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GREENHOUSE GAS EMISSIONS AND EMISSIONS TRADING IN NORTH AMERICA: KYOTO TREATY AND U.S. INITIATIVES

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INTRODUCTION

Good morning. It is a pleasure to be back at this conference again. Several years ago, I was given the opportunity to speak on the differences between environmental law in the United States and Europe. Today we will be exploring the issue of global warming associated with greenhouse gas emissions, and the different regulatory approaches being taken to address that international environmental concern. The timing of this conference was perfect, given the movement of the Kyoto Protocol,[1] as well as United States' recent decision to go its own way.

"If It Is True, My Country Goes Away"

Several years ago, I had the opportunity to represent the government of the United Arab Emirates (UAE), over in the Arabian Gulf, to help create their Federal Environmental Agency and draft comprehensive federal environmental laws for that country. Part of my job was to assist in implementing environmental treaties to which the UAE had become a signatory over the years.

In conjunction with one meeting attended by ministry representatives of the Gulf Cooperation Council, before the Kyoto Protocol had moved to signature, I attended a reception where environmental issues were a topic of discussion. I was talking about the global warming issue with an official from the island nation of Bahrain, going through some of the academic uncertainties that were still a subject of great debate. I pointed out how the science was still unsettled in some areas, and the fact that a particularly hot summer in a given could not really be attributed to the phenomenon of global

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[1] *See* Kyoto Protocol to the United Nations Framework Convention on Climate Change, U.N. Doc. FCCC/CP/1997/7/Add.2, 37 I.L.M. 32 (1998) [hereinafter Kyoto Protocol].

warming. When I suggested that we really needed to settle some of the unresolved questions before making the hard decisions with serious economic implications, he then turned to me and said, "But, if it is true, my country goes away."

After pondering the magnitude of that "if" from his perspective, I conceded the academic debate and meekly replied, "Good point." I did not really know what to do with that statement. The ultimate impacts of global warming can be devastating if it is as serious a problem as we think it may be, and the changes will be much more dramatic in some specific locations. While need to look at how to address the issue to avert potential disasters, also must balance the associated costs and economic distortions as we go forward, which is the key stumbling block. It is difficult from the United States' perspective to move forward with ratification and implementation of a Protocol that does not seek to control the majority of greenhouse gas emissions attributable to countries not covered by the Protocol, who clearly are seeking to gain a competitive economic advantage in the world marketplace.

Thinking of my friend from Bahrain, I also checked the statistics on that country's *per capita* greenhouse gas emissions. Bahrain actually rests at third on the list in the entire world, surpassed only by the UAE and Qatar.[2] So it is a little duplicitous for a country not taking on any reduction credits to simply continue burning fossil fuel at such tremendous *per capita* rates without addressing the economic burdens placed on those subjecting themselves to substantial reductions.

THE PROBLEM: GREENHOUSE GAS ACCUMULATION

First, what is the real problem here? I think it is worth taking just a minute to talk about the greenhouse effect itself.

Generally, the atmosphere provides a natural greenhouse effect, which keeps the earth warm enough for human habitation. The average global temperature is about 60 degrees Fahrenheit.[3] There are several greenhouse gases – primarily carbon dioxide (CO_2), methane, nitrous oxide (NO_x) and water vapor – that trap heat and help warm the earth's surface.

Some of sun's infrared energy comes straight through the atmosphere, but a good portion of it is absorbed and then readmitted in all directions by the

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[2] *See 1996 Emission of CO_2* Per Capita, *at* http://www.epa.gov/globalwarming/presentations/emissions/stock/all_emissions.pdf.

[3] Average global temperature is 12-13 degrees Celsius. *NOAA Paleoclimatology Program*, *at* http://www.ngdc.noaa.gov/paleo/paleo-ed.html (last visited June 13, 2002) [hereinafter NOAA]; ENVIRONMENTAL PROTECTION AGENCY, CLIMATE SCIENCE 1 (1997), *at* http://www.epa.gov/globalwarming/presentations/science/stock/all_science.pdf [hereinafter EPA CLIMATE SCIENCE].

greenhouse gas molecules. This causes increased warming of the earth's surface in the lower atmosphere. The balance of those greenhouse gases affects the relative average temperatures of the world. For a given concentration of greenhouse gases in the atmosphere, the resulting amount of radioactive forcing or heat-trapping of energy can be predicted with reasonable precision. *Exactly* how the earth's climate will respond to increased amounts of greenhouse gases depends on a complex interaction between the atmosphere, the oceans, the land, the ice, and the biosphere.

The greenhouse gas effect and global warming interaction is now a well-documented fact. Precisely how it happens and how much greenhouse gas does exactly what to which countries is a matter of great debate, however, and the science will not be completely settled until after catastrophic results have already occurred in some areas. We do know that the atmospheric concentrations of greenhouse gases have increased significantly since the Industrial Revolution. Carbon dioxide is up more than 30 percent, methane 100 percent, and nitrous oxide 15 percent.[4] If we continue on our current path, greenhouse gas concentrations are projected to double the pre-Industrial levels by 2060.[5]

Another fact is important to keep in mind: many of these greenhouse gases remain in the atmosphere for a long time - that is decades or centuries - leading to a significant cumulative impact. Carbon dioxide has an atmospheric lifetime of between 50 and 200 years.[6] It is now at a concentration of about 370 parts per million volume (ppmv) and increases about 1.5 ppmv annually.[7] The pre-Industrialization level was about 280 ppmv,[8] so we are nearing a 35-percent increase in that concentration. While methane's atmospheric lifetime is only twelve years (the smallest of all of the greenhouse gases that we measure[9]), its concentration in the atmosphere is

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[4] *See id.* at 3. Carbon dioxide concentrations are up from about 288 parts per million volume (ppmv) from about the year 1860 to 369 ppmv today. *See Current Greenhouse Gas Concentrations, at* http://cdiac.esd.ornl.gov/pns/current_ghg.html (Sept. 2001). Methane concentration is up from 838 parts per billion volume (ppbv) to 1726 ppbv; nitrous oxides are up from 289 ppbv to 315 ppbv. *See id.* In reference to CO_2 concentrations, human activity is responsible for almost zero of the former number, and about five percent of the latter. *See* H. Sterling Burnett, *Who's Afraid of CO2?, at* http://www.ncpa.org/ba/ba256.html (Jan. 23, 1998); *Frequently Asked Questions About Global Warming, Climate Change, and the Greenhouse Effect, at* http://www.greenpeace.org/~climate/climatefaq.html.

[5] *See* EPA CLIMATE SCIENCE, *supra* note 3, at 3.

[6] *See id.* at 4.

[7] *See Energy for the World, at* http://www.distant-star.com/issue12/may_2000_energy.htm (last visited June 13, 2002).

[8] *See* NOAA, *supra* note 3.

[9] *See id.* Note that methyl cloroform, CH_3CCl_3, also a known greenhouse gas, has an atmospheric lifespan of 5 years, but is not consider one of the "biggies," as the measurements for its presence in the atmosphere are in the parts per trillion (ppt) range.

more than twice its historic pre-Industrialization level.[10] Nitrous oxide has an atmospheric lifetime of 120 years,[11] and its concentration in the atmosphere is continuing to grow as well.

We also know that the projected carbon dioxide concentrations we are looking at are higher than those observed at anytime over the past 160,000 years.[12] We know that by the studies that have been done of Antarctic ice borings looking at the levels of carbon dioxide over time. We can look back about 160,000 years and confirm that the concentrations we will be approaching in the next 50 to 60 years are higher than anything that has ever been seen throughout that period.

Effects on the Environment and Human Health

What results have been observed so far? Over the past century, the consensus of documentation is that the earth's mean temperature has increased one-half of a degree to one degree.[13] The global sea level has risen four to ten inches, and global precipitation has increased about one percent.[14] We have a fair amount of documentation showing that the last 100 years has seen real increases in those three key factors. The overwhelming consensus is that there is a discernible human influence on the global climate by increased greenhouse gas emissions; I think even the Bush Administration does not dispute that fact despite its different approach on how to deal with the problem.[15] Overall, there is no real dispute with respect to the general scientific principle.[16]

We also know that Northern Hemisphere temperatures right now are the warmest they have been in 1,000 years,[17] so it is not likely a short-term cycle

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[10] *See id.*

[11] *See* EPA CLIMATE SCIENCE, *supra* note 3, at 4.

[12] *See id.* at 3.

[13] *See id.* at 7.

[14] *See id.*

[15] *See, e.g.*, Eric Pianin, *Bush Unveils Global Warming Plan*, WASH. POST, Feb. 15, 2002, at A9.

[16] *But see* Alex Kirby, *Global Warming "A Reality", at* http://news.bbc.co.uk/hi/english/sci/tech/newsid_912000/912599.stm (Sept. 6, 2000).

[17] *See* Charles Clover, *2002 "Warmest for 1000 Years,"* DAILY TELEGRAPH (London), Apr. 26, 2002, at 1. A study of temperature data from six hundred- to 1,800-foot deep boreholes in North America, Europe, Africa and Australia found that the Earth's average surface temperature has increased about 1.8 degrees Fahrenheit over the past five centuries, and half of that warming occurred in this past century alone. *See* Michael E. Mann, Raymond S. Bradley & Malcolm K. Hughes, *Global-Scale Temperature Patterns and Climate Forcing Over the Past Six Centuries*, 392 NATURE 779 (1998); Michael E. Mann, Raymond S. Bradley & Malcolm K. Hughes, *Northern Hemisphere Temperatures During the Past Millennium: Inferences, Uncertainties, and Limitations*, 26 GEOPHYSICAL RES. LETTERS 759 (1999); Henry N. Pollack, Shaopeng Huang & Po-Yu Shen, *Climate Change Record in Subsurface*

we are looking at. Furthermore, the 11 warmest years that have been observed in the last 140 years during which reliable global temperature measurements have been kept have been during the two-decade period since 1983.[18]

Without significant changes, the climate is expected to change even more. The projected temperature increase, depending on whose study you look at, will be about 3.6 degrees Fahrenheit by the year 2100 - the range of figures being from 1.8 to 6.3 degrees.[19] Sea level rise is projected to rise between 6 to 38 inches, with the consensus being about 20 inches.[20] Serious floods will be much more likely due to increased precipitation intensity in some areas, and in other areas droughts will be more severe due to the increased evaporation and drier soils. We will also see additional adverse health impacts such as weather-related mortalities, infectious diseases and respiratory diseases, as well as serious agriculture impacts on crop yields and irrigation demands, changes of forest composition and productivity, and geographic changes in the range of forests. We will experience water-resource impacts, such as diminished water quality and increased competition for water supplies. We will see noticeable impacts on coastal areas, the erosion of beaches, loss of lower elevation areas, shifting ecological zones and the loss of habitats and species.

Moreover, as I noted previously, some island nations such as Bahrain are in danger of complete elimination. The environmental issues are real, and we need to look at what kinds of mitigation may be achieved by regulation under the Kyoto Protocol or the alternative path being followed by the United States.

American Contribution to Greenhouse Gas Emissions

First, let us look at the United States' emissions in 1996. The U.S. greenhouse gas emissions represented about 24 percent of the world total.[21] Our emission of CO_2, which is the largest share of U.S. greenhouse gas emissions, was about 85 percent of that amount.[22] Fossil fuel combustion is

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Temperatures: A Global Perspective, 282 SCIENCE 279 (1998).

[18] *See Presentation to the United Nations Framework Convention on Climate Change*, (2000) (statement of Robert Watson, Chair, Intergovernmental Panel on Climate Change), *available at* http://www.ipcc.ch/press/sp-cop6.htm.

[19] *See Global Perils*, *at* http://www.washingtonpost.com/wp-srv/inatl/longterm/climate/stories/perils.htm (last visited June 14, 2002).

[20] *See id.*

[21] *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, U.S. GREENHOUSE GAS EMISSIONS 10 (1998), *at* http://www.epa.gov/globalwarming/presentations/emissions/stock/all_emissions.pdf [hereinafter EPA GGE].

[22] *See id.* at 1.

the main source of carbon dioxide emissions.[23] This is where we come into the energy-production issue. The major sources of carbon dioxide emissions are fossil-fuel utilities, which produce 35 percent of American CO_2 emissions, compared with transportation that produces about 31 percent and the industrial sector, about 21 percent.[24] Residential and commercial uses of fossil fuel contribute seven and five percent, respectively.[25]

The real question here is, what price are Americans willing to pay for their gasoline, natural gas, and electricity? I heard a comment yesterday by one of our senators, as the effort to drill in ANWR was defeated, saying that Americans have just not decided how much they are willing to pay for their gasoline yet.

That may be a good part of the question here. What price are we willing to pay to affect the changes we are talking about, so we can seriously control our emissions of greenhouse gases attributed to fossil fuels? The Kyoto Protocol is a first step, but not a sufficient step, to address the timing and magnitude of projected impacts. The remedial lag time is substantial for things that are in the atmosphere for 40, 120, or 200 years. We will only begin to dent the emerging problems with the kind of effort we are talking about. More serious efforts would be required in the near future to avoid the kind of serious consequences we have just discussed.

The *future* growth in CO_2 emissions is really the highest for developing countries. Currently, the U.S. has the highest CO_2 emissions, with about six million metric tons (mmt) of emissions per year, followed by China at 3.2 mmt, Russia at 1.5, Japan at 1.2, and Germany and India at 0.9.[26] Canada is eighth at 0.5 mmt per annum.[27]

However, approximately 50 percent of Canada's energy production (which currently is in the range of $35 billion U.S. per year) is currently exported to the United States. In the last decade, fully one-third of Canada's greenhouse gas emissions increases are attributable to those energy exports. This problem dramatically shows how intertwined Canada and the United States are in this problem and why we must deal with the issue jointly.

China and the developing world produced 38 percent of world total greenhouse gas emissions in 1996.[28] Under current development trends, this number is expected to increase to 50 percent by 2020, while the U.S., under current programs, will drop from 24 to 21 percent.[29]

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[23] *See id.*
[24] *See id.* at 5.
[25] *See id.*
[26] *See* EPA GGE, *supra* note 21, at 6.
[27] *See id.*
[28] *See* EPA GGE, *supra* note 21, at 10-11.
[29] *See id.*

So the key issue here is how to get our hands around the growing side of the equation in China, India, and the developing world so we can really deal with the global problem. That is the crux of the issue that the Bush Administration is wrestling with and, I believe, its reason for backing off the Kyoto Protocol.

THE KYOTO PROTOCOL AND AMERICAN RESISTANCE

Let us look at the Protocol itself.[30] It was adopted in December 1997 at a conference in Kyoto, Japan.[31] It called on 39 signatory industrialized nations (which did not include India or China) that are identified in a specific annex[32] to reduce greenhouse gas emissions an average of 5.2 percent between 2008 and 2012 as compared to 1990 levels.[33] The Protocol combines these ambitious reduction targets with innovative market-based mechanisms to help countries achieve those targets at the lowest possible cost, recognizing that greenhouse gas emissions may be reduced more inexpensively in another country. To this end, the Protocol allows the parties to use emissions trading and other flexible mechanisms to meet their commitments at a reduced cost.[34] Because global warming is an international issue, it really does not matter *where* you achieve the reductions, so this type of trading program makes a lot of sense.

The question of "entry into force" is key here. The Protocol was opened up for signature in March of 1998,[35] and to enter into force, it must be ratified by at least 55 countries that accounted for at least 55 percent of the total 1990 carbon dioxide emissions for the 39 identified countries.[36] The U.S. signed the Protocol in November of 1998,[37] and the Protocol currently has 84 signatories.[38] Thus, has met the first prong for entry into force. However, the signatures alone are not sufficient to turn the text of the

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[30] Kyoto Protocol, *supra* note 1.

[31] *See* Brendan P. McGivern, *Conference of the Parties to the Framework Convention on Climate Change: Kyoto Protocol*, 37 I.L.M. 22, 22 (1998).

[32] *See* Kyoto Protocol, Annex B, 37 I.L.M. at 42. The 39 nations are: Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, the E.C., Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, the United Kingdom, and the United States.

[33] *See* Kyoto Protocol, *supra* note 1, art. 3(7).

[34] *See id.*, art. 16 *bis*.

[35] *See id.*, art. 23(1).

[36] *See id.*, art. 24(1).

[37] *See* United Nations Framework Convention on Climate Change, *Kyoto Protocol: Status of Ratification* 5 (June 4, 2002), *at* http://unfccc.int/resource/kpstats.pdf [hereinafter Kyoto Ratification].

[38] *See The Convention and the Kyoto Protocol*, at http://unfccc.int/resource/convkp.html

agreement into international law; formal ratification or accession is required. For the U.S. government, that requires Senate approval.[39] Today, the ratification count stands at 53 of the required 55 countries.[40] I understand that Sweden has moved through to get to that point as well, and other anticipated ratifications will achieve the 55 required.[41]

However, those countries currently represented only bring the CO_2 emissions total to 24 percent. So, how do you get to 55 percent if the United States does not participate? The U.S. has 36.4 percent of the shares of the designated 39 countries.[42] The European Union collectively has 24.2 percent; Russia has 17.4 percent; Japan, 8.5 percent; Central and Eastern European countries, 7.5 percent; and, Canada, 3.3 percent.[43] The E.U. countries, along with Japan and others, are proceeding to formal ratification. While there are efforts to expedite the process in Canada, the government is drawing strong objections from western provinces, the Chamber of Commerce, and the petroleum sector.[44] While Russia is likely to ratify the Protocol, which might tip the percentage requirement for entry into force, that country likely views the Protocol as an economic opportunity rather than a cost. Russia, whose industry – and pollution – have declined dramatically since 1990, hopes to benefit greatly from the Protocol's mechanisms allowing other countries to purchase a portion of Russia's emissions quota under the 1990 baseline.

American Resistance to Kyoto

Last June, President Bush declared that the Kyoto Protocol was "flawed in fundamental ways" and determined it to be unrealistic, "arbitrary, and not based on science."[45] Accordingly, he announced the U.S. would not ratify

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[39] *See* U.S. CONST. art. III, § 2. ("[The President] shall have Power, by and with the Advice and Consent of the Senate, to make Treaties, provided two thirds of the Senators present concur . . .").

[40] *See* Kyoto Ratification, *supra* note 37.

[41] Sweden ratified Kyoto on May 31, 2002. *See id.* at 4.

[42] *See* UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, A GUIDE TO THE CLIMATE CHANGE CONVENTION AND ITS KYOTO PROTOCOL 40 (2002), *available at* http://unfccc.int/resource/guideconvkp-p.pdf.

[43] *See id.*

[44] *See* Saskatchewan Chamber of Commerce, *Climate Change Protocol May Cause More Harm Than Good, at* http://www.saskchamber.com/documents/42Climate_Change_Protocol_May_Cause_More_Harm.doc; Jill Mahoney, *Anti-Kyoto Alternative Wins Airing*, GLOBE & MAIL, Jun. 7, 2002, at A10.

[45] *See* President George W. Bush, Remarks Discussing Global Climate Change (June 11, 2001) (transcript available at http://www.whitehouse.gov/news/releases/2001/06/20010611-2.html).

the treaty.[46] Also, a straw-poll resolution in the U.S. Senate came out 95 to 0 against the Kyoto Protocol without the involvement of major developing countries.[47] As such, the Protocol's entry-into-force remains a somewhat doubtful prospect.

While this may be, to some extent, a large game of chicken in negotiations with the developing world, I tend to agree with the comments made earlier, that the U.S. is not going to change its position any time soon. The U.S. is going it is own way.

The divergence in the reductions that individual countries have to achieve under the Protocol would place a huge burden on the United States. While the European Union agreed collectively to a similar magnitude of collective reductions, they also put in place a burden-sharing plan. Under the plan, Germany agreed to a 21 percent reduction,[48] of which it has already received credit for 18.7 percent having shut down operations in former East Germany.[49] Sweden just ratified, but they get a four percent *increase* in the allowable emission level under the burden-sharing plan.[50] Australia gets an eight percent increase as well.[51] Thus, part of the Bush Administration's objection is that there really is not science driving the percentages, and there was something else going on when those were developed.

The Bush Administration's Alternative Strategy: Maintain the *Status Quo*

So let us look at what the United States *did* propose to do, and how that approach would work.

On February 14, 2002, President Bush unveiled a new environmental initiative directed at cutting power plant emissions and setting a new strategy to address global climate change issues.[52] The first half of that plan, the "Clean Skies Initiative," is projected to cut power plant emissions of the

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[46] *See id.*

[47] *See* Byrd-Hagel Resolution on Kyoto Protocol, S. Res. 98, 105th Cong., 143 Cong. Rec. S8138-39 (daily ed. July 25, 1997).

[48] *See Burden-Sharing Target of the EU*, *at* http://www.climnet.org/resources/euburden.htm (last visited June 14, 2002) [hereinafter *Burden-Sharing*].

[49] *See, e.g.*, Robin Pomeroy, *E.U. Halfway to Kyoto Target, But Emissions are Up*, ENVTL. NEWS NETWORK, April 30, 2002, *at* http://www.enn.com/news/wire-stories/2002/04/04302002/reu_47060.asp.

[50] *See Burden-Sharing*, *supra* note 48.

[51] *See, e.g.*, *Global Environment Forum – KANSAI Symposium*, *at* http://www.convention-news.co.jp/environmental1999.html (last updated July 1999).

[52] *See Fact Sheet: President Bush Announces Clear Skies & Global Climate Change Initiatives*, *at* http://www.whitehouse.gov/news/releases/2002/02/20020214.html (last updated Feb. 14, 2002) [hereinafter Clear Skies Fact Sheet].

three worst air pollutants - nitrogen oxides, sulfur dioxide and mercury - by 70 percent, and improve air quality using market-based approaches.[53]

Second, on the global climate change issue, the new initiative seeks to commit America to cutting "greenhouse gas *intensity*" by 18 percent over the next ten years.[54] The plan also supports climate change research, provides for tax incentives, and expressly says that it was created to ensure the economic competitiveness of American workers for the future.[55]

What are the objections to the Bush Plan? You heard it suggested earlier that some people think the numbers do not quite add up; that is, cutting greenhouse gas intensity by eighteen percent over the next ten years is not a net reduction. I think the consensus is that the Bush Plan is pretty close to the *status quo*. Even the official fact sheet says that the President's goal seeks to lower our rate of emissions from an estimated 183 metric tons in 2002 per million dollars of GDP to 151 metric tons by 2012.[56] However, the new metric of greenhouse gas intensity – the ratio of greenhouse gas emission to economic output – does not compare well to reductions under the Kyoto Protocol; it is an apples-and-oranges comparison. Since 1990, U.S. greenhouse gas emissions have actually *increased* 14.5 percent from the baseline level.[57] So a seven-percent reduction from the 1990 level called for under the Kyoto Protocol would really mean a 19 percent reduction from the current pace. According to Glenn Hubbard, the chairman of President Bush's Council of Economic Advisors, an eighteen percent decline in greenhouse gas *intensity* over ten years implies a 4.5 percent reduction in annual greenhouse gas emissions relative to what they would be if we moved ahead according to current forecasts which project a steady rise in those emissions.[58] Most forecasts call the gross domestic product to expand about 30 percent or more over the ten-year period we are talking about. Thus, the Bush Plan is actually a proposal to allow a significant increase in emissions, not just from the 1990 levels, but also from the current emission rates of greenhouse gases in the United States. Margaret Beckett, Britain's Environment Secretary, noted that since the U.S. economy is projected to grow so much, the result of the Bush Administration's targets appears to be a

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[53] *See id.*

[54] *See id.*

[55] *See id.* ("The initiative also . . . ensures that America's workers . . . are not unfairly penalized").

[56] *See* Clear Skies Fact Sheet, *supra* note 52.

[57] *See* Julian Borger, *Clear Skies for U.S., Gloom for Kyoto*, THE GUARDIAN (London), Feb. 15, 2002, at P15, *available at* 2002 WL 13762449.

[58] *See* R. Glenn Hubbard, *Realism in Cutting Emissions*, N.Y. TIMES, Feb. 15, 2002, at A21.

continued increase in greenhouse gas emissions expected to total some 25 percent over the period 1990 to 2010.[59]

While U.S. greenhouse gas emissions have grown 12 percent in the past decade, the greenhouse gas intensity of our economy during that period - that is, its emissions per unit of gross domestic product - actually *declined* by 15 percent.[60] Thus, the U.S. already has been doing for the past ten years essentially what is included in the new proposal.

A Ray of Hope?

It is important to note, even as we move away from the Kyoto Protocol, that state programs within the United States are moving toward direct regulation of greenhouse gas emissions. We already have approximately a half-dozen states that have greenhouse gas emission programs in place,[61] and proposed regulations are under review in approximately 18 others.[62] So, this may become more of a state regulatory issue until direct treaty involvement of the United States comes into play sometime further down the road. It is also encouraging to note that the United States is seeking to put in place bilateral cooperative agreements with individual countries, including Canada, China and Australia.

CONCLUSION

With that background on the science and politics of global warming, and thinking about the potential economic impacts the Bush Administration's approach seeks to address, perhaps we can better understand the dynamics at play. Now, I at least know what to say when I am faced with that difficult scenario posed to me by the Bahrain official several years ago - "But if it is

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[59] *See* Mike Peacock, *Government to Ratify Kyoto Treaty "Within Weeks," available at* http://www.planetark.org/dailynewsstory.cfm/newsid/14947/story.htm (Mar. 8, 2002).

[60] *See Pew Center Analysis of President Bush's February 14th Climate Change Plan, at* http://www.pewclimate.org/policy/response_bushpolicy.cfm (last visited June 14, 2002).

[61] *See, e.g.,* HAW. REV. STAT. § 226-18(a)(4), (c)(8)-(9) (supporting actions that involve "the reduc[tion], avoid[ance], or sequester[ing] greenhouse gases in utility, transportation, and industrial sector applications," as well as in "state facilities" through, in part, "agriculture and forestry initiatives."); 415 ILL. COMP. STAT. § 5/9.10 (2001) (establishes an emissions banking for certifying credits for voluntary offsets); N.H. REV. STAT. ANN. § 125-L (West 1999) (establishes a voluntary greenhouse gas emissions reduction registry.

But cf. ALA. CODE § 22-28A-3(a) (1998), which forbids the Director of the Alabama Department of Environmental Management from "proposing or promulgating any new regulations intended . . . to reduce emissions of greenhouse gases, as . . . defined by the Kyoto Protocol, from the residential, commercial, industrial, electric utility, or transportation sectors unless such reductions are required under existing statutes."

[62] *See, e.g.,* CAL. HEALTH & SAFETY CODE § 42801(pending legislation) (intended to state-wide GGE tracking and reductions).

true, my country goes away." At least I can respond, "True, but the U.S. economy will remain strong." Thank you.