths by saying that the EIA results are an isolated example, or that technology will find an answer. But that's not the case. EIA's latest report is supported, directly and indirectly, by other government and independent studies, including analyses by WEFA, Inc, DRI/McGraw-Hill and Charles River Associates, among other independent firms, as well as by noted professors at Harvard, Yale, the Massachusetts Institute of Technology and Stanford University.

Moreover, the Administration's own efforts to find acceptable "solutions" to limiting near-term U.S. greenhouse emissions supports industry's assertion that quickly switching from fossil fuels to non-carbon technologies would be very costly. Here is a quick summary of Administration efforts since the Berlin Mandate:

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stabilize emissions by 2010 at no cost, while virtually eliminating corporate income taxes. A DOE study released at the same conference showed a near-term loss in GDP.

o In July, 1996 at the Second Meeting of the Conference of the Parties, then-Undersecretary of State Tim Wirth sought to remedy these discrepancies by announcing in Geneva that the Department of Commerce would lead the Administration's effort to resolve methodological differences and to provide Congress and industry the results of its analysis by the year's end.

o In late 1996, the Administration failed to release its promised Argonne National Laboratory study of climate policy impacts on six energy-intensive industries. Leaked to the press in April, 1997, the Argonne study showed "devastating" impacts on several key industries and a loss of jobs, capital and technology to overseas competitors.

o Shortly after resigning in 1997 as director of the government's interagency analytic team, Dr. Everett Ehrlich, stated in a *Washington Post* op-ed that gasoline pump prices would need to rise 25 cents a gallon to achieve stabilization.

o During July 17, 1997 testimony before the Senate Committee on Environment and Public Works, Dr. Janet Yellen, chair of the President's Council of Economic Advisers, said that "the effort to develop a model or set of models that can give us a definitive answer to the economic impacts of a given climate change policy is futile."

Nevertheless, some officials argue that a "Five Labs" study completed late last year demonstrates that technology--and a $25 to $50/ton carbon tax--could stabilize 2010 greenhouse emissions around 1990 levels. Setting aside the unrealistic assumptions regarding technology innovation and diffusion, stabilization is not what the Kyoto Protocol calls for--it requires the U.S. to cut--and keep--U.S. emissions 7% below 1990 levels in little more than a decade.

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Common sense argues against a quick technology fix. Technology is a powerful tool. But inventions cannot be scheduled, development costs are not free, and the replacement of existing capital stock with more energy-efficient processes and equipment would take decades and cost trillions of dollars. The other options--rationing and/or sharply higher energy taxes--are as politically unacceptable as they are socially and economically destructive. The Global Climate Coalition believes that the Kyoto Protocol paints the United States into a corner.

Either approach--using taxes or rationing to sharply reduce energy use, or subsidizing some technologies while setting standards aimed at quickly phasing out some fuels while increasing the use of less carbon-intensive technologies or processes--would cause substantial harm to the U.S. economy. No doubt such policies would reduce emissions somewhat. But the economic and political costs of implementing policies that fulfilled the U.S. pledge in Kyoto would be enormous. And, even if Americans agreed to shoulder this burden indefinitely, draconian domestic policies would have little or no environmental impact. This would only happen if developing countries also took meaningful--and simultaneous--steps to limit their emissions.

Sound science and Senate Resolution 98 present a far better approach than the Kyoto Protocol to reducing any human risk to the climate.

Climate change is a bipartisan issue. It is bipartisan because scienctific fact doesn't have to answer to individual or party preferences. Climate change is a bipartisan issue as well because of the enormous economic and social costs associated with any attempt to radically alter U.S. energy patterns. Representatives of labor, agriculture, and business and industry groups recognize this, and worked hard in Kyoto to voice their opposition to a bad agreement. Members of this Committee, other House committees and the Senate also sent observers. Like you, the Global Climate Coalition regards climate change as a legitimate scientific, economic and policy issue. But somehow, we've gotten off the track.

One way back is to return to the science. Everyone present knows that the 1995 Intergovernmental Panel on Climate Change concluded that "the balance of

suggests a discernible human influence on global climate." The two sentences in the report which precede this statement are never quoted, but they state: "Our ability to quantify the human influence on global climate is currently limited because the expected signal is still emerging from the noise of natural variability, and because there are uncertainties in key factors. These include the magnitude and patterns of long term variability and the time-evolving pattern of forcing by, and response to, changes in concentrations of greenhouse gases and aerosols, and land surface changes."

In 1997, the three lead authors of that chapter--Working Group I, Chapter 8--had this to say about the use of the one sentence of the report:

> "It's unfortunate that many people read the media hype before they read the chapter....I think the caveats are there. We say quite clearly that few scientists would say the attribution issue was a done deal." Dr. Benjamin Santer, Lawrence Livermore National Laboratory, *Science*, Vol. 276, May 16, 1997.

> "We're in a position here scientifically where we sort of see the smoking gun, if you wish, but we don't know whose prints are on the gun." Dr. Tim Barnett, Scripps Institute of Oceanography, Associated Press, October 6, 1997.

> "Just from a pure climate point of view, another 20 years of doing nothing is unlikely to mess things up." Dr. Tom Wigley, National Center for Atmospheric Research, *The New York Times*, September 9, 1997.

Additional quotes by leading scientists are included in **Appendix E.**

Climate change is a long-term issue, not an imminent crisis. Imposing a quick "fix" now on an uninformed and reluctant public runs the risk of depleting political resolve that later may be needed.

A far better approach than the Kyoto Protocol is set forth in Senate Resolution 98:

"(1) the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would—

(A) mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period, or

(B) would result in serious harm to the economy of the United States; and

(2) any such protocol or other agreement which would require the advice and consent of the Senate to ratification should be accompanied by a detailed explanation of any legislation or regulatory actions that may be required to implement the protocol or other agreement and should also be accompanied by an analysis of the detailed financial costs and other impacts on the economy of the United States which would be incurred by the implementation of the protocol or other agreement."

By appropriately balancing economic and environmental concerns, S.R. 98 takes a long-range, global approach and calls on developing countries to agree to take meaningful action in similar compliance periods before the U.S. moves forward on this important issue.(See Appendix F.) The GCC supports this approach. We also support voluntary mitigation activities, continued research to reduce scientific uncertainties, further exploration of the benefits that might be realized under global JI and emissions trading programs, and open and public debate of this important policy issue.

Finally, we urge the President not to sign the Kyoto Protocol. The flaws in the agreement cannot be defended, explained or even remedied through further negotiations. Efforts to implement it would cause serious damage to the U.S. economy while providing little, if any, reduction in the risk that human activities are adversely and substantially affecting global climate.