

The U.S. Response to the Kyoto Protocol – A Realistic Alternative?

By Lawrence Kogan

INTRODUCTION

On or about February 14, 2002, the Bush Administration unveiled its long awaited national energy and environmental climate change plan, intended to both ensure our country's national security by reducing our dependence on foreign source oil, and to encourage industry's voluntarily reduction of greenhouse gas ("GHG") emissions believed by many scientists to contribute to global warming and climate change.¹ The plan is intended as an alternative to the mandatory emissions reduction, reporting and compliance requirements imposed by the Kyoto Protocol, a unique multilateral environmental treaty which the United States signed on December 12, 1998, but never ratified.² The Bush Administration subsequently rejected the Kyoto Protocol in March 2001. The administration reasoned that the protocol failed to subject developing countries to any of the emissions reduction requirements imposed on industrialized nations and that its adoption by the United States would result in serious harm to the U.S. economy.³

The announcement of the Bush plan was preceded by efforts made by the U.S. Congress to address our country's national security, energy use and environmental needs. On August, 21, 2002, the House of Representatives passed H.R. 4 "Securing America's Future Energy ('SAFE') Act of 2001," which it then submitted to the U.S. Senate for consideration. During the fall of 2001, a parallel bill introduced within the Senate entitled, "The National Laboratories Partnership Improvement Act of 2001" (S.517), had begun to attract the Senate's attention.⁴ Within a day of the Bush plan's announcement, S.517 was modified by Senate Amendment No. 2917 entitled, "The Energy Policy Act of 2002", which includes within it the "Climate Change Strategy and Technology Innovation Act of 2002."⁵ At approximately the same time, a separate tax bill, S.1979 "The "Energy Tax Incentives Act of 2002", containing energy-related tax incentives, was introduced and reported to the Senate.⁶ These Senate bills and related subsequent amendments ultimately coalesced into a final version of S.517

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that was approved by the Senate on April 25, 2002, and incorporated into the House bill.⁷ Of all the legislation crafted by the U.S. Congress, only the “Climate Change Strategy and Technology Innovation Act of 2002” integrates U.S. energy policy with U.S. climate change policy.⁸

The Kyoto Protocol, as updated and clarified by the Bonn and Marrakech Agreements, reflects the global community’s joint response to accumulating scientific evidence that increasingly points toward a link between GHG emissions, global warming and climate change. The protocol seeks to implement, in a legally binding manner, previously agreed upon but unattained goals set forth pursuant to the United Nations Framework Convention on Climate Change (“UNFCCC”), adopted by 186 governments, including the United States, since May 1992.⁹ The stated objective of the UNFCCC is the “stabilization of atmospheric concentrations of GHGs at a level that would prevent dangerous anthropogenic interference with the climate system...within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a ‘sustainable manner.’”¹⁰ The Kyoto Protocol emphasizes the need to address global climate change as part of a broader international effort to improve both the environment and living conditions of all peoples consistent with the notion of ‘sustainable development’. “The aim is to tackle climate change as part of our wider commitment to ‘sustainable development.’ This includes two components. The first is to maintain global economic development. The second is to do so on an environmentally sustainable basis.”¹¹

The term ‘sustainable development’ was first popularized in 1987, by the publication of the Report of the World Commission on Environment and Development, entitled “Our Common Future”. This report, which later became known as the ‘Brundtland Report’, defined ‘sustainable development’ as development that is “consistent with future as well as present needs.” Its central themes criticized the then dominant paradigm for failure to reconcile these needs. The report claimed that the earth’s natural systems have limited capabilities to support human production and consumption and that existing economic policies, if continued, could result in irreversible damage to natural systems on which all life depends. The sustainable development paradigm emphasizes the need to redefine the term *development*.¹²

The United States is both the leading member of the global economic community and the single largest global emitter of GHGs. The United States therefore bears a special responsibility to act in a manner that not only reflects its unique status and capabilities, but also honors its agreement, as a UNFCCC signatory, to conscientiously address the problem of global climate change.¹³ Since the United States has chosen to respond to this environmental challenge outside of the preferred international regime (the Kyoto Protocol), its response must be carefully evaluated to see whether its objectives and the measures selected to achieve them are likely to preserve the global environment for current and future generations, consistent with the goal of sustainable development.

The aim of this paper is threefold: 1) To highlight the key requirements and mechanisms of the Kyoto Protocol, as clarified by the Bonn and Marrakech Agreements, especially its goal of promoting sustainable development; 2) To highlight the aggregate proposed U.S. response to the Kyoto Protocol's effort to address climate change, considering key proposals contained within the Bush plan and the House and Senate bills for achieving GHG emissions reductions and the creation of renewable clean energy sources; and 3) To analyze whether the aggregate proposed U.S. response promotes sustainable development within the context of climate change, and consequently, whether it serves as a realistic alternative to the Kyoto regime.

An analysis of the proposed U.S. response to the Kyoto Protocol reveals overall a genesis of a conscientious long-term plan that endeavors to achieve stabilization and ultimately reduction of GHG emissions in furtherance of the goal of sustainable development. It can fairly be said that certain aspects of the plan represent a "new beginning" concerning the U.S. attitude and behavior towards the long-term problem of global warming and climate change. Other aspects of the response, however, continue to focus on short-term domestic energy needs to the detriment of the global environment. Hopefully, the actions planned by the United States will constitute only the first of many steps needed to transform its fossil fuel- based energy infrastructure into one that favors energy derived from cleaner and more renewable sources. At least one study has concluded, that even if the U.S. remains outside the Kyoto regime U.S. companies may still be able to participate in emission reduction projects in developing countries and earn emission reduction credits for later use in a regional or national emissions trading system.

Notwithstanding its inherent flaws, the proposed U.S. response, arguably, sets forth goals that the United States believes it can realistically achieve. It is precisely this issue that other developed nations are now struggling to address as they each decide whether to ratify the Kyoto Protocol. Recent media reports have indicated, for example, that Canada will be unable to meet its Kyoto commitment to cut GHG emissions, and may join the United States and pull out of the Kyoto Protocol. In addition, on June 5, 2002, Australia announced that it would not ratify the Kyoto Protocol, following many months of internal debate and indecision. Furthermore, despite Japan's ratification of the Kyoto Protocol, on June 4, 2002, the Japanese legislature continues to find itself at the center of a 'domestic global warming debate', as it studies how to effectively revise the nation's global warming prevention law in order to meet its commitments under the protocol.

That Canada, Australia and Japan are experiencing these internal debates about climate change is significant. They, along with the United States, previously comprised the membership of an Umbrella Group of countries that collectively fought for concessions during the negotiations preceding the adoption of the Kyoto Protocol.¹⁴ Since the protocol will enter into force only after fifty-five states ratify or accede to it, provided those states account for at least 55 percent of the total 1990 carbon dioxide

emissions of developed states, the actions taken by these countries individually will likely determine whether the Kyoto Protocol will ever become binding international law.¹⁵

I. HIGHLIGHTS OF THE KYOTO PROTOCOL AS CLARIFIED BY THE BONN AND MARRAKECH AGREEMENTS

A. *The Kyoto Mechanisms*

The Kyoto Protocol, agreed to in December 1997, sets forth legally binding GHG emission targets for each of the industrialized nations listed. The Kyoto Protocol is the first step toward meeting the mandate of the UNFCCC.¹⁶ Overall, the developed countries are supposed to achieve at least a 5 percent reduction in GHG emissions from 1990 levels over the period spanning from 2008 through 2012.¹⁷ The United States, for example, must reduce its GHG emissions to 7 percent below its 1990 'baseline' level by the end of that period.¹⁸ The protocol covers six GHGs: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.¹⁹

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The overriding goal of the Kyoto Protocol is to promote 'sustainable development'. "Each [industrialized (Annex I)] party, in achieving its quantified emissions limitation and reduction commitments, *in order to promote sustainable development*, (emphasis added) shall: a) implement and/or further elaborate policies and measures in accordance with its national circumstances; and b) cooperate with other Parties to enhance the individual and combined effectiveness of their policies and measures adopted under this Article...To this end, the Parties shall take steps to share their experience and exchange information on such policies and measures."²⁰ The Kyoto Protocol does not specify the policies and measures individual countries should implement to achieve their emissions limitations. Rather, the Kyoto Protocol provides Parties (primarily, industrialized nations and nations in the process of economic transition) with several ways to address climate change issues in fulfillment of this objective. First and foremost, they can promote GHG emission reductions domestically by taking pre-emptive state level actions. Such measures would include promoting sustainable forest management practices (including afforestation and reforestation), enhancing energy efficiency within relevant sectors of the economy, and promoting research, development and increased use of new and renewable forms of energy, carbon dioxide sequestration technologies and advanced 'break-through' technologies. Alternatively, they can mitigate climate change impacts after they have occurred.²¹

Apart from and as a supplement to domestic action,²² firms within industrialized

nations can engage in GHG reduction activities with other countries pursuant to any of three possible collaborative instruments. One way they can reduce GHGs abroad and earn emissions reduction credits, is by trading GHG emission permits (emissions trading) with firms of other developed countries with a binding emissions target (“Annex B countries”).²³ Tradable permits are seen as a more flexible means of achieving emissions targets, since they will likely allow firms or nations to keep down the costs of reducing GHGs. Cost reductions can be achieved when a firm or nation that finds it comparatively easy to reduce GHGs can sell emissions permits to a firm or nation which finds it more expensive to reduce GHGs. Emissions trading can potentially result in more GHGs being reduced at the same overall economic cost, without affecting the level of environmental protection (or social cost). Whether emissions trading will be successful will depend on how the rules of such a system are defined. At the present time, since emission trading has not been conducted on an international scale, many uncertainties and potential difficulties remain.²⁴

Alternatively, firms within industrialized nations can reduce GHG emissions abroad and earn emissions reduction credits by collaborating with other developed nations on specific emissions reduction projects pursuant to the ‘joint implementation’ (“JI”) mechanism.²⁵ The JI instrument can help industrialized countries to reduce their net cost of building clean power plants or promoting energy efficiency systems. In fact, a number of successful forest conservation and tree-planting efforts have been initiated pursuant to the JI mechanism. The emissions reductions that can be achieved through enhancement of GHG absorption by biological or physical ‘sinks’, for example, can be significant. And the JI instrument can be utilized effectively to finance joint carbon sequestration projects once development needs, such as reforestation and rural development have been satisfied.²⁶ JI projects are likely to be undertaken by countries that do not participate in international emissions trading programs.²⁷

Lastly, firms within developed countries can obtain emissions reduction credits (ERCs) by engaging in project activities in a developing country, through the clean development mechanism (“CDM”).²⁸ The choice and type of CDM projects, to be effective, must be voluntarily agreed to and determined by the development needs of the developing country partner. Possible collaborative projects include the construction of high-tech, environmentally sound power plants, or more adaptive projects such as sea wall construction the goal of which is to protect a developing country from the impacts of climate change. The CDM is intended to serve as a funding vehicle to assist developing countries towards sustainable development.²⁹

B. The Bonn and Marrakech Agreements

On November 9, 2001, the Seventh Session of the Conference of the Parties (COP-7) agreed in Marrakech, Morocco upon additional rules for implementing the Kyoto Protocol. These rules also clarify an earlier agreement of the Parties known as the “Bonn Agreement” (COP-5), reached in July 2001. A brief summary of some of the significant updates to the Kyoto Protocol follows.

The Bonn Agreement previously required industrialized countries to satisfy four

eligibility requirements in order to participate in any one of the Kyoto mechanisms. For example, each developed country must establish at the national level an emissions monitoring system, a registry to track trades and an inventory of both its 'base year' and current year GHG emissions. Also each developed nation must expressly accept the Kyoto compliance regime.³⁰ The Marrakech Agreement established a fifth requirement for eligibility, namely, that an industrial country must also report on its 'sinks activities'.³¹ In addition, the Marrakech Agreement created an exception to the eligibility rules. It now permits a developed nation that otherwise would be ineligible to participate in the Kyoto mechanisms because it failed the inventory requirement, to *host* JI projects through a project design and approval process similar to the CDM.³²

The Marrakech Agreement, furthermore permits 'unilateral CDM', pursuant to which a developing country may undertake a CDM project *without* an industrialized country partner and later market the resulting emissions credits. This may be critical for smaller developing countries less likely to draw major developed nation investments. It can also be important for businesses hoping to market clean technologies in developing countries. Unilateral CDM would also enable a developing country to partner with a country that is not a Party to the Kyoto Protocol, such as the United States.³³

The Marrakech Agreement, moreover, treats emissions units from one Kyoto mechanism (e.g., emissions trading) as equally 'fungible' with emissions units from all other Kyoto mechanisms (JI, CDM). Such treatment would allow for a more liquid market in emissions units, since emission units from all such mechanisms can be transferred several times as equal units. It would also make the mechanisms more viable, thereby enhancing opportunities for cost-effectiveness. Also, the Marrakech Agreement maintains the Bonn Agreement's requirement, that each industrialized country must hold back from the (trading) market, either 90 percent of its allowable emissions or five times its most recently reviewed emissions inventory, whichever is lower.³⁴ This provision addresses the risk of overselling emission credits that a Party might later need to meet its own target.

Lastly, the Marrakech Agreement has deferred a decision until the next meeting of the Parties concerning whether the proposed penalty for failure to achieve specified GHG reductions, as set forth in the Bonn Agreement, will be legally binding. Pursuant to the proposed compliance regime, a country failing to meet its Kyoto emissions target in the current target period, for example, would be required to make up its shortfall, plus 30 percent, in the next target period.³⁵

II. THE U.S. RESPONSE TO THE KYOTO PROTOCOL

The preservation of a strong U.S. economy and a secure U.S. energy infrastructure is of vital concern to the current Administration and to the U.S. Congress. A strong and secure U.S. economy that promotes peace and prosperity abroad is also in the interest of the global economy at large. Notwithstanding these interests, however, the United States cannot focus solely upon its national economic and energy needs to the

exclusion of their environmental impact upon the global atmosphere. This would, arguably, be tantamount to ignoring our global responsibilities to other nations.³⁶ In addition, environmental issues pertaining to the upper atmosphere and climate change, despite the scientific uncertainties that surround them, are of a global rather than a sovereign magnitude. For this reason, they must be addressed and acted upon jointly by all nations of the world.

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The preamble to the UNFCCC acknowledges that a change in the Earth's climate and its adverse effects are a 'common concern of humankind'. That recognition has given rise to a growing consensus that the planet is ecologically interdependent, and that humanity may have a collective interest based on environmental concerns in certain activities that take place within sovereign state boundaries:

*"Once an environmental concern has been designated as a 'common concern of humanity' (CCH), it is no longer viewed as the province solely of individual states. Growing concern that the emission of fossil fuels threatens the Earth's climate system led to the execution of the UNFCCC, and the designation of climate change as common concern of humanity. The CCH designation by itself, however, implies NO (emphasis added) specific legal obligation owed by one state to any other state beyond that of 'cooperation'. Rather, it requires "world-wide cooperation to take concerted action to avoid environmental disaster."*³⁷

A. Highlights of the Bush Energy / Climate Change Plan

1. Domestic Initiatives

The plan announced by President Bush this past February is based on the notion that the continued, unimpaired economic growth of the United States is essential to finance the types and magnitude of energy-related and technological infrastructure changes needed to stabilize and ultimately reduce the amount of U.S. GHG emissions that are absorbed into the atmosphere.³⁸ The plan recognizes that although climate change is a complex, long-term challenge that will require a sustained effort over many generations, neither the limits of our current knowledge nor the presence of scientific uncertainty should prevent the United States from beginning now to address the factors that contribute to climate change.^{39*}

The cornerstone of the Bush plan is to reduce the "GHG intensity" of the U.S. economy by 18 percent over the next ten years. GHG intensity measures the ratio of GHG emissions to economic output.⁴⁰ The Bush plan claims that the use of a GHG intensity target is intended to separate the goal of reducing emissions from the potential economic harm associated with a rigid emission cap. It is believed that if GHG

emissions are measured relative to economic activity, it will be possible to gauge progress as emissions reduction programs are being implemented.⁴¹ It is also asserted that this goal is comparable to the average progress that nations participating in the Kyoto Protocol are required to achieve.⁴²

The President's plan recognizes that the goal of reducing GHG intensity overall requires an assurance that individual players are endeavoring to reduce the rate of their GHG emissions. In order to facilitate public confidence that such practices are indeed taking place, but without penalizing emitting parties from disclosing accurate information about their mitigation efforts, the Bush plan focuses upon improving the current voluntary GHG Reduction and Sequestration Registry. That registry recognizes GHG reductions by non-governmental entities, businesses, farmers and the federal, state and local governments.⁴³ The primary aim is to promote the identification and expansion of innovative and effective ways to reduce GHGs.⁴⁴ In addition, the plan intends to protect businesses and individuals that register reductions from future environmental policy change requirements by providing persons that can show real emissions reductions with transferable credits which may be used in a future emissions trading market.⁴⁵

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The Bush plan, furthermore, seeks to build on existing voluntary GHG emissions reduction agreements entered into with the semi-conductor and aluminum industries and with industries that emit methane.⁴⁶ It calls upon the EPA to launch a new “Climate Leaders Program” with a group of major companies that have voluntarily agreed to test new GHG reporting guidelines as the basis for agreeing to emissions targets in the future. The program is intended to provide a significant opportunity to achieve the targeted GHG intensity reductions through a voluntary approach.⁴⁷

Noting that GHG emissions have risen with economic growth during past decades due to plentiful and inexpensive fossil fuels, the Bush plan seeks to break the emission–economy link by investing in new research and development, and by deploying advanced technologies to mitigate emissions.⁴⁸ Specifically, the plan calls for clean energy tax incentives to be offered over the next five years, to spur investments in renewable energy (solar, wind and biomass), hybrid and fuel cell vehicles, cogeneration, landfill gas (methane) conversion and ethanol.⁴⁹ Furthermore, the Bush plan calls for the creation of the Climate Change Research Initiative (CCRI), through which monies will be funneled for basic research on climate change. The CCRI will focus on studying areas of scientific uncertainty and on identifying priority areas where investments can make a difference.⁵⁰ Moreover, the Bush plan provides for the creation of the National Climate Change Technology Initiative (NCCTI) pursuant to which funds will be committed to funding research on “breakthrough” climate change technologies.⁵¹

2. *Global Initiatives*

In addition, the President's plan seeks to promote new and expanded international policies designed to compliment U.S. domestic programs. One such policy would call for the expansion of joint research agreements with Italy, Japan and Central America. Pursuant to these agreements, the parties will engage in joint climate change science and technology research activities, including advanced climate modeling, aimed at understanding, monitoring and predicting climatic variations and their impacts.⁵² In particular, the U.S.-Japan partnership, which has since been finalized, will also investigate how market incentives may be used to affect global climate change.⁵³ Since the announcement of the Bush plan, the United States has entered into a new partnership agreement on climate change with Australia, which, among other issues, will focus on researching emissions measurements and accounting, land management and developing country collaborations.⁵⁴

Another international policy would involve 'debt-for-nature' forest conservation programs. In a debt-for-nature 'swap', the U.S. government and a U.S. based nongovernmental organization(s) ("NGO") will typically assume a portion of a developing country's debt owed to the U.S., and accept payments back from the debtor country of a portion of the remaining balance owed in the form of national currency. The United States and the U.S. based NGO will then donate the monies back to the debtor government pursuant to a commitment (e.g., local currency obligations) to utilize these funds for tropical forest conservation activities through local NGOs. "This would allow a developing country to pay off the loan by exporting the service of protecting its environment (forests) to the rest of the world, rather than by exporting the natural resources (the trees)."⁵⁵

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In addition, other international policies are geared toward fulfilling commitments owed generally by developed nations to developing countries pursuant to the UNFCCC.⁵⁶ These commitments focus mainly on providing the financial and technological resources needed by developing nations to implement measures that will deal with the environmental effects of climate change. For example, the Bush plan calls for the allocation of \$25 million to climate observation systems in developing countries. It also proposes a \$77 million increase in the funding of the Global Environmental Facility ("GEF"). The GEF plays a critical role in improving the environment globally, particularly in financing developing countries' ability to address environmental issues relating to climate change, biodiversity conservation and land degradation. The GEF, operating as the UNFCCC's primary "financial mechanism", funds the extra costs over normal development costs ('incremental' costs) of reducing GHG emissions in energy and other projects. And, the Bush plan also calls for

budgeting \$155 million to fund climate change programs established by the United States Agency for International Development ('USAID') to facilitate bilateral technology transfers and capacity building in developing countries.⁵⁷

B. Highlights of the House Bill (H.R. 4)

The House bill is essentially an omnibus energy bill that emphasizes domestic energy production, energy research and development, and tax incentives geared toward conservation and production. It expresses the sense of the Congress that the United States should take all actions necessary in the areas of conservation, efficiency, alternative source, technology development and domestic production, to reduce the United States' dependence on foreign energy sources.⁵⁸ The omnibus House bill does not directly address environmental issues, which are instead treated as mere ancillary benefits derived from achieving optimal energy efficiencies.

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Among its many provisions, the omnibus House bill includes the following energy conservation proposals: 1) An extension of specified Federal energy conservation programs;⁵⁹ 2) An expansion of the National Energy Conservation Policy Act to include the Federal Government's promotion, production, supply, and marketing of energy efficient products and services, and unconventional and renewable energy resources;⁶⁰ and 3) The expansion of the Energy Star program at the Department of Energy and the Environmental Protection Agency to identify and promote energy-efficient consumer products and buildings in order to reduce energy consumption, improve energy security, and reduce pollution through labeling of products and buildings that meet the highest energy efficiency standards.⁶¹

Several portions of the House bill enumerate goals and earmark appropriations for continued and expanded energy research, development, demonstration and commercial application programs that increase energy efficiency and conservation and minimize adverse environmental impacts. These provisions, for example, emphasize energy conservation and efficiency with respect to building technology, state and community sectors, industry, power technologies and transportation. In addition, they allocate resources to learn more about renewable energy sources, such as hydrogen, bio-energy, geothermal technology, hydropower, solar power, photovoltaic energy systems, solar building technology, wind energy systems and electric energy systems and storage. Furthermore, the House provisions focus on developing nuclear energy and cleaner fossil energy.⁶²

Consistent with the energy provisions mentioned above, the House bill contains various tax incentives (mostly credits) that fall into one of three broad categories. Certain incentives are geared toward promoting conservation, including development

of renewable energy sources.⁶³ Other incentives are intended to encourage reliability.⁶⁴ And still others focus on increasing energy production from conventional fossil fuel sources.⁶⁵

*C. Highlights of the Senate Bill*⁶⁶

*1. Energy Provisions*⁶⁷

The energy goals articulated within the Senate bill are similar to those mentioned within the House bill. Their emphasis essentially is to provide for the energy security of the nation. The Senate bill, unlike the House bill, however, does not seek to promote increased energy production from conventional fossil fuel sources. Rather, with the environment in mind, it is largely focused on ‘decarbonizing’ the economy by reducing the amount of carbon produced for a given amount of energy.⁶⁸

The Senate bill seeks to accomplish this by promoting the development of energy supplies from a greater diversity of sources (‘fuel-switching’). It endeavors, among other things, to: 1) create a renewable portfolio standard and to provide incentives to triple the amount of U.S. electricity produced from renewable energy sources, including solar, wind, geothermal and biomass; 2) expand the amount of renewable fuels, such as ethanol and biodiesel used in motor vehicles; 3) lower barriers for installation of cogeneration power facilities and power facilities that generate electricity from fuel cells; 4) increase funds to speed the permitting of new domestic oil and gas production technologies; and 5) to invest in research and development to ensure a full range of fuels and technologies are available for the future, from clean emission-free coal technologies, hydropower and nuclear energy, to fuel cell and renewable technologies.⁶⁹

The Senate bill, like the Bush plan, moreover, aims to decarbonize the economy by reducing its overall ‘energy intensity’.

The Senate bill, furthermore, endeavors to “decarbonize” the economy by exploiting new technological efficiencies to improve all areas of energy use. It attempts to accomplish this in several ways. For example, it recognizes that a reduction in the amount of gasoline and petroleum consumption can be obtained by increasing corporate fuel economy (CAFÉ) standards for cars, SUVs and light trucks.⁷⁰ Also, significant energy savings (gasoline, electricity, etc.) can result by requiring greater efficiencies in fuel and energy use from the Federal government and its employees. And, additional energy savings can be secured by establishing new efficiency standards for commercial and consumer products.⁷¹

The Senate bill, like the Bush plan, moreover, aims to decarbonize the economy by reducing its overall ‘energy intensity’. Energy intensity is defined as the amount of energy required per unit of economic output (e.g., gross domestic product), and is cited by experts as an important element of decarbonization.⁷² The Senate bill adopts this view and establishes a framework for a comprehensive energy research, development

and deployment program, the objectives of which are to: 1) reduce 'energy intensity' 1.9 percent each year through 2020; 2) reduce total energy consumption by 8 quadrillion Btu by 2020 from otherwise expected levels; and 3) reduce carbon dioxide emissions from expected levels 166 million metric tons by 2020.^{73 74}

*2. Tax Incentive Provisions*⁷⁵

The tax incentive provisions contained within the Senate energy bill appear somewhat more environmentally friendly (and less oil friendly) than those contained within the House bill. The three key elements of these provisions are: 1) new production; 2) new technology and 3) conservation.

The production incentives are intended to encourage new energy development, because through 2020, U.S. energy consumption is projected to increase more rapidly than domestic production, thereby increasing United States dependence on foreign oil. Some of these provisions extend the availability of the tax credit for producing electricity from either wind energy or biomass, and qualify many more sources as renewable fuel sources, including geothermal, solar and plant life.⁷⁶ Other provisions create incentives for clean coal. Taxpayers that retrofit facilities to use currently available clean coal technology are eligible for a production tax credit. Taxpayer facilities that use advanced technology are eligible for both an investment credit and a production credit.⁷⁷ Additional incentives create a new credit for oil and gas production from marginal wells, and a limited tax break for geological and geophysical expenditures.⁷⁸ Each of these tax incentives is intended to encourage more energy production from a variety of renewable and traditional sources, while promoting a cleaner environment.

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The new technology incentives focus on the transportation sector of the economy and impose very stringent emissions standards in order to ensure a cleaner environment. Tax credits are available to purchasers of new technology vehicles powered by alternative fuels, fuel cells, or by electricity. A credit is also provided for the purchase of hybrid vehicles that run partly on electricity and partly on gasoline.⁷⁹ Each of these vehicles offer significant advantages compared to traditional fuel vehicles. The short-term goal is to promote the use of hybrid and alternative fuel vehicles. The long-term goal is to promote the use of zero-emission fuel cell and electric vehicles. In addition, incentives are provided to develop a new infrastructure to deliver the new fuels called for by such vehicles. In particular, credits are provided for the installation of new refueling station technology and for the purchase of alternative fuels.⁸⁰ All tolled, the new technology incentives are intended to transform automotive transportation in the United States so that it is cleaner, more fuel efficient and less reliant on imported oil.

The conservation incentives are intended to promote energy conservation, in order to ensure a cleaner environment and lessen reliance on foreign energy sources. Increased

conservation is deemed to have the same effect as reduced consumption. A tax credit is provided to individuals who use energy consumption information devices (smart meters) to track energy use in their homes.⁸¹ In addition, credits are available to individuals who purchase energy efficient refrigerators, air conditioners and other appliances.⁸² Furthermore, credits are provided to encourage energy efficient construction, to make homes and commercial buildings more energy efficient.⁸³ A credit is also provided to purchasers of combined heat and power system property.⁸⁴

3. *Climate Change Provisions*

The interrelationship between energy use and the environment was intently focused upon during the debates and colloquies preceding the passage of the Senate energy bill. Senator Robert Byrd (D. WV), for one, well articulated the need for the Senate bill to address both of these issues at the same time. “Climate change and energy policy are two sides of the same coin. Because the vast majority of manmade greenhouse gas emissions are associated with energy use, it is here, in an energy bill, that we need to deal with the long-term challenges associated with global climate change.”⁸⁵

a. *The Current Condition of the Environment and the U.S. ‘Call to Arms’*

The portion of the Senate energy bill that addresses global climate change is contained within the provisions of the “Climate Change Strategy and Technology Innovation Act of 2002” (the “Climate Change Act”). The Climate Change Act reflects the concern of the Senate that “over the past decade, energy research and development budgets in the public and private sectors have declined precipitously and have not been focused on the climate change response challenge, and that the investments that have been made to date have not been guided by a comprehensive strategy”.⁸⁶ As a result, the current ability of the United States to respond adequately to climate change issues has been impaired. The Senate, therefore, deems it imperative for the United States to facilitate a veritable technological revolution in the global energy system and other emitting sectors and to develop a well designed climate change response strategy that features meaningful emissions reduction mechanisms.⁸⁷

The Climate Change Act instructs the United States to remain cognizant of its shared responsibility, as a “developed country Party” to the UNFCCC, and to take the lead in combating climate change and related adverse effects,⁸⁸ notwithstanding the concerns previously expressed within Senate Resolution 98.⁸⁹ This non-binding resolution called for the Clinton Administration not to ratify the Kyoto Protocol because it failed to subject developing countries to any of the emissions reduction requirements imposed on industrialized nations and because its adoption by the United States would likely result in serious harm to the U.S. economy.⁹⁰ Furthermore, the Climate Change Act calls upon the United States to demonstrate ‘international leadership and responsibility’ in mitigating health, environmental and economic threats posed by global warming. It also admonishes the Bush Administration against inaction, in light of mounting scientific evidence of increased GHG atmospheric concentrations, and notwithstanding the scientific uncertainties that remain, including science’s inability to determine precisely what atmospheric concentrations are dangerous.⁹¹

The kind of leadership envisioned necessitates: 1) taking responsible actions to ensure meaningful reductions in GHG emissions; 2) creating flexible international and domestic market mechanisms, including joint implementation, technology deployment emissions trading and carbon sequestration projects that will reduce, avoid and sequester GHG emissions; and 3) participating in international climate change negotiations.⁹² In effect, the Climate Change Act expresses the Senate's belief that, only by pursuing this magnitude of reform can the United States aspire to eventually participate in a revised Kyoto Protocol or other future binding climate change agreement that both protects its economic interests and recognizes the shared international environmental responsibility for addressing climate change, including developing country participation.⁹³

b. Domestic Measures To Be Taken:

The Climate Change Act articulates two primary objectives: a) stabilization of GHG atmospheric concentrations at a level that would prevent dangerous anthropogenic (human) interference with the climate system; and b) implementation of an internationally-minded strategy that: i) defines mitigation levels and utilizes mitigation approaches that would result in stabilization of GHG atmospheric concentrations; ii) reflects a commitment to energy research and development that emphasizes breakthrough technologies; iii) focuses on climate adaptation research; and iv) focuses on resolving remaining scientific, technical and economic uncertainties about climate science research.⁹⁴ To achieve these goals, the Senate requires that any U.S. response take into account the international nature of the challenge. In particular, a credible response must establish joint climate strategies and joint research programs with other developed nations. In addition, it must provide assistance to developing countries and countries in transition for building technical and institutional capacities, along with incentives for addressing the challenge. And, a reasonable response must promote public awareness of the issue.⁹⁵

The Climate Change Act calls for the establishment of the following new offices to implement its proposed climate strategy. They include: 1) a National Office of Climate Change Response, within the Executive Office of the President;⁹⁶ 2) an Interagency Task Force chaired by the Director of the White House Office;⁹⁷ 3) an Office of Climate Change Technology within the Department of Energy;⁹⁸ and 4) an Independent Review Board.⁹⁹

The Climate Change Act, furthermore, would establish a comprehensive National GHG Database system to collect, verify and analyze information on GHG emissions generated by entities (including, presumably, all affiliates and related parties within an 'entity-wide' organizational structure, as later defined by regulations to be promulgated under New Section 1104) located in the United States, and GHG emission reductions carried out by entities based in the U.S.¹⁰⁰ The purpose of such a database system would be to create complete, transparent, reliable and accurate data that can be used by public and private entities to design efficient and effective GHG emission reduction strategies.¹⁰¹ Information compiled from such a database would

also serve as a national GHG inventory for purposes of compliance with the United Nations Framework Convention on Climate Change (UNFCCC).¹⁰²

In contrast to the President's plan, the Climate Change Act would impose detailed and rigorous mandatory reporting requirements that each entity must follow, unless exempted. First, an entity must establish its own *and* an 'entity-wide' historic emissions 'baseline'. This baseline shall consist of the gross amount of all entity and entity-wide GHG emission levels, less actual GHG reductions allocable to the entity and the entity-wide organizational structure.¹⁰³ Once a historic baseline has been established, for each successive calendar year thereafter, an entity must report annually all GHG emissions it has generated and that have been generated collectively within its 'entity-wide' organizational structure during that year. The annual reporting requirement applies if the total GHG emissions of at least one of the entity's facilities, or the total GHGs produced, distributed and/or imported by the entity exceeds a minimum threshold of 10,000 metric tons of carbon dioxide equivalent per year.¹⁰⁴ The GHG emissions must be reported facility-by-facility, and must be expressed in terms of mass AND in terms of carbon dioxide equivalent. They must also include an estimate of the GHG emissions from fossil fuel combusted by products manufactured and sold by the entity, over the average lifetime of those products.¹⁰⁵ All information reported annually and to establish a historic baseline must be capable of being verified by the appropriately charged administrative agency.¹⁰⁶ An entity shall be exempted from the baseline and annual reporting requirements, if it can demonstrate that all of its entity and entity-wide GHG emissions activities are covered by an agreement entered into with a GHG registry participant, for the purpose of a carbon sequestration project.¹⁰⁷ Otherwise, an entity shall be exempted from the Climate Change Act's mandatory reporting requirements if it is already required to report carbon dioxide emissions data to a Federal agency on the date the Act is enacted.¹⁰⁸

The Climate Change Act, furthermore, solicits the involvement of the public in formulating the criteria the government will utilize in evaluating GHG emissions and reduction activities.

In addition to manual reports, the Climate Change Act also provides for voluntary submissions to the GHG registry. An entity may choose to report, with respect to its preceding calendar year's GHG emissions (as reported above), all emissions project reductions, transfers of emissions project reductions and product use phase emissions.¹⁰⁹ Also, an entity may report all indirect GHG emissions not otherwise required to be reported.¹¹⁰ An entity, furthermore, may voluntarily report all GHG emissions reduction activities that it previously carried out during any year beginning in 1990, and that have been verified and previously disclosed pursuant to a current voluntary GHG emissions reduction program.¹¹¹ Lastly, an entity may voluntarily report information about any other GHG emissions reduction or sequestration projects or

activities in which it has engaged and not yet reported about, and which is not otherwise reportable within the mandatory registry.¹¹² It is highly recommended that prior to submitting data to the voluntary registry, an entity should first have it verified by qualified independent third parties.¹¹³

The Climate Change Act, furthermore, solicits the involvement of the public in formulating the criteria the government will utilize in evaluating GHG emissions and reduction activities. In particular, it instructs the federal agencies responsible for managing and implementing the national database system to jointly develop comprehensive measurement and verification methods and standards to ensure a consistent and technically accurate record of GHG emissions, emission reductions, sequestration and atmospheric concentrations for use in the registry, within one year of the bill's enactment.¹¹⁴ In furtherance of this endeavor, the agencies are advised to obtain the assistance of experts and consultants in the private and nonprofit sectors (e.g., NGOs), in the areas of GHG measurement, certification and emission trading.¹¹⁵ To secure the services of these persons, the agencies are instructed to use *any* available grant, contract, cooperative agreement or other arrangement authorized by law.¹¹⁶ The Act also provides that all methods and standards so developed should be made available to the public for comment, prior to being finalized for enactment into law.¹¹⁷

To ensure compliance with the registry provisions, the Climate Change Act (unlike the President's incentive approach) would impose two types of penalties, one monetary, another not. If an entity that participates or has participated in the voluntary registry fails to submit a report capable of being verified, or fails to submit an annual report at all, it will be prohibited prospectively from including GHG emissions reductions to the registry in the calculation of its own (and possibly entity-wide) baseline in future years.¹¹⁸ Furthermore, an entity otherwise subject to the mandatory reporting requirements that fails either to establish a historic baseline or to submit an annual report (including, presumably, a report that is not verifiable), may be subject to civil monetary penalties of up to \$25,000 per day.¹¹⁹

“The United States should market our clean energy technologies, especially clean coal technologies, to developing nations...”

c. Measures to Assist the Developing World:

Consistent with the need to assist developing nations address the problems of global climate change, the Climate Change Act establishes an interagency working group to coordinate and promote U.S. government efforts to open overseas energy markets for U.S. ‘clean energy technology’ exports. Clean energy technology is defined, as an energy supply or end-use technology that over its lifecycle and compared to a similar technology already in commercial use in developing countries, countries in transition, and other partner countries: 1) emits substantially lower levels of pollutants or GHGs; AND 2) may generate substantially smaller or less toxic volumes of solid or

liquid waste.¹²⁰ Entitled, the ‘Clean Energy Exports Program’, this initiative is also intended to facilitate the transfer of U.S. clean energy technology to developing countries and countries in transition, that are expected to experience, over the next 20 years, the most significant growth in energy production and associated GHG emissions.¹²¹ As noted by Senator Robert Byrd (D. WV), the author of this program, the Clean Energy Exports Program would cover, among other endeavors, technology transfer programs pursued under the UNFCCC:

“The United States should market our clean energy technologies, especially clean coal technologies, to developing nations, like China, India, South Africa, and Mexico, to help them meet their economic and energy needs... Furthermore, such technologies can enable these countries to build their economies in more environmentally friendly ways, thus helping the global effort to address climate change.”¹²²

The Climate Change Act also establishes a pilot program to provide financial assistance to U.S. firms that undertake “qualifying international energy deployment projects” in any developed country or a country in transition (listed in Annex I of the UNFCCC), or within any developing country.¹²³ The pilot program would permit an eligible firm to construct an energy production facility outside the United States, provided: 1) the output from such project will be consumed outside the U.S.; and 2) the deployment of such project would result in a GHG reduction per unit of energy produced that is at least 10 percent greater than that achievable using the technology otherwise available.¹²⁴

Proposals submitted for projects in developing countries may include a research component intended to build technological capacity within the host country, provided the research is related to the technologies being deployed, and it involves a host country institution and an industry, university or national laboratory participant from the United States. In addition, the host country institution must contribute at least 50 percent of the funds required for such research.¹²⁵ An eligible U.S. firm will be entitled to receive a loan or loan guarantee bearing an interest rate equal to comparable Treasury obligations, in an amount up to 50 percent of the total cost of the qualified international energy deployment project.¹²⁶ In order for an otherwise eligible U.S. firm to access funds from such a loan or loan guarantee, however, it would first need to secure a financial contribution from the host country equal to at least 50 percent of the total cost of such loan or loan guarantee.¹²⁷

III. EVALUATING WHETHER THE PROPOSED U.S. RESPONSE TO THE KYOTO PROTOCOL PROMOTES SUSTAINABLE DEVELOPMENT:

The question of whether the proposed U.S. response is a realistic alternative to the Kyoto Protocol must be evaluated in light of the principles articulated by the new environmental, social and economic paradigm of sustainable development. This paradigm emphasizes the need of all societies to redefine the term ‘development’ in recognition of the inherent limitations of the earth’s natural systems to support human

production and consumption, and the genuine threat of irreversible damage posed by current economic policies upon the global environment.

The most important indication of a worldwide paradigm shift with respect to the environment was the United Nations Conference on Environment and Development (“UNCED”) held in Rio de Janeiro in June 1992 (the “Earth Summit”). The Earth Summit, among other things, produced the Rio Declaration on Environment and Development (hereinafter referred to as “the Rio Declaration”), a non-binding set of broad principles set forth in the form of declarations, that helped to create international environmental norms and expectations. It also produced a non-binding agreement called ‘Agenda 21’, which is a global plan of action for more sustainable societies that embraces economic growth, social development and environmental protection.¹²⁸ The UNFCCC, as well, was opened for signature at the Earth Summit, although it was negotiated independently of the UNCED during the same period of time.¹²⁹

A. Sustainable (Economic) Development Defined Generally:

The principle of sustainable development requires that all states and people shall cooperate in good faith and in the spirit of (global) partnership, to conserve, protect and restore the health and integrity of the Earth’s ecosystem, in accordance with our ‘common but differentiated’ responsibilities. Although we may each place different pressures upon the global environment and may possess different capabilities, we must nevertheless recognize our ultimate and joint responsibility to address environmental problems based on international consensus.¹³⁰

Implicit within this notion is the conclusion that the earth’s natural ecosystem is capable, with proper stewardship, of regeneration, and that it has the capacity to assimilate in response to physical and human phenomena.¹³¹ This means that we need not abandon economic growth in order to achieve sustainability. Rather, we are free to satisfy our economic needs, provided we do not impoverish our successors.¹³² The concept of sustainability obliges us to conduct ourselves so that we leave to the future the option or the capacity to be as well off as we are.¹³³ Our right to development, in other words, is conditioned upon the fulfillment of our obligation to equitably meet the developmental AND environmental needs of present and future generations.¹³⁴

Dr. Robert Solow, a renowned environmental economist and Nobel Laureate, has aptly summarized how this concept can be pragmatically applied to accommodate economic development:

“The concept of sustainable development does not necessarily require us to “preserve the stock levels we have inherited from the past... There is no specific object or any particular natural resource that the goal [obligation] of sustainability, requires us to leave untouched... [Instead], we can take advantage of the principle of substitutability, [which posits]... that different amenities... and production inputs... really are, to some extent, substitutable for one another... [However,] in doing so, we must [conscientiously] take into account the resources we have used up, [as well as], the resources that we leave behind... [Likewise,] we must consider the environment we leave behind, including the built environment, productive capacity [plant and equipment] and technical knowledge. We may pursue economic

growth and the use of technology in ways that affect our environment, as long as we do not fail to leave behind...for future people...a generalized capacity to create well-being...Our decision [as a society] not to please ourselves at the expense of future well-being, is analogous to our choosing to save and invest our resources for the future...In each case, we have chosen not to spend and consume our resources [capital] currently. Our commitment to environmental protection, [for example,] can be viewed as an investment, that contributes to sustainability, [provided] it comes at the expense of current consumption, and not at the expense of investment in future additions to future capacity...[This implies that] when [in the course of our economic activities] we use up a [non-renewable] resource, including minerals and energy-yielding fossil fuels, such as coal, oil and natural gas..., we are obliged to replace it with some substitute of equal long-term capital value, such as scientific knowledge, technology, research and development, plant and equipment or some environmental investment.”¹³⁵

While states have the sovereign right to exploit their natural resources pursuant to their own environmental and developmental policies, they are, however, required to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of the ‘global commons’. Protection of the environment in pursuit of sustainable development is best achieved by *preventing* environmental harm in the first place, rather than by attempting to remedy or compensate for such harm after it has occurred.¹³⁶

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In the event we are faced with the threat of environmental harm, the principle of sustainable development compels us to act immediately to safeguard the environment, to the full extent of our capabilities. Although we may lack scientific certainty about the magnitude or nature of the threat, we must err on the side of caution.¹³⁷ A *precautionary* approach is called for even if there is no guarantee that adoption of a given measure would prevent serious environmental harm.¹³⁸ It is generally recognized, “that scientific certainty often comes too late to design effective legal and policy responses for preventing potential environmental threats. Most environmental issues involve complex analyses of scientific, technical, and economic factors. We rarely have anything approximating perfect knowledge when law-makers are asked to make decisions whether to respond to a specific threat.”¹³⁹

B. Sustainable (Economic) Development, Energy Use and Global Climate Change

Principle 4 of the Rio Declaration provides that, “In order to achieve sustainable

development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it". In other words, sustainable development must simultaneously serve economic, social and environmental objectives."¹⁴⁰

That this principle has been incorporated within the provisions of both the UNFCCC and the Kyoto Protocol is significant, because it reflects the inextricable link between development, energy use and climate change.¹⁴¹ The introductory statement made at the beginning of the Third Conference of the Parties (COP-3) to the UNFCCC, at which the Kyoto Protocol was later signed, makes reference to the critical role that energy use will assume in responding to the global issue of climate change. "While energy is essential to economic development, it is also, by far, the largest source of man-made carbon dioxide emissions. For this reason, energy will play a critical part in the solution to climate change... This does not, however, require that national economic and energy needs must be sacrificed in favor of global environmental considerations."¹⁴²

Consequently, if the U.S. response to the Kyoto Protocol is to promote sustainable development, it must reflect, overall, a long-term serious attempt to begin transforming the currently entrenched U.S. fossil fuel-reliant energy infrastructure into a new more flexible, technologically advanced and GHG emission-friendly energy infrastructure.¹⁴³ And, like the Kyoto Protocol, its current prescriptions must represent only the first in a series of steps that the United States is willing to take toward addressing the problems of climate change, especially considering that concrete results (e.g., stabilization of 1990 GHG emissions) will neither be achievable nor measurable for some time.

The Bush Administration's use of a GHG intensity measurement seems to be based on a similarly broad indicator used to measure energy efficiency per unit of GDP.

In the view of some experts, "The economic logic of the Kyoto Protocol is that without such an agreement, countries will not have the proper incentives to address the threats from global climate change and therefore develop sustainably."¹⁴⁴ If this is true, the broad aim and purpose of any climate change initiative proposed by the United States in response to the Kyoto Protocol should be to provide the proper incentives to develop sustainably. An analysis of the U.S. response to the Kyoto Protocol, therefore, should not focus exclusively on the level of GHG emissions reductions to be achieved through implementation of such a climate change plan, unless this measure, alone, will determine the state of development or well-being of society. Rather, according to these same experts, "it is the quality of energy services provided and how they are used to improve people's lives that is the essential measure of well-being."¹⁴⁵ Likewise, an examination of the projected costs surrounding either the Kyoto Protocol or the U.S. response to the Kyoto Protocol should not focus exclusively on implementation costs. Instead, implementation costs should be considered along with the social, political, economic and other ancillary benefits of avoiding the harmful

effects of climate change and developing sustainability, of which there are many.¹⁴⁶ “Just as climate policies can yield ancillary benefits that improve well-being, non-climate policies may produce climate benefits.”¹⁴⁷

C. Whether the U.S. Response to the Kyoto Protocol Promotes Sustainable Development

1. Flirting With Sustainable Development

The most controversial aspect of the U.S. response to the Kyoto Protocol is its lack of a defined, mandatory national GHG emissions reduction target. While the House and Senate bills are silent with respect to this issue, the Bush plan sets forth a broad emissions reduction objective based on voluntary compliance and a projected ten year measurement of declining GHG intensity. The Bush plan imposes neither an actual fixed rate reduction of absolute GHG emissions, nor an annual GHG intensity reduction target. GHG intensity measures the ratio of GHGs to economic output expressed in terms of gross domestic product (e.g., per \$1 million of GDP).¹⁴⁸ The Bush Administration’s use of a GHG intensity measurement seems to be based on a similarly broad indicator used to measure energy efficiency per unit of GDP. However, it appears that such indicator fails to adequately consider the environmental impacts from continued economic growth.¹⁴⁹ It has been suggested that:

“The central question in the analysis of energy efficiency may really be ‘efficient with respect to what?’ Measurement of energy efficiency always relates to the specific policy objectives at stake. The appropriate indicator is dependent on the policy objective. For example, if the policy objective concerned the environment, then the intensity indicator would involve carbon [and/or carbon equivalent] emissions. From the global warming perspective, the absolute carbon emissions are obviously most important, and energy intensity is NOT relevant. On the other hand, if economic productivity is the policy objective, then energy expenditures per dollar of GDP might be a more suitable indicator.”¹⁵⁰

This analysis suggests that if the Bush Administration’s true goal is to address the environmental problem of climate change and to encourage a reduction in U.S. GHG emissions, its measurement of GHG intensity would be based upon the more appropriate ratio of GHG emissions to energy output, rather than upon the ratio of GHG emissions to economic output (GDP). Instead, the Bush plan seems to have combined these two separate ratios into one (GHG emissions relative to GDP). As a result, the goal of promoting cleaner and more efficient energy use appears secondary to the primary goal of promoting more economic production at the least energy and environmental protection cost, especially in the short term. And, so it would seem, under the Bush and House plans (in contrast to the Senate bill), that advanced technologies, especially in the near term, would be used more to develop efficient uses of conventional energy sources than to develop cleaner, more renewable and environmentally-friendly sources of energy.¹⁵¹

With environmental protection being measured relative to GDP, especially absent a sizeable and rigid GHG intensity reduction target, there is no assurance that a given

level of environmental protection (a decrease in absolute levels of GHG emissions) would be achieved.¹⁵² For example, although GHG intensity decreased over the last two decades, studies have shown that total emissions continued to rise.¹⁵³ And, at least one study has concluded that a falling GHG intensity is normal, since GDP typically rises faster than GHG emissions.¹⁵⁴ If this is true, the Bush plan's projected 18 percent GHG intensity decline for 2012, assuming a GDP growth rate consistent with the past, would appear to continue, or at the very most, slightly improve upon, the same trend of GHG intensity reductions experienced in the past, with a comparable *increase* in absolute levels of GHG emissions of approximately 12-14 percent.¹⁵⁵ Consequently, it is likely that such a target would not result in the timely development and deployment of technologies that, over time (10, 20, 30, or perhaps even 50 years) would substantially reduce the "carbon intensity" of the environment and contribute to the well-being of future generations.¹⁵⁶ Therefore, the Bush plan's voluntary GHG intensity target, barring consideration of any other aspects of the proposed U.S. response, arguably would not constitute a successful climate change strategy that is likely to promote sustainable development.

2. Invoking the Precautionary Principle, the Prevention Principle, the Principle to Enact Effective Domestic Environmental Legislation, the Principle of Sustainable Development and the Principle of Public Participation

A national 'call to arms' is clearly expressed within the many provisions of the Bush plan and the Senate Climate Change Act that address the complex issues surrounding global climate change. The significance of this expression lies in the integration of environmental protection with development, especially considering our lack of scientific certainty concerning the precise causes and magnitude of global climate change and the precise impact that GHG emissions will have upon the global environment. This renewed focus reflects that the United States has begun to satisfy the obligations imposed pursuant to the "Precautionary Principle" and the "Prevention Principle," as articulated within the Rio Declaration on Environment and Development.¹⁵⁷ The fact that many of the proposed goals and the measures selected to implement them will not have a measurable impact upon the global environment until well into the future should not detract from their importance.

The Bush plan and Senate bill (EPA 2002 and Climate Change Act) contain a plethora of programs, tax incentives and funds earmarked for scientific and applications-oriented research and development and for the expansion of voluntary public-private collaborations. These proposals are intended to promote and accelerate the development and use of breakthrough technologies that ultimately will stabilize and then reduce U.S. GHG emissions and global GHG concentrations. To achieve this end, they emphasize making conventional technologies more energy efficient and climate-friendly in the short term, and establishing a new infrastructure for renewable and clean technologies through intense research and investment, over the long-term. In effect, they demonstrate a serious attempt by the United States to encourage a paradigm shift in public behavior away from consumption toward more climate-

friendly energy use.¹⁵⁸ This approach is likely in the future to yield ancillary benefits, such as cleaner air, better health, and the creation of new paradigms, new industries, new products and new sources of employment.¹⁵⁹

In addition, the Climate Change Act and the Bush plan openly seek the creativity and expertise of the private and nonprofit sectors to assist the United States in fulfilling its global responsibility to promote GHG emission reductions.¹⁶⁰ This approach assumes, consistent with Rio Declaration, Principle 10, that “Environmental issues are best handled with the participation of all concerned citizens at the relevant level”.¹⁶¹ The Climate Change Act, for example, expresses the need to solicit private and nonprofit sector consultants, including NGOs, to assist in the development of GHG measurement and verification standards. Also, the Bush plan seeks the involvement of NGOs in debt-for-nature swaps, and endeavors to build upon existing ‘voluntary’ GHG emissions reduction agreements (legally enforceable contracts) entered into with individual companies within specific energy emitting industry sectors, pursuant to its new Climate Leaders Program.¹⁶² Apparently, experts believe that the private and nonprofit sectors will be better able to anticipate and react to future government initiatives if they are more knowledgeable about the issues surrounding global climate change. Such knowledge may even encourage them to move forward with substantial capital investments that will eventually secure significant emissions reductions.

Unlike the Kyoto Protocol, the U.S. response does not currently include a detailed proposal for emissions trading, even though economists generally agree that the ability of a tradable permit program to make pollution an ‘internal’ cost of business is actually very effective.

The combination of a mandatory and voluntary emissions reporting system subject overall to independent third party verification, in addition to the creation of a new national greenhouse database, as proposed by the Climate Change Act, recognizes that, while voluntary programs like those called for by the Bush plan can provide valuable experience for designing future efforts, a mandatory program calling for accountability is necessary to achieve the level of emission reductions that will ultimately be required. It may also serve as an eventual bridge back to the international Kyoto regime, which requires Parties to establish a national emissions monitoring system and a registry to track trades, in order to utilize the free market emissions reduction mechanisms. The higher level of scrutiny and specificity imposed upon large GHG emitters and the creation of a more rigorous voluntary reporting program that can track and verify current, as well as, previous emissions and emissions reduction data, are likely to contribute toward a long-term sustainable development goal of inventorying U.S. GHG emissions for the purpose of targeting them for reduction. Although the Climate Change Act and Bush plan take different approaches to assure compliance with these reporting requirements (the Senate plan would impose up to a \$25,000

civil penalty for each day of noncompliance and prohibit inclusion of emissions reductions credits to determine future entity baselines, while the Bush plan would focus on emissions trading credit incentives), a combined 'carrot and stick' approach, if adopted, would likely encourage the beginning of behavioral change within U.S. society that is necessary to stabilize and then reduce GHG emissions.¹⁶³

Unlike the Kyoto Protocol, the U.S. response does not currently include a detailed proposal for emissions trading, even though economists generally agree that the ability of a tradable permit program to make pollution an 'internal' cost of business is actually very effective.¹⁶⁴ The Bush plan, however, does allude to the creation of 'transferable credits' that will be given to companies that can show 'real emissions reductions' (as yet undefined), for possible use within a future market-based trading system.¹⁶⁵ And, the Climate Change Act calls for the creation of 'flexible domestic and international mechanisms', including joint implementation, emissions trading and carbon sequestration projects that will reduce, avoid and sequester GHG emissions.¹⁶⁶

Perhaps the lack of a detailed emissions trading plan within these proposals may have more to do with the fact that existing domestic emissions trading programs to date have not been designed to address an environmental challenge as scientifically, economically, and politically complex as global climate change.¹⁶⁷ Or perhaps, experts may realize that, despite its inherent flexibility, a domestic emissions trading system cannot lower the cost of securing emissions reductions significantly below the level that can be achieved in a regulatory command and control environment, unless it has been well designed.¹⁶⁸ Whatever the reason, history has shown that, in the absence of a pre-existing regulatory framework, a GHG emissions trading program within the United States will likely proceed in a gradual manner, as policy development and trading proceed concurrently rather than sequentially with each influencing the other.¹⁶⁹ That the Bush plan refers to and the Climate Change Act calls for a future domestic GHG emissions (credits) trading system, however, signifies the potential for a very different outcome, one in which the United States, consistent with the Kyoto Protocol, has officially begun to consider how to properly design such a program. This, in turn, will further the U.S. long-term goal of promoting market efficiencies that ultimately will lead to absolute GHG emission reductions.¹⁷⁰

In contrast, the House energy bill's emphasis on exploiting 'known technological options' and on production and production-related tax incentives, is intended to retard the change of our country's current energy infrastructure, which is comprised of two major energy systems that have very little overlap.¹⁷¹ It is also intended to minimize the significant short-term economic and social costs, including the industry sector dislocation and unemployment that the U.S. economy is likely to suffer during the transition from one energy mix to another.¹⁷² Because the House energy bill focuses on creating domestic future well-being at the short term expense of the global atmosphere, given that many of the House bill's production incentives will likely encourage resource intensive production patterns that will, in the short term, increase U.S. GHG emissions, the House energy bill would appear to ignore and violate all of

the abovementioned principles, and therefore fail to promote sustainable development. At the very least, it would contravene both the spirit and letter of Article 2 of the Kyoto Protocol, which defines the promotion of fiscal and tax incentives and subsidies in all GHG emitting sectors as running counter to the concept of sustainable development.¹⁷³ The important question, however, is whether the overall long-term strategic U.S. vision of which the House bill is a part, would lead to future intergenerational and intra-generational well-being.

3. Invoking the Principle of Common But Differentiated Responsibilities, the Principle of Intergenerational and Intra-generational Equity, the Principle of Exchanging Scientific and Technological Know-how and the Principle of Global Cooperation

It would appear, that the programs designed to foster international cooperation and a greater understanding of issues relating to global climate change established and/or expanded by the Bush plan and Senate Climate Change Act, can help to improve the economic and environmental well-being of persons living within both the developed and developing worlds, taking into account the needs and capabilities of each of the parties.¹⁷⁴ These initiatives include the joint international climate action and scientific partnerships with Central America, Italy, Japan, and Australia (and soon, possibly Canada), and the Tropical Forest Conservation Act partnerships with Bangladesh, Belize, El Salvador, Thailand (and now Peru). They also include the Climate Change Act's proposed pilot program to provide financial assistance to U.S. firms that undertake "qualifying international energy deployment projects" in developing countries and countries in transition, as well as, the Clean Energy Exports Program, which is intended to facilitate the transfer of U.S. clean energy technology to developing countries and countries in transition that are expected to experience significant GHG emissions growth within the next 20 years. Consistent with the mandate of the Kyoto Protocol and the Marrakech Agreement, these technology transfer initiatives, made possible by the abundant resources of the United States, over time, can potentially help to promote endogenous capacity-building.¹⁷⁵ In addition, these policies can possibly help to provide the necessary financial and technological incentives for the developing world to begin altering its current GHG emitting behavior, and thereby contribute to the stabilization, and later, the reduction of global GHG emissions.¹⁷⁶ This type of cooperative approach could eventually encourage specific developed and developing countries to assume their 'common yet differentiated responsibilities' and to join the United States in beginning to fulfill their shared responsibility to protect the global atmosphere.

V. CONCLUSION –THE U.S. RESPONSE TO THE KYOTO PROTOCOL, WHILE FLAWED, IS A GOOD BEGINNING

While certain aspects of the proposed U.S. response to the Kyoto Protocol can fairly be said to represent a "new beginning" concerning the U.S. attitude and behavior towards the long-term problem of global warming and climate change, other aspects

of the response continue to focus on short-term energy needs to the detriment of the global environment. It is therefore uncertain whether the U.S. proposal, in its totality, will ultimately promote sustainable development in the context of global climate change within the foreseeable future. Much will depend, instead, on whether these proposals, like the provisions of the Kyoto Protocol, represent only the first of many steps directed at stabilizing global GHG emissions. At present, the U.S. proposal is as impalpable as the Kyoto Protocol, since in neither case has anything of substance materialized – few, if any, truly revolutionary technologies have been developed and transferred, and few, if any, significant GHG emissions reductions have been registered and inventoried. What appears most certain is that each climate change regime probably best reflects the needs and special circumstances of its participants. If sustainable development is as much an aspiration as it is an objective, there is, no reason why these two regimes cannot operate, at least in the near future, in both a concurrent and interactive manner.

At present, the U.S. proposal is as impalpable as the Kyoto Protocol, since in neither case has anything of substance materialized.

VI. LOOKING TOWARD THE FUTURE

However flawed the proposed U.S. response to the Kyoto Protocol may be, it does, at least, set forth goals that the United States believes it can realistically achieve. And it is precisely this issue that other developed nations are now debating as they decide whether to ratify the protocol.

For example, Canadian news media recently reported that Canada might join the United States and pull out of the Kyoto Protocol, despite the government's recent disclosure of a four-part action plan to meet its Kyoto obligations.¹⁷⁷ It was noted, that even if Canada chose to ratify, it “has little chance of fulfilling its Kyoto commitment to cut emissions of the greenhouse gases blamed for global warming by 6 percent from 1990 levels by 2010. Recent estimates show the country's emissions actually grew by 20 percent from 1990 to 2000.”¹⁷⁸

Furthermore, notwithstanding Japan's ratification of the Kyoto Protocol, on June 4, 2002, recent media reports indicate that the Japanese legislature continues to wrestle with the details of a domestic bill to revise the nation's global warming prevention law.¹⁷⁹ The press has criticized the centerpiece of the bill, entitled the ‘Kyoto Objective Achievement Plan’, as lacking ‘bite’ as well as public support:

“While long on ideas, it is short on incentives and implementation details – both essential for reducing emissions...Actual domestic cuts total 4.4 percent of the 6 percent required, with the bulk of cuts – nearly 90 percent – to be amassed by using controversial ‘sinks’ or the carbon-absorbing properties of forests. The remaining

1.6 percent is ostensibly to come from "Kyoto Mechanisms"...A glaring omission in the plan is the role of economic instruments. Industry opposition and inter-ministry differences of opinion effectively have kept any carbon tax or emissions trading initiative from making it into the scheme...What is clear is that government figures are premised on boosting nuclear power by 30 percent over current levels as well as having up to 13 new nuclear power plants on line by 2012. Given current public sentiment, this seems improbable...No mechanism exists to guarantee cuts of any kind, nor even to require that companies keep tabs on emissions, let alone report or make them public".¹⁸⁰

In addition, on June 5, 2002, Prime Minister John Howard informed the Australian Parliament that Australia, the world's largest exporter of coal, would not ratify the Kyoto Protocol. He asserted that, "It is not in Australia's interests to ratify. For us to ratify the protocol would cost us jobs and damage our industry. That is why the Australian government will continue to oppose ratification".¹⁸¹ The Australian government had been undecided about whether it would join the list of countries that previously ratified the Kyoto Protocol, since its February 28, 2002 signing of a bilateral agreement with the U.S. on climate change.¹⁸²

That Canada, Australia and Japan are now experiencing these domestic climate change debates is highly significant. Without the United States and Australia, virtually every other industrial country must ratify the Kyoto Protocol in order for it to become binding international law.¹⁸³

Assuming that most of the features contained within the proposed U.S. response to the Kyoto Protocol survive the upcoming Congressional Conference Committee debates, and are then signed into law by the President, the development of a parallel U.S. domestic GHG system, which includes emissions trading, would most likely follow. At least one study has concluded, that even if the United States remains outside the Kyoto regime, U.S. companies may still be able to gain access to emissions reductions generated within a developing country Kyoto party for purposes of compliance with a U.S. domestic emissions limit. Emissions reduction credits can be obtained in one of two ways using the unilateral CDM mechanism allowed by the Marrakech Agreement. U.S. buyers, for example, can purchase marketed emissions reduction credits from willing developing country sellers. Since developing countries do not have national emissions reduction obligations, such sales would not directly affect the integrity of the Kyoto Protocol's 'Annex B' emission caps.¹⁸⁴ Alternatively, U.S. companies may simply engage in clean development projects directly with a willing developing country Kyoto party in order to secure its share of certified emission reductions. Whether such a parallel U.S domestic GHG system will succeed on its own, be integrated into the Kyoto regime, or perhaps, even evolve into a separate 'JUSCANZ' GHG system, will depend on the actions taken today and in the foreseeable future.

Notes

¹ Global Climate Change Policy Handbook, Executive Summary p.1 at www.whitehouse.gov/news/releases/2002/02/climatechange.html; "Building Institutions for a Better Environment", Economic Report of the

President – 2002, Chapter 6, p.2.

² David Hunter, et. al., “U.S. Rejection of Kyoto Protocol Process”, *International Environmental Law*, p. 647. Article 25 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (“The Kyoto Protocol”) provides that the protocol will enter into force only after fifty-five states ratify or adhere to it, on the condition that those states account for at least 55 percent of the total 1990 carbon dioxide emissions of developed states.

³ The Administration’s reasoning apparently was based on the text of S. Res. 98 (the “Byrd-Hagel Resolution”), introduced by Senators Byrd and Hagel, along with 64 co-sponsors, and passed by the Senate pursuant to a vote of 95-0, on July 25, 1997. The non-binding but influential resolution was, in large part, responsible for the Kyoto Protocol not being submitted by former President Clinton to the Senate for ratification. The resolution appeared within S.1132, which was later adopted by the House in H.R. 4761.

⁴ S.517, the National Laboratories Partnership Improvement Act of 2001, among other things, authorized funding the Department of Energy to enhance its mission areas through technology transfer and partnerships for fiscal years 2002 through 2006.

⁵ SA No. 2917 to S. 517 was originally sponsored by Senator Tom Daschle (D.SD) and was submitted and proposed on February 15, 2002, the day following the announcement of the President’s plan. Since then, multiple amendments have been made to SA No. 2917. The climate change provisions contained within SA No. 2917, in particular, have since been amended by SA No.3231 and S.A. No. 3239. SA No. 3231 was proposed by Senator Jeff Bingaman (D.NY) on April 22, 2002, and was approved, as modified, on April 23, 2002. (Congressional Record, CR S3047-3054, and CR S3145-3147. See, also: Bingaman Modified Amendment No. 3231 (to Amendment No. 2917), to clarify the structure for, and improve the focus of, global climate change science research. (Congressional Record, April 23, 2002), at www.legislative.noaa.gov/climatechangeamendmenttoenergybill042302.html. SA No. 3239 significantly altered the climate change provisions within S.A. 2917. SA No. 3239, as modified, was approved on April 25, 2002. (Congressional Record, CR S3394-3395 and CR S3354-3357). The ultimate form that the Senate’s U.S. Climate Change plan will assume remains uncertain, considering that it must still survive future House-Senate Conference Committee hearings where it will be reconciled with other competing House bill provisions.

⁶ S.1979 was originally proposed by Senator Max Baucus (R. MT). An explanation of its provisions can be found within Senate Finance Committee Report 107-140. S. 1979 was reported to the Senate on February 13, 2002, and was subsequently placed on the Senate Legislative Calendar for debate on March 1, 2002. It appears that S. 1979 morphed into SA No. 3231 (See: CR S3083 – CR S3105) on April 22, 2002, and later into SA No. 3286 on April 23, 2002. See, also: Senate Colloquy for “Amendment No. 3286 To Amendment No. 2917 to S.517, “Purpose: To Provide Energy Tax Incentives”, p. CR S3117 (April 23, 2002). The energy tax incentives were recently proposed and approved as Amendment No. 3286 to SA No. 2917, on April 23, 2002, and are now contained within the final Senate bill. A more detailed summary of the legislative proposals submitted by members of the 107th Congress (2000-2002) regarding global climate change, can be found on the website of the Pew Center of Global Climate Change, at www.pewclimate.org/policyguide/cong_chart_update.cfm.

⁷ The final Senate bill was approved by an overwhelming margin of 88-11. The language of S.517 was subsequently incorporated into H.R. 4 as an amendment. It is now referred to as, amended H.R. 4. See: “S.517, Bill Summary & Status for the 17th Congress”, at www.senate.gov; Shailagh Murray, “Energy Bill Moves Ahead in Senate – Use of Renewable Sources To Rise but Measure Has Few Domestic Oil Incentives”, *Wall Street Journal*, p. A4 (4/26/02); Helen Dewar, “Senate Approves Energy Measure – Scaled-Back Bill Pushes Conservation”, *Washington Post*, p. A1 (4/26/02), at www.washingtonpost.com; David E. Rosenbaum, “Senate Passes an Energy Bill Called Flawed by Both Sides”, *New York Times* (4/26/02), at www.nytimes.com.

⁸ Division D – Integration of Energy Policy and Climate Change Policy, Title X – Climate Change Policy, Title XI – National Greenhouse Gas Database, and Title XIII – Climate Change-Related Research and Development, of SA No. 2917 to S.517, as adopted by H.R. 4 .

⁹ “Guide to the Climate Change Negotiation Process”, p.1, at <http://unfccc.int>.

¹⁰ The United Nations Framework Convention on Climate Change, Art.2.

¹¹ Statement by Robert Priddle, Executive Director Int’l Energy Agency, Paris, to the Third Session of the Conference of the Parties to the U.N. Framework Convention on Climate Change (COP-3).

¹² Gareth Porter, Janet Welsh Brown and Pamela S. Chasek, *Global Environmental Politics*, Third Edition, pp.23-25, (Westview Press 2000).

¹³ The United States is the world’s largest emitter of GHGs, accounting for roughly 25 percent of global emissions. “The U.S. Domestic Response to Climate Change: Key Elements of a Prospective Program”, Pew Center on Global Climate Change (August 2001). The United States is a major source of anthropogenic (man-

made) GHG emissions primarily because our economy is the largest in the world. The U.S. produces this magnitude of emissions, with less than 5 percent of the world's population, but about a quarter of world gross domestic product (GDP). "Greenhouse Gases, Global Climate Change, and Energy", p.2, (Energy Information Administration, U.S. Department of Energy) at www.eia.doe.gov.

¹⁴ This group, which also included New Zealand, was referred to as the 'JUSCANZ' countries. During the negotiations, the United States was concerned that the Europeans had an unfair economic advantage in complying with any emissions standards. As a negotiating tactic, it indicated that it was considering the creation of a separate GHG trading regime that included these countries. As of June 4, 2002, New Zealand remains undecided about whether to ratify the Kyoto Protocol. It seems likely, however, that Australia's rejection of the protocol will have an influence upon New Zealand's decision.

¹⁵ As of June 4, 2002, following the ratification of the protocol by the European Union and all fifteen of its member states, seventy-four (74) of the eighty-four (84) countries that signed the Kyoto Protocol have ratified or acceded to it. However, these countries together account for only 35.8% of the total 1990 carbon dioxide emissions of developed states. See: "The Convention and the Kyoto Protocol, List of Signatories & Ratification to the Kyoto Protocol", at <http://unfccc.int/resource/convkp.html>. The fifteen European Union members formally ratified the Kyoto Protocol at the United Nations on June 1, 2002. U.N. Secretary General Kofi Annan applauded the action as "good news for the entire world". "Kyoto Pact Ratified by EU, Japan; U.S. Still Intransigent", Reuters, Business World Internet Edition (June 6, 2002) at <http://bworld.net/current/TheEnvironment/envistory2.html>; "U.S. Attached as EU Ratifies Kyoto", CNN.com., (June 1, 2002) at <http://europe.cnn.com/2002/WORLD/europe/0601/kyoto.eu/index.html>.

¹⁶ William Moomaw, Kilparti Ramakrishna, Kevin Gallagher and Tobin Freid, The Kyoto Protocol: A Blueprint for Sustainable Development, 4 *Journal of Environment and Development* 82, at p.89 (March 1999).

¹⁷ Kyoto Protocol, Art. 3(1). This projection assumes that the Parties are able to meet the protocol's standards, which some commentators believe is highly doubtful considering current consumption patterns. In any event, this 5% projected reduction in GHG emissions is only a small down payment on the reductions that will ultimately be required. The Second Assessment Report of the IPCC calculates that reductions of 70% to 90% of 1990 global carbon dioxide emissions will ultimately be required IF we wish to *stabilize* atmospheric concentrations at levels that will induce less severe changes in the climate system in the future. Moomaw, Ramakrishna, Gallagher and Freid., at p.89. Scientists nevertheless remain uncertain about the precise carbon dioxide concentration level at which severe climate changes will begin to stabilize.

¹⁸ Kyoto Protocol, Annex B. Based on projections of the growth of emissions using current technologies and processes, the reduction in GHGs required of the U.S. would likely be between 20% and 30% below where it would be otherwise by the 2008-2012 budget period. It is thus questionable whether the 7% emission reduction target level could ever be achieved even if sinks are counted and one or more of the Kyoto mechanisms are utilized. Susan R. Fletcher, "CRS Report for Congress 98-2: Global Climate Change Treaty: The Kyoto Protocol" (March 6, 2000).

¹⁹ Kyoto Protocol, Annex A.

²⁰ Kyoto Protocol, Art. 2(1)(a) and 2(1)(b). 'Annex I countries' as defined by the UNFCCC, are the industrialized countries, including the countries in transition to a market economy, namely the nations of Eastern Europe and the former Soviet Republic. 'Annex II countries' as defined by the UNFCCC, are the industrialized countries exclusively. 'Annex B countries' as defined by the Kyoto Protocol, are those countries subject to a binding greenhouse gas emissions limitation pursuant to the protocol. They are the same nations listed in Annex I of the UNFCCC, except for Belarus and Turkey.

²¹ Kyoto Protocol, Art. 2(1)(a)(i),(ii) and (iv); .Moomaw, Ramakrishna, Gallagher and Freid at p.84.

²² Kyoto Protocol, Art. 6(1)(d), Art.12 , Art.17.

²³ Kyoto Protocol, Art. 16.

²⁴ Moomaw, Ramakrishna, Gallagher and Freid at pp.85-86.

²⁵ Kyoto Protocol, Art. 6.

²⁶ Moomaw, Ramakrishna, Gallagher and Freid at pp.86-87.

²⁷ *Ibid*, p.86.

²⁸ Kyoto Protocol, Art.12.

²⁹ Kyoto Protocol, Art. 12(6); Moomaw, Ramakrishna, Gallagher and Freid at p.85.

³⁰ "Climate Talks in Marrakech – COP7: News and Information", pp.2-3, Pew Center on Global Climate Change (October 2001); "Climate Talks in Marrakech – COP7: Update, November 9, 2001 – Final Analysis", p.3, Pew Center on Global Climate Change (November 2001).

³¹ The Bonn Agreement defined the kinds of sink activities that are eligible for emissions credits and for forest management, and set country-specific caps for each Annex I country. They include: forest management, cropland management and re-vegetation. There is no overall cap on sink credits. For forest management, however, countries are assigned specific upper limits on the amounts that can be credited against their emissions targets. Sink projects also will be allowed under the CDM, but will be limited to 'afforestation and reforestation projects', and will be capped at 1% of a country's base year emissions. "Climate Talks in Marrakech – COP7: News and Information", p.2, Pew Center on Global Climate Change (October 2001).

³² "Climate Talks in Marrakech – COP7: News and Information", pp.2-3, Pew Center on Global Climate Change (October 2001); "Climate Talks in Marrakech – COP7: Update, November 9, 2001 – Final Analysis", p.3, Pew Center on Global Climate Change (November 2001).

³³ "Climate Talks in Marrakech – COP7: Update, November 9, 2001 – Final Analysis", p.2, Pew Center on Global Climate Change (November 2001).

³⁴ *Ibid.*, p.3.

³⁵ "Climate Talks in Marrakech – COP7: News and Information", p.2, Pew Center on Global Climate Change (October 2001).

³⁶ Arguably, certain norms of international law are so important that a state owes a duty to obey those norms to the international community as a whole, rather than to individual states, including obligations 'erga omnes' (of all to all), pursuant to which all states, even those not injured in the traditional sense, may bring a complaint based on a violation of a global obligation. Barcelona Traction, Light and Power Co., Ltd. (New Application 1962). The International Law Commission has endorsed the idea that obligations *erga omnes* include obligations "of essential importance for the safeguarding and preservation of the human environment." U.N.GAOR, 31st Session.

³⁷ IUCN Draft Covenant on Environment and Development, Art. 3 (1995); David Hunter, et al., *International Environmental Law*, p. 345.

³⁸ "Prosperity...allows us to commit ever-increasing resources to environmental protection and to the development of science and technology that will lead to both future growth and a better environment...Empirical evidence suggests that growth eventually goes hand in hand with environmental improvements". "Building Institutions for a Better Environment", *Economic Report of the President – 2002*, Chapter 6, p.2.

³⁹ *Global Climate Change Policy Handbook*, Executive Summary p.1. "We are uncertain about the effect of natural fluctuations on global warming. We do not know how much the climate could or will change in the future. We do not know how fast climate change will occur, or even how some of our actions could affect it. Finally it is difficult to say with any certainty what constitutes a dangerous level of warming that must be avoided". "Building Institutions for a Better Environment", *Economic Report of the President – 2002*, Chapter 6, p.17, at <http://w3.access.gpo.gov/eop/index.html>.

* Recently, the Bush Administration, pursuant to its obligations under the UNFCCC, submitted its third climate action report, "U.S. Climate Action Report 2002", to the United Nations. The 269 page report provides an update on key activities conducted by the U.S. since the submission of its second report in 1997, an inventory of U.S. GHG emissions and sinks, an estimate of the effects of mitigation measures and policies on future emissions levels and a description of U.S. involvement in international programs. It also discusses U.S. national circumstances that affect U.S. vulnerability and responses to climate change, as well as information on U.S. climate research, observation and adaptation programs. See: *Federal Register Notice*, Vol. 66, No. 221, pp. 57456-57 (Nov. 14, 2001) [FR Doc. 01-28736]. With respect to the latter subject matter, the report: 1) identifies human activity in the U.S. as the cause of much of the increase in greenhouse gas concentrations in the U.S.; 2) confirms that increased GHG concentrations are indeed causing 'real' global warming and climate change in the U.S.; and 3) details how global warming will impact the U.S. population (health) and the U.S. environment. The report, which was authored by the Environmental Protection Agency and posted on the agency website on June 1, 2002, concludes that, of the GHGs that are directly influenced by human activity, the most important are carbon dioxide (the primary source of which is fossil fuel burning), methane, nitrous oxide, ozone and chlorofluorocarbons (CFCs). The report indicates that, "as a result of human activities, surface air temperatures and sub-ocean temperatures in the U.S. will continue to rise through the 21st century, with resulting increases in rainfall rates and increased susceptibility of semi-arid regions to drought." While the precise impacts of global warming will vary (and may include some short-term benefits), it is certain that: 1) many natural ecosystems, such as coral reefs, alpine meadows and southeastern forests will be endangered; 2) infrastructure damage is likely to result from permafrost melting in Alaska and from sea level rise and storm surges in low-lying coastal areas; and 3) the effects of air and water pollution on the environment and human health are likely to be magnified. The report concludes that adaptation is likely to help protect much of the U.S. population. "Maintenance of our nation's public health and community infrastructure, from water treatment

systems to emergency shelters, will be important for minimizing the impacts of water-borne diseases, heat stress, air pollution, extreme weather events, and diseases transmitted by insects, ticks, and rodents.” See: “Third National Communication of the United States of America under the United Nations Framework Convention on Climate Change, Chapter 6: Impacts and Adaptation; Appendix D, Climate Change Science: An Analysis of Some Key Questions”, at www.epa.gov/globalwarming/publications/car/. Several recent news articles and editorials have focused on this portion of the report. See: John Heilprin, “White House Warns on Climate Change”, AP, [washingtonpost.com](http://www.washingtonpost.com), (June 4, 2002) at <http://www.washingtonpost.com>; Andrew C. Revkin, “Climate Changing, U.S. Says in Report”, The New York Times on the Web (June 3, 2002) at <http://www.nytimes.com/2002/06/03/science>; “Bush Dismisses EPA Report on Climate Change”, AP, CNN.com (June 4, 2002) at <http://www.cnn.com/2002/ALLPOLITICS/06/04/bush.climate.change.ap/index.html>; Bob Herbert, “Ignoring a Growing Peril”, The New York Times on the Web (June 6, 2002) at <http://www.nytimes.com/2002/06/06/opinion>; Editorial, “Crossroads on Global Warming”, The New York Times on the Web (June 3, 2002) at <http://www.nytimes.com/2002/06/03/opinion>; Eileen Claussen, “The Global Warming Dropout”, The New York Times on the Web (June 7, 2002) at <http://www.nytimes.com/2002/06/07/opinion>.

⁴⁰ In terms of emissions, the goal is to reduce the estimated 183 metric tons of emissions per million dollars of GDP emitted today, to 151 metric tons per million dollars of GDP in 2012, through current and new methods. Cumulatively over the ten-year period, more than 500 million metric tons of GHGs will be prevented from entering the atmosphere. Global Climate Change Policy Handbook, Executive Summary, p.2.

⁴¹ Global Climate Change Policy Handbook, pp. 6-7. It is arguable that the notion of “GHG intensity”, as articulated by the Bush plan, runs counter to the concept of sustainable development which, by definition, seeks to prevent the decoupling of the economy from the environment. According to environmental economists, the failure to include within the price of goods and services the associated social and environmental costs incurred to produce such goods and services, is a classic ‘externality’ that results in pricing distortion and the continued exploitation of the environment.

⁴² Ibid. According to the Bush plan, “forecasts of the average reductions required by nations implementing the Kyoto Protocol range from zero to 7 percent...Our goal translates into a 4.5 percent reduction beyond forecasts of the progress that America is expected to make based on existing programs and private activity”. Ibid.

⁴³ Although businesses can already register emission reductions under Section 1605(b) of the 1995 Energy Policy Act, participation has been limited. Proposed improvements to this program include enhancement of measurement accuracy, reliability and verifiability. It should recognize reductions achieved through capture and sequestration projects, mitigation projects that increase energy efficiency and/or switch fuels, and process changes to reduce emission of potent GHGs, such as methane. Global Climate Change Policy Handbook, pp. 7-8.

⁴⁴ Ibid.

⁴⁵ Ibid. Such a market does not yet exist, though several studies suggest how such a market can successfully be established.

⁴⁶ Existing specific industry sector challenges include: 1) The New PFC Reduction Climate Partnership Agreement, between the EPA and the Semiconductor Industry Association; 2) The Voluntary Aluminum Industrial Partnership entered into by twelve of the thirteen U.S. primary aluminum producers; 3) EPA’s Natural Gas STAR Program, participated in by companies engaged in U.S. natural gas production, transmission pipelines, distribution service connections, and processing; 4) EPA’s Coalbed Methane Outreach Program; 5) Ag-STAR Program and the Ruminant Livestock Efficiency Program (a partnership between the USDA and EPA); and 6) The Combined Heat and Power Partnership, between the EPA and 17 Fortune 500 companies, city and state governments and nonprofits, committed to reducing carbon dioxide. Global Climate Change Policy Handbook, pp. 13-14.

⁴⁷ Global Climate Change Policy Handbook, p.13. The following companies have voluntarily agreed to participate in this program: Florida Power and Light, GM, Lockheed Martin, Miller Brewing Co., Bethlehem Steel, Interface Inc., SC Johnson and Holcim Inc.

⁴⁸ Global Climate Change Policy Handbook, p.9.

⁴⁹ The \$4.6 billion of proposed tax incentives are described in more detail within pages 10-12 of the Global Climate Change Policy Handbook.

⁵⁰ Proposed funding of \$1.7 billion will permit the CCRI to improve the integration of scientific knowledge, including measures of uncertainty, into effective decision support systems, and will adopt performance metrics and deliverable products useful to policymakers in a short (2-5 year) timeframe. Ibid. pp.24-25.

⁵¹ Approximately, \$1.3 billion will be committed to this endeavor. Among its objectives, are: a) the evaluation of the state of U.S. climate technology; b) the development of advance mitigation technologies that offer the

greatest promise for low cost reductions of GHG emissions; and c) the development of opportunities to enhance private-public partnerships in applied research and development to expedite innovative and cost-effective approaches to reducing GHG emissions. *Ibid.*, pp. 25-26.

⁵² The U.S. and Italy identified more than 20 joint climate change research activities for immediate implementation during a January 2002 meeting in Rome. *Ibid.*, p.5 and p.18. On June 7, 2001, the U.S. and the Central American Heads of Government expanded and renewed the Central American-United States of America Joint Accord (CONCAUSA).

⁵³ See: "U.S., Japan Agree on Possible Joint Climate Change Project" (770), Statement of the Science and Technology Working Group of the U.S.-Japan High Level Consultations on Climate Change, U.S. State Department Washington File, International Information Programs (March 1, 2002) at <http://usinfo.state.gov>; "U.S., Japan Consult on Climate Change Cooperation" (880), Second Meeting of the U.S.-Japan High-Level Consultations on Climate Change, U.S. Department Washington File, International Information Programs (April 6, 2002) at <http://usinfo.state.gov>.

⁵⁴ On February 28, 2002, the Bush Administration executed a partnership agreement on climate change with Australia. "U.S., Australia to Set Up Climate Action Partnership" (410), U.S. Department of State, International Information Programs (February 27, 2002) at <http://usinfo.state.gov>.

⁵⁵ Approximately \$40 million will be budgeted for such programs; David Malin Roodman, "Ending the Debt Crisis", *State of the World, 2001* (Lester Brown et al., eds. 2001), p.160; The Tropical Forest Conservation Act ("TFCA") program offers eligible countries the opportunity to reduce their debt to the United States while preserving their tropical forests. Grants from the local fund can be used to support a wide range of activities, such as: 1) training persons and organizations involved in forest conservation; 2) restoration of forested areas; and 3) protection of parks and other protected areas. TFCA agreements have already been negotiated by the Bush Administration with Bangladesh, Belize, El Salvador and Thailand. *Global Climate Change Policy Handbook*, at pp.18-19. Recently, the U.S. entered into a debt-for-nature agreement with Peru. "U.S.-Peru Debt Agreement to Protect Biodiversity, Tropical Forests", (410) Washington File, (March 24, 2002) at www.usinfo.state.gov.

⁵⁶ Article 3 of the UNFCCC requires developed country Parties to provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in fulfilling their responsibilities under the convention. In addition, they shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full 'incremental costs' of implementing such measures.

⁵⁷ The goal of such activities is to encourage the accelerated adoption of energy efficiency and renewable energy technologies and practices. *Global Climate Change Policy Book* at p. 22.

⁵⁸ The aim of the bill is to reduce the U.S. dependence on foreign energy sources from 56 percent to 45 percent by January 1, 2012, and to reduce U.S. dependence on Iraqi energy sources from 700,000 barrels per day to 250,000 barrels per day by January 1, 2012. Summary of H.R. 4, as of 8/10/01.

⁵⁹ Division A, Title I, Subtitle A. Such programs include, among others: 1) promotion of export of energy efficient products; 2) energy conservation standards for new buildings; 3) the Federal Energy Management Program; 4) energy efficient lighting and building centers; 5) energy efficiency labeling for windows and window systems; and 6) energy efficiency for commercial office equipment.

⁶⁰ Division A, Title I, Subtitle B, Sec. 121-126. "The Energy Advancement and Conservation Act of 2001". The Act essentially prescribes implementation guidelines for: 1) Federal agency acquisition of only Energy Star products; and 2) metering and sub-metering of all energy-using Federal buildings.

⁶¹ Division A, Title I, Subtitle D, Sec. 141A-143. The program, among other things, directs each agency to promote Energy Star compliant technologies as the preferred technologies for achieving energy efficiency and pollution reduction.

⁶² Summary, Division B, "The Comprehensive Energy Research and Technology Act of 2001". Title I, "Energy Conservation and Energy Efficiency"; Title I, Energy Conservation and Energy Efficiency, Subtitles F and G; Title II, Renewable Energy, Subtitles B and D; Title III, Nuclear Energy, Subtitles A -C; Title IV, Fossil Energy, Subtitles A-D; Title V, Science, Subtitle A, Fusion Energy Sciences, Subtitles B and D.

⁶³ Title I. The many provisions relating to energy conservation focus on promoting renewable energy sources. They include: 1) an extended period during which credits may be obtained for investments made in "wind facilities" and "closed-loop biomass facilities" (*Ibid.*, Title I, Sec. 3102); 2) a 10% credit of up to \$1,000 for each kilowatt of capacity, for the purchase of "qualified stationary fuel cell power plants" (*Ibid.*, Sec. 3103); 3) a \$4,000 to \$40,000 credit for purchasers of "qualified fuel cell motor vehicles" (*Ibid.*, Sec. 3104(a)); 4) a \$250 to \$10,000 credit for purchasers of "qualified hybrid motor vehicles" (*Ibid.*, Sec. 3104(b)); 5) a credit equal to 50% of the excess cost of purchasing a "qualified alternative fuel motor vehicle" (*Ibid.*, Sec. 3104(c)); 6) a

\$1,000 to \$3,500 credit for purchasers of “advanced lean burn technology motor vehicles” (Ibid., Sec. 3104(d)); 7) up to a \$2,000 credit for purchasers of “qualified energy efficiency home improvements, including photovoltaic property expenditures and qualified solar water heating property expenditures” (Ibid., Sec. 3108, 3109); and 8) a 10% credit for purchasers of combined heat and power property (Ibid., Sec. 3113).

⁶⁴ Division C, “The Energy Tax Policy Act of 2001”, Title II. Other tax incentives encourage reliability, such as the current deduction by small business refiners of up to 75 percent of the costs paid or incurred for the purpose of complying with the EPA highway Diesel Fuel Sulfur Control Requirements. (Ibid., Sec. 3204).

⁶⁵ Division C, “The Energy Tax Policy Act of 2001”, Title III. Some tax provisions encourage energy production, such as the current deduction of “delay rental payments” incurred in connection with the development of oil or gas within the U.S., and of geological and geophysical costs incurred in connection with oil and gas exploration in the U.S. (Ibid., Sec. 3303). Furthermore, while encouraging increased energy production, some tax incentives reward the use of “environmentally clean” technologies, such as the 10% investment tax credit for qualified investments in clean coal technology, and the production credit for producing electricity from a qualified advanced clean coal technology electricity generation unit. (Division C, “The Energy Tax Policy Act of 2001”, Title I, Sec. 3117 and 3118). The emphasis placed on ‘clean coal technology’ by the House bill, must be viewed in light of the existing national energy infrastructure and the ready availability of inexpensive coal as an energy resource. The “Clean Coal Power Initiative Act of 2001”, for example, calls for research on and development, demonstration, and commercial application of clean coal technologies, and other specified coal and related technologies. Ibid.

⁶⁶ The final Senate bill (Amendment No. 2917, as amended, to S.517) was approved by an overwhelming margin of 88-11. The language of S.517 was subsequently incorporated into H.R. 4 as an amendment. It is now referred to as amended H.R. 4.

⁶⁷ The energy provisions of the Senate bill are contained within the “Energy Policy Act of 2002” (‘EPA 2002’).

⁶⁸ See: Seth Dunn, “Decarbonizing the Energy Economy”, State of the World 2001, pp.83-102, (Lester Brown, et al., eds. 2001).

⁶⁹ EPA 2002 – Highlights Division E, Enhancing Research, Development and Training, Title XII-Energy Research and Development Programs, Subtitle A-Energy Efficiency, Sec. 1211-1214; Subtitle B-Renewable Energy, Sec. 1221-1223; Subtitle C-Fossil Energy, Sec. 1231-1236; Subtitle D-Nuclear Energy, Sec. 1241-1245.

⁷⁰ This portion of the bill, which was championed by Senator John Kerry (D. MA), sought to raise the CAFÉ standards from the current 24 mpg to 36 mpg. It was soundly defeated on March 13, 2002, by a vote of 62-38. Pursuant to SA No. 2997 to SA No. 2917, approved on March 13, 2002, Republicans and Democrats instead agreed to a compromise amendment that gives the Transportation Department the *option* of raising the CAFÉ standards for cars and some light trucks within the next two years. Any changes would have to take 13 criteria into account, including impacts on safety and employment. John J. Fialka and Norihiko Shirouzu, “Senate Kills Effort to Raise Cars’ Fuel Efficiency”, p.A2 (Wall Street Journal, 3/14/02).

⁷¹ EPA 2002 – Division E, Title IX. These initiatives include: 1) requiring higher fuel efficiency in future Federal purchases of autos for civilian use; 2) saving 16 trillion BTUs of energy each year in federal buildings; 3) encouraging a 25 percent increase in industrial energy efficiency over 10 years; 4) setting new efficiency standards for commercial and consumer products to save over 13 quadrillion BTUs of energy by 2020; and 5) increasing federal investment in research and development on energy efficiency. See: SA No. 3000 to SA No. 2917, approved March 13, 2002.

⁷² Seth Dunn, “Decarbonizing the Energy Economy”, State of the World 2001, p.91, (Lester Brown, et al., eds.).

⁷³ EPA 2002 — Division E, Title XII, Summary.

⁷⁴ Another portion of the Energy Policy Act 2002 focuses on improving the productivity of the U.S. electric transmission system. Among other things, it seeks to: 1) clarify the roles of the Federal Energy Regulatory Administration (“FERC”) and the States in regulating electricity through fair and consistent rules; and 2) provide FERC with the tools to ensure that *competitive electricity markets* work well to provide consumers with affordable energy, including tools that will provide more transparent information *on trading in energy markets* (a key flaw highlighted by the Enron collapse) and tools to protect against monopolies as energy companies restructure over the next several years. Ibid. See: Mitchell Benson, Chip Cummins and Jathon Sapsford, “Trade Disclosures Shake Faith in Damaged Energy Market”, pp. A1, A8 (Wall Street Journal, 5/13/02). Recently, FERC announced its intent to create mandatory rules for the nation’s electricity markets that should be finalized this summer after public comment. If passed as currently envisioned, the rules would formalize what had been a largely voluntary system that required energy-industry cooperation. See, also: Rebecca Smith, “FERC Plans Rules for Electricity Markets – The Stage is Set for Battle With States, Big Utilities Asked to Cede Control”, p.A2

(Wall Street Journal, 3/14/02).

⁷⁵ The tax incentive provisions now contained within the Senate Energy Bill S.517 were recently adopted from SA No. 3286 to SA No. 2917, “The Energy Tax Incentives Act of 2002”, on April 23, 2002 (Congressional Record, pp. CR S3117-3119). It is referred to as the ‘Baucus Amendment’. The legislative history underlying these provisions is contained within Senate Finance Committee Report No.107-40.

⁷⁶ S. 517, Title XIX, Secs. 1901-1903.

⁷⁷ Ibid, Title XXII, Secs. 2201, 2211 and 2212.

⁷⁸ Ibid, Title XXIII, Sec. 2301.

⁷⁹ Ibid, Title XX, Secs. 2001 and 2002.

⁸⁰ Ibid, Title XX, Sec. 2003.

⁸¹ Ibid, Title XXI, Sec. 2106.

⁸² Ibid, Title XXI, Sec. 2102.

⁸³ Ibid, Title XXI, Sec.s 2101, 2103 – 2105.

⁸⁴ Ibid, Title XXI, Sec. 2108.

⁸⁵ Quoted from a speech given by Senator Robert Byrd of West Virginia, as part of a Senate colloquy concerning SA No. 2917 to S.517, on March 21, 2002, (p. CR S2197).

⁸⁶ SA 2917, Sec. 1012(10). This failure has also been cited by the Bush plan.

⁸⁷ Ibid, Sec. 1012(10) and (11).

⁸⁸ Ibid, Sec. 1001(a)(7) and (a)(8).

⁸⁹ Ibid, Sec. 1001(a)(9); A revised report issued by the Natural Resources Defense Council in October 2001, casts doubt on one such concern (expressed within S.98), namely that China, a developing country which is the world’s second largest emitter of GHGs, is unfairly exempted from the very same Kyoto emissions reduction provisions that the U.S. is subject to. The report found, surprisingly, that China’s emissions reductions fell dramatically during the mid to late 1990’s, even as the country’s economy grew rapidly. “Second Analysis Confirms Greenhouse Gas Reductions in China”, Natural Resources Defense Council (October 2001) at www.nrdc.org/globalWarming.

⁹⁰ Otherwise known as the ‘Byrd-Hagel Resolution’, S.Res. 98 was passed by the Senate pursuant to a vote of 95-0, on July 25, 1997. It read as follows: “*Resolved*, That it is the sense of the Senate that —

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 GHG emissions for the Annex I Parties, unless the protocol or other agreement also mandates new scheduled commitments to limit or reduce GHG 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 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.”

⁹¹ SA No. 2917, Sec. 1001(a)(1)-(5); 1012(1) and (3).

⁹² Ibid, Sec. 1001(b)(1)-(3).

⁹³ Ibid, Sec. 1001(b)(1)-(3). 1012(6)(7)(8)

⁹⁴ Ibid, Sec. 1012(12)(A) and (B); (13).

⁹⁵ Ibid, Sec. 1012(13)(A)-(C). Some of the research programs are described within Title XIII of the Climate Change Act, “Climate Change Science and Technology, Department of Energy Programs”, Sections 1301-1302 and 1311-1312.

⁹⁶ Its purpose would be to develop the U.S. climate change response strategy, and its director shall be appointed by and report directly to the President, with the advice and consent of the Senate. Ibid, Sec. 1013(1), 1015(a), and 1016(b). Such person shall submit to the Congress the President’s climate change strategy no later than one year following the date of enactment, and an update thereof, every two years thereafter. Ibid, Sec. 1015 (b)

and (c). In addition, progress reports describing progress on the implementation of the Strategy shall be prepared annually for the President by the director, and shall be submitted annually by the President to the Congress. *Ibid.*, Sec. 1016 (b)(4); 1015 (d). One provision within the Climate Change Act, Section 1013, was recently clarified and elaborated upon (but not modified) during a Senate colloquy adopting Modified Amendment No. 3231 to SA No. 2917. Notwithstanding bipartisan agreement on substantially all provisions within Titles X and XIII of SA No. 2917, a number of senators remained convinced that there needs to be a *Senate-confirmed appointee* in the White House to oversee climate change policy and assure accountability, so that the national energy policy being developed in the White House is not developed independently (and possibly in duplication) of Congress' U.S. climate change policy. The Senators have agreed to move forward to conference with their concerns, where they expect to engage the White House and the House energy conferees to resolve the issue of central accountability in the Executive Office of the President. See: Bingaman Modified Amendment No. 3231 (to SA No. 2917), Congressional Record, April 23, 2002, at www.legislative.noaa.gov/climatechangeamendmenttoenergybill042302.html.

⁹⁷ Its purpose would be to serve as the primary mechanism for Federal agencies to work together to develop and implement national climate change policy. SA No. 2917, Sec. 1013(2), 1016(b)(3)(B) and 1016(d). Among the advisory duties to be performed by the Director of such office, is a review of the extent to which existing, proposed or newly created tax policy, trade policy and foreign policy are capable of producing progress on the long-term goal of stabilization of GHG concentrations. *Ibid.*, Sec. 1016(b)(3)(C)(ii).

⁹⁸ Its purpose would be to spend up to \$4.75 billion to establish a "Technology Innovation Program" for innovative research and development, focusing on breakthrough technologies. *Ibid.*, Sec. 1013(3) and 1017(a)-(f).

⁹⁹ Its purpose would be to review and monitor annually the progress made toward the stabilization of GHG concentrations. *Ibid.*, Sec. 1013(4) and 1019(a)-(h).

¹⁰⁰ *Ibid.*, Sec. 1101. See: SA No. 3239, as modified, to SA No. 2917, approved April 25, 2002, New Sec. 1102(6), and 1104(b)(1) and (2). For purposes of this database, GHGs are defined as including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other anthropogenic climate-forcing emissions with significant ascertainable global warming potential. See: SA No. 3239, as modified, to SA No. 2917, and New Sec. 1102(8)(A)-(G). The first six GHGs listed herein are identical to those listed within Annex I of the Kyoto Protocol.

¹⁰¹ SA No. 2917, Sec. 1101(1)-(3).

¹⁰² SA No. 3239, as modified, to SA No. 2917, New Sec. 1103(b)(3)(B). The responsibility for developing, maintaining and verifying the database falls upon the Department of Energy; the responsibility for developing emissions measurement standards and verification technologies falls upon the Department of Commerce; the responsibility for monitoring, measuring and verifying emissions and maintaining the national emissions inventory falls upon the Environmental Protection Agency; and the responsibility for developing measurement techniques for sequestration and reforestation activities is borne by the Department of Agriculture. New Sec. 1003(b)(1)-(3).

¹⁰³ SA No. 3239, as modified, to SA No. 2917, approved April 25, 2002, New Sections 1105(b)(1)(A) and 1102(2).

¹⁰⁴ *Ibid.*, New Sec. 1105(c)(3)(A). This rule applies only to entities that are not in the farming business.

¹⁰⁵ *Ibid.*, New Sec. 1105(b)(1)(B) and 1105(c)(1). Entities must also report all other categories of emissions, as later determined to be necessary by any one or more of the appropriately designated administrative agencies. New Sec. 1105(c)(1)(C)(i)-(iv).

¹⁰⁶ *Ibid.*, New Sec. 1105(c)(4), and 1106(a)(2)(A) and (B). To satisfy the reporting requirements of New Section 1105, a reporting entity has the 'option' of obtaining 'independent third party' verification by industry experts, though it is highly recommended. *Ibid.*, New Sec. 1105(c)(6). Entities must begin annual GHG emissions reporting no later than April 1 of the third calendar year following the date of enactment of the Act. *Ibid.*, New Sec. 1105(b)(2).

¹⁰⁷ This exemption will not be available if an entity individually or on an entity-wide basis has other GHG emitting activities that are NOT covered by such an agreement. *Ibid.*, New Sec. 1105(b)(1) and (2). An entity's eligibility to use this exemption may be withdrawn at a later date, if it is determined by the Director of the Office of National Climate Change Policy that the mandatory reports submitted during the five years following the enactment of this Act represent less than 60 percent of the national aggregate anthropogenic GHG emissions. *Ibid.*, New Sec. 1108(a) and (b).

¹⁰⁸ *Ibid.*, New Sec. 1105(c)(3)(B).

¹⁰⁹ *Ibid.*, New Sec. 1105(c)(2)(i)(I)-(III). The appropriately designated agencies will eventually develop and implement a system pursuant to which unique serial numbers will be assigned to all of an entity's verified

emissions reductions. This will allow comparisons with an entity's baseline, and will permit the 'tracking' of reductions for use in satisfying future emissions targets and in connection with a possible future emissions trading program. *Ibid*, New Sec. 1104(b)(3).

¹¹⁰ *Ibid*, New Sec. 1105(c)(2)(i)(IV).

¹¹¹ This would include emissions reductions activities previously reported pursuant to the current voluntary GHG Reduction and Sequestration Registry program under Section 1605(B) of the Energy Policy Act of 1992, as amended, or under any other Federal or state voluntary GHG reduction program. *Ibid*, New Sec. 1105(c)(2)(B)(ii).

¹¹² *Ibid*, New Sec. 1105(c)(2)(B)(iii). Reportable reduction and sequestration activities include the following: fuel switching; energy efficiency improvements; uses of renewable energy; use of combined heat and power systems; management of cropland, grassland and grazing land; forestry activities that increase forest carbon stocks or reduce forest carbon emissions; carbon capture and storage; methane recovery; GHG offset investments; and any other practice for achieving GHG reductions. See also: New Sec. 1102(1)(A)and(B).

¹¹³ *Ibid*, New Sec. 1105(c)(2)(B); New Sec. 1105(c)(6).

¹¹⁴ *Ibid*, New Sec. 1106(a)(1).

¹¹⁵ *Ibid*, New Sec. 1106(d)(1).

¹¹⁶ *Ibid*, New Sec. 1106(d)(2).

¹¹⁷ *Ibid*, New Sec. 1106(c)1)and(2).

¹¹⁸ *Ibid*, New Sec. 1105(c)(5).

¹¹⁹ *Ibid*, New Sec. 1109.

¹²⁰ SA No. 2917, Sec. 1321(a)(1) and 1321(b)(1). Such working group shall consist of appointees of the Secretaries from the Departments of Energy and Commerce and the Administrator for U.S. Agency for International Development, and representatives from the Departments of State and Treasury, the Environmental Protection Agency, the Export-Import Bank, the Overseas Private Investment Corporation the Trade and Development Agency and other federal agencies as deemed appropriate. Sec.1321(b)(2).

¹²¹ *Ibid*, Sec. 1321(b)(1). The working group shall submit an annual report describing technology, policy and market opportunities for international development, demonstration, and deployment of clean energy technology. *Ibid*, Sec. 1321(d). All federal agencies or government corporations carrying out an assistance program in support of U.S. persons in the environment or energy sector of a developing country, country in transition or other partner country, are instructed to support, to the maximum extent practicable, the transfer of U.S. clean energy technology as part of that program. *Ibid*, Sec. 1321(c).

¹²² Quoted from a speech given by Senator Robert Byrd of West Virginia, as part of a Senate colloquy concerning SA No. 2917 to S.517, on March 21, 2002, Congressional Record, (p. CR S2197).

¹²³ SA No. 2917, Sec. 1322(l)(2)(A) and 1322(l)(2)(C)(i) and (iv); Modified Amendment No. 3231 to SA No. 2917, New Section 1322(l)(2)(C)(v). This program is to be overseen by the Secretary of Energy, pursuant to the Energy Policy Act of 1992.

¹²⁴ SA No. 2917, Section 1322(l)(1)(A) and 1322(l)(1)(B).

¹²⁵ *Ibid*, Sec. 1322(l)(2)(C)(vi).

¹²⁶ *Ibid*, Sec. 1322(l)(2)(C)(ii) and (iii).

¹²⁷ *Ibid*, Sec. 1322(l)(2)(C)(iv); Modified Amendment No. 3231 to SA No. 2917, New Section 1322(l)(2)(C)(v). The amount a developing country must contribute in order to gain access to (draw down) a development project loan was recently increased from 10% to 50%. See: SA 3231 to SA 2917, approved April 22, 2002.

¹²⁸ Agenda 21 provides a broad and comprehensive blueprint for humanity "to halt and reverse the environmental damage to our planet and to promote environmentally sound and sustainable development in all countries on Earth. It calls for specific changes in the activities of all people, and includes concrete measures and incentives to reduce the environmental impact of industrialized nations, revitalize development in developing nations, eliminate poverty world-wide and stabilize the level of human population." Daniel Sitarz, ed., Agenda 21: The Earth Summit Strategy To Save Our Planet, p. 6 (Earth Press 1993). Preparations are currently being made for the Johannesburg (Rio + 10) Summit on Sustainable Development that is scheduled to take place in Johannesburg, South Africa from August 26 – September 4, 2002. Featured among the many issues to be discussed is the debate over energy use and efficiency, and the challenge of finding ways of bringing clean, affordable energy to those in need. "Johannesburg Summit 2002 – What's New" (1/21/02) United Nations Department of Economic and Social Affairs, Division on Sustainable Development, at http://www.johannesburgsummit.org/html/whats_new/feature_story.html; "Johannesburg Summit 2002 – What's New – Other Stories, Energy Emerges as a Key Issue for Johannesburg", United Nations Department of

Economic and Social Affairs, Division on Sustainable Development, at http://www.johannesburgsummit.org/html/whats_new/otherstories_energy0905.html.

¹²⁹ Nevertheless, it is often mentioned as an UNCED-related agreement. See: Gareth Porter, Janet Welsh Brown and Pamela S. Chasek, "Global Environmental Politics", Third Edition, p.23 and p.25 (Westview Press 2000).

¹³⁰ Rio Declaration, Principle 27. This principle provides that, "States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development"; Rio Declaration, Principle 7, otherwise known as the "Principle of Common But Differentiated Responsibilities". It provides that "States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command".

¹³¹ Herman Daly, "Sustainable Growth: An Impossibility Theorem", Chapter 14, pp.267-73, *Valuing the Earth*.

¹³² Robert Solow, *Sustainability, an Economist's Perspective*, p.3 (Woods Hole Oceanographic Institution 1991).

¹³³ *Ibid*; Rio Declaration, Principle 8 provides, "To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies".

¹³⁴ Rio Declaration, Principle 3, otherwise known as the "Principle of Intergenerational and Intra-generational Equity."

¹³⁵ Robert Solow, *Sustainability, an Economist's Perspective* at pp. 3-5. See, also: Robert Repetto, World Resources Institute, cited by Frances Cairncross, "Growth and Sustainable Development" Chapter 1, p. 27, *Costing the Earth* (1992). Mr. Repetto similarly asserts that "...Sustainable development...[does not] demand the preservation of the current stock of natural resources or any particular mix of human, physical and natural assets. As development proceeds, the composition of the underlying asset base changes".

¹³⁶ Rio Declaration, Principle 2, otherwise known as "The Prevention Principle"; David Hunter et al., "The Prevention Principle", *International Environmental Law & Policy*, at p. 364.

¹³⁷ Rio Declaration, Principle 15, otherwise known as the "Precautionary Principle". It provides that, "In order to protect the environment, the 'precautionary approach' shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall NOT (emphasis added) be used as a reason for postponing cost effective measures to prevent environmental degradation." The precautionary principle is incorporated within Article 3.3 of the UNFCCC.

¹³⁸ Daniel Bodansky, "Scientific Uncertainty and the Precautionary Principle", 33 *Environment* 4 (Sept. 1991), cited in David Hunter et al., *International Environmental Law*, at p. 363.

¹³⁹ David Hunter et al., "The Precautionary Principle", *International Environmental Law*, at p. 360.

¹⁴⁰ "Implementing Agenda 21", Report of the Secretary General, Commission on Sustainable Development, UN Economic and Social Council, par.4 (Dec. 20, 2001).

¹⁴¹ Rio Declaration, Principle 4. It provides that "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it"; Daniel Sitarz, ed., "Efficient Use of World's Natural Resources", Agenda 21: The Earth Summit Strategy to Save Our Planet pp.9-19; At Marrakech, a Ministerial Declaration was adopted, which among other things, emphasized linkage between sustainable development and climate change., "Climate Talks in Marrakech – COP7: News and Information", Pew Center on Global Climate Change, p. 4; UNFCCC Preamble, Arts. 2, 3 and 4.

¹⁴² Statement by Robert Priddle, Executive Director Int'l Energy Agency, Paris, to the Third Session of the Conference of the Parties to the U.N. Framework Convention on Climate Change (COP-3), pp. 1-2.

¹⁴³ The current infrastructure can probably be traced back 150 years to the beginning of large-scale industrialization. "Greenhouse Gases, Global Climate Change, and Energy", p.1, (Energy Information Administration, U.S. Department of Energy).

¹⁴⁴ Moomaw, Ramakrishna, Gallagher and Freid, *The Kyoto Protocol: A Blueprint for Sustainable Development*, 4 *Journal of Environment and Development* 82, at p.88 (March 1999). "In economic terms, the emission of GHGs in the world economy is a classic externality. GHG emitters do not currently pay the cost of climate change's harmful effects. Because of these perverse incentives, disruption of the global climate will proceed at an excessive pace. Unless such a pace is tempered, substantial costs will accrue in terms of commerce and the environment alike."

¹⁴⁵ Moomaw, Ramakrishna, Gallagher and Freid at pp.84-85.

¹⁴⁶ Moomaw, Ramakrishna, Gallagher and Freid at p.88.

¹⁴⁷ Summary for Policymakers, *Climate Change 2001: Mitigation, A Report of Working Group III of the Intergovernmental Panel on Climate Change*, par.19 (February 28-March 3, 2001)

¹⁴⁸ *Global Climate Change Policy Handbook*, pp.6-7.

¹⁴⁹ From a technical perspective, “energy efficiency” can be said to have occurred when either energy inputs are reduced for a given level of service, or there are increased or enhanced services for a given amount of energy inputs...*Energy intensity* is defined as the ratio of energy consumption to some measure of demand for energy services. Energy intensity measures are often used to measure energy efficiency and its change over time..., [although] energy intensity measures are at best a rough surrogate for energy efficiency...because energy intensity may mask structural and behavioral changes that do not represent ‘true’ efficiency improvements such as a shift away from energy intensive industries.” Stephanie J. Battles and Eugene M. Burns, “United States Energy Usage and Efficiency: Measuring Changes Over Time”, Energy Information Administration, p.4 (17th Congress of the World Energy Council, Houston Texas, 9/14/98).

¹⁵⁰ *Ibid*, pp.4-5.

¹⁵¹ In the absence of future (mandatory) actions taken to reduce energy demand and carbon dioxide emissions, “carbon dioxide emissions from energy use are projected to increase an average rate of 1.5 percent per year from 1,562 million metric tons of carbon equivalent in 2000 to 2,088 million in 2020. This increase is due to higher projected energy demand in the commercial and transportation sectors and more coalfired electricity generation. Carbon dioxide emissions are expected to increase more rapidly than total energy consumption, as a result of increasing use of fossil fuels, a slight decline in nuclear generation and slow growth in renewable generation. “Annual Energy Outlook 2002 with Projections to 2020”, Department of Energy Report# DOE/EIA-0383 p. 6, (2002) (December 21, 2001, last modified 3/28/02).

¹⁵² “Pew Center Analysis of President Bush’s February 14th Climate Change Plan”, p.1, Pew Center on Global Climate Change at www.pewclimate.org.

¹⁵³ In the 1980’s GHG intensity fell by 21 percent. During the 1990’s GHG intensity fell by approximately 16 percent, but absolute levels of emissions increased by 14.1 percent. The contributing factors include technologies and the continued transition from heavy industry to less energy intensive, service oriented industries. *Ibid*.

¹⁵⁴ “Analysis of Bush Administration Greenhouse Gas Target”, World Resource Institute (February 14, 2002). This study found that between 1990 and 2000, GHG emissions increased by an average of 1.4 percent per year (14.7 percent total over the decade), while the economy grew by about 3.3 percent per year (38.1 percent total). As a result, GHG intensity declined at an average rate of 1.8 percent per year (-16.9 percent total) over the 1990-2000 period.

¹⁵⁵ *Ibid*; “Pew Center Analysis of President Bush’s February 14th Climate Change Plan”, p.2, Pew Center on Global Climate Change. In other words, the Bush plan would represent “business as usual”.

¹⁵⁶ “The U.S. Domestic Response to Climate Change: Key Elements of a Prospective Program”, Pew Center on Global Climate Change, p.4 (August 2001). Theoretically, a GHG intensity target can lead to a net reduction in emissions, but only if it is sufficiently stringent. *Ibid*, p.1. The IPCC report also indicates that to achieve stabilization of atmospheric carbon dioxide over a broad range of 550 ppmv to 450 ppmv or below over the next 100 years, most economic models suggest that a very significant reduction in world carbon emissions per unit of GDP from 1990 levels will be necessary. Summary for Policymakers, Climate Change 2001: Mitigation, A Report of Working Group III of the Intergovernmental Panel on Climate Change, (‘IPCC Report III’) par.9 (February 28-March 3, 2001).

¹⁵⁷ Rio Declaration, Principles 2 and 15.

¹⁵⁸ Rio Declaration, Principles 4, 8 and 11. Rio Declaration, Principle 11, provides that “States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply...”

¹⁵⁹ IPCC Report III, par.19; 22.

¹⁶⁰ The importance of public-private partnerships between governments, the private sector and community and citizen groups (NGO’s), was highlighted at a recent United Nations Preparatory Committee (PrepCom III) meeting organized in preparation for the World Summit on Sustainable Development which will take place in Johannesburg, South Africa (the “Rio + 10” conference), during August 2002. “Enthusiasm and Some Concerns Voiced Over Partnership Proposals”, Johannesburg Summit 2002, p. 1 (April 2, 2002) at www.johannesburgsummit.org.

¹⁶¹ Rio Declaration, Principle 10 provides generally that, “Environmental issues are best handled with the

participation of all concerned citizens at the relevant level... States shall facilitate and encourage public awareness and participation [in decision-making processes] by making information widely available..."

¹⁶² Although past experience shows that without mandatory requirements voluntary agreements have not worked, at least one study claims that voluntary agreements can be used to secure significant, enforceable emissions reductions in advance of later mandatory emissions requirements. "The U.S. Domestic Response to Climate Change: Key Elements of a Prospective Program", Pew Center on Global Climate Change, pp.5-6 (August 2001).

¹⁶³ Eric Dannenmaier and Isaac Cohen, "Promoting Meaningful Compliance With Climate Change Commitments", Prepared for the Pew Center on Global Climate Change, p. 38 (November 2000). This would be consistent with the growing trend toward building a national framework that would incorporate both rewards and punishments to motivate behavior consistent with public policy.

¹⁶⁴ "Building Institutions for a Better Environment", Economic Report of the President – 2002, Chapter 6, p.8. A tradable permit program forces polluters to incorporate the cost of their external environmental damages into their operating costs.

¹⁶⁵ Global Climate Change Policy Handbook, pp.2 and 8.

¹⁶⁶ SA No. 2917 to S.517, Sec. 1001(b)(2) and 1015(a)(5).

¹⁶⁷ Richard Rosenzweig, Matthew Varilek, Ben Feldman, Radha Kuppalli, "The Emerging International Greenhouse Gas Market", Prepared for the Pew Center on Global Climate Change, p.46, (March 2002). A GHG market has begun to emerge across the globe only during the last five years, and in the absence of formal regulation, has evolved under a loosely constructed, ad hoc framework consisting of mostly project-based programs that have been voluntary in nature.

¹⁶⁸ Moomaw, Ramakrishna, Gallagher and Freid, at p.84; Tom Teitenberg, *Economic Instruments for Environmental Regulation*, pp. 376, 379-81, 382, 392, (Robert Stavins, ed., 4th ed., 2000); *Economic Report of the President – 2002*, at pp.7,16-17. The lack of clear trading rules, for example, has increased transaction costs and been a significant impediment to the development of a more robust GHG market. Rosenzweig, Varilek, Feldman, and Kuppalli, at pg v. The economic costs and benefits of a climate and energy policy depend critically on elements of the policy design. James P. Barret and Andrew Hoerner, *Clean Energy and Jobs, A Comprehensive Approach to Climate Change and Energy Policy*", p. 3 (Economic Policy Institute 2002).

¹⁶⁹ "Market participants attempt to conform their trades to emerging policy, and policy-makers seek to develop trading programs in light of accumulating experience from market participants... During the brief history of emissions trading programs, trading has typically proceeded after government requirements to reduce emissions were imposed and trading rules were developed." Rosenzweig, Varilek, Feldman, and Kuppalli at p.46. Some multinational companies and governments outside the U.S., including Denmark and the United Kingdom, have already begun exploring the challenges and benefits of GHG trading prior to the existence of a formal regulatory framework. Only recently, in fact, did the European Union issue a proposal to establish an EU-wide carbon dioxide emissions trading system.

¹⁷¹ "There are two major energy systems functioning in the U.S., with comparatively little influence on each other. Our transportation system is run almost entirely on oil-based resources. The second system which provides power to warm our homes, light our businesses... run our computers, and cook our meals, is supplied largely by domestic industries and resources that are in the midst of an historic and difficult transition... We must intelligently address the needs of these two energy systems simultaneously in order to provide a comprehensive solution to our energy needs..." Quoted from a speech given by Senator Robert Byrd of West Virginia, as part of a Senate colloquy concerning SA No. 2917 to S.517, on March 21, 2002, Congressional Record, p. CR S2197.

¹⁷² It is widely acknowledged that climate change is a long-term global problem that involves complex interactions between climatic, environmental, economic, political, institutional, social and technological processes. A prudent risk management strategy requires a careful consideration of the environmental and economic consequences, their likelihood and society's attitude toward risk. A step-by-step resolution aimed at stabilizing GHG concentrations is suggested. The relevant question is not "what is the best course for the next 100 years", but rather "what is the best course for the near term given the expected long term climate change and accompanying uncertainties. Known technological options refer to technologies that exist in operation or pilot plant stage today. It does not include any new technologies that will require drastic technological breakthroughs. IPCC Report III at pars..9 and 15.

¹⁷³ *Ibid*, par.10; Kyoto Protocol, Article 2, (1)(a)(v).

¹⁷⁴ Rio Declaration Principles 3, 7 and 27. Rio Declaration, Principle 27 provides that, "States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development".

¹⁷⁵ Principle 9 of the Rio Declaration, provides that “States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchange of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies”.

¹⁷⁶ See: Statement by Robert Priddle, Executive Director Int’l Energy Agency, Paris, to the Third Session of the Conference of the Parties to the U.N. Framework Convention on Climate Change (COP-3), p.2.

¹⁷⁷ Fred Pearce, “Canada Set to Reject Kyoto Protocol”, *NewScientist.com*, Reed Business Information Ltd., (May 10, 2002) at <http://www.newscientist.com/news/print.jsp?id=ns99992269>. This outcome has become more plausible given the divisions over Kyoto within the Canadian federal government which is under heavy pressure from energy producers and business groups to reject the protocol. David Ljunggren, “Global Warming Spat Mars Ottawa’s Kyoto Proposals”, *Reuters New Service* (May 15, 2001) at <http://www.yahoo.com>. It was also recently reported that the Canadian government issued a four-part action plan that it claims would allow the country to meet its obligations under the Kyoto Protocol. However, Canada’s ratification would depend on it being able to engineer a deal for major breaks in its emissions limits, something that the European Union is unlikely to agree to. “Canadian Government Offers Scenarios For Meeting Kyoto Protocol Limits On Greenhouse Gas Emissions”, *Associated Press* (May 15, 2002) at www.yahoo.com; See, also: Perrin Beatty and Alanna Mitchell, “Kyoto: The Storm Over Climate Change”, *The Globe and Mail*, Bell Globemedia Interactive Inc., (May 11, 2002 Online Edition) at www.globeandmail.ca; Jeremy Hainsworth, “Canada Debates Kyoto Protocol”, *Associated Press* (March 16, 2002) at <http://www.yahoo.com>.

¹⁷⁸ David Ljunggren, “Ottawa Casts More Doubt on Kyoto Ratification”, *Reuters News Service*, reported by the Environmental News Network (May 10, 2002), at www.enn.com/news/wire-stories/2002/05/05082002/reu_47147.asp. This article reported the contents of a recently released letter authored by Canadian Industry Minister Allan Rock. Mr. Rock stated in his letter that, “We must find ways to stay competitive while taking action on climate change. When the United States changed their position on ratifying Kyoto, it dramatically changed the playing field for Canada”. See, also: Mark Bourri, “Canadian Plan Moves Toward Kyoto Ratification”, *International Press Service* (May 15, 2002) at www.yahoo.com. This recent article reveals that the Canadian government’s four option plan to meet Kyoto obligations is likely to be very expensive for both consumers and industry and would likely result in a reduction of Canada’s gross domestic product by about 0.6 percent. See also: “Canadian Emissions Threaten Kyoto”, *Ottawa Dispatch*, reported by *Guardian Unlimited* (March 4, 2002), at <http://www.guardian.co.uk/elsewhere/journalist/story/0,7792,661588,00.html>.

¹⁷⁹ Editorial, “Kyoto Protocol Ratified” But More Effective Policy Initiatives are Needed”, *Asahi Shimbun* (June 5, 2002) at www.asahi.com/english/op-ed/K2002060600415.html.

¹⁸⁰ “Toothless Global Warming Bill”, *The Japan Times Online*, *The Japan Times* (May 1, 2002) at <http://www.japantimes.co.jp>; See also: “Lower House Panel Oks Kyoto Accord Ratification”, *The Japan Times Online*, *The Japan Times* (May 18, 2002) at <http://www.japantimes.co.jp>; “Cabinet Approves Legislation to Revise Kyoto Protocol”, *The Japan Times Online*, *The Japan Times* (March 30, 2002) at <http://www.japantimes.co.jp>.

¹⁸¹ “Australia Won’t Sign Kyoto Protocol”, *AP*, *Guardian Unlimited* (June 5, 2002) at <http://www.guardian.co.uk/worldlatest/story/0,1280,-1785273,00.html>; Fred Pearce, “Coal-rich Australia Rejects Kyoto Protocol”, *New Scientist.com News Service* (June 5, 2002) at <http://www.newscientist.com/news/news.jsp?id=ns99992369>; “Australia Dumps Kyoto Climate Change Treaty”, *Reuters*, *Taiwan News.com* at <http://www.etaiwannews.com/Asia/2002/06/06/1023329160.htm>.

¹⁸² Amanda Hodge, “Climate Deal Puts Kyoto at Risk”, *The Daily Telegraph*, (March 1, 2002), at http://www.dailytelegraph.news.com.au/common/story_page/0,5936,3865184%5E421,00.html; “Australia Announces Agreement With U.S. on Climate Control”, *Kyodo News on the Web*, *Kyodo News* (February 28, 2002), at <http://home.kyodo.co.jp/all/display.jsp?an=20020228071>; “Government Accused of Climate Sell-Out”, *AAP*, (March 1, 2002) at http://news.com.au/common/story_page/0,4057,3867623%5E1702,00.html; “Australia Welcomes Bush Climate Plan, Signs Pact”, *Planet Ark* (March 1, 2002), at <http://www.planetark.org/dailynewsstory.cfm/newsid/14790/story.htm>.

¹⁸³ It is uncertain whether Canada’s ratification, at the present time, is necessary for the survival of the Kyoto Protocol. Following the ratification of the protocol by the European Union and all of its members, Dutch Environment Minister Jan Pronk noted, that even the contribution of Japan and Russia would not be enough to reach 55 percent (the Kyoto Protocol needs to be ratified by 55 countries accounting for at least 55 percent of carbon dioxide emissions by the developed world in 1990). “Canada is extremely important” to bring the protocol into force. “EU Ratifications Bring Kyoto Protocol Closer to Reality”, *AFP*, *EurActiv.com* (May 31, 2002) at <http://www.eubusiness.com>; Another media report seems to indicate that Canada’s ratification is not necessary to bring Kyoto into force. “Without Australia and the U.S., the protocol can come into force if the E.U. and Japan are joined by Russia, Ukraine and Poland.” Fred Pearce, “Coal-rich Australia Rejects Kyoto

Protocol”, New Scientist.com News Service (June 5, 2002) at <http://www.newscientist.com/news/news.jsp?id=ns99992369>.

¹⁸⁴ Rosenzweig, Varilek, Feldman, and Kuppalli, at pp. 41-43. The study notes that gaining access to reductions generated by projects in developing countries is likely to be far less complicated for U.S. firms, than either developing and locating corporate subsidiaries in Annex B countries, or utilizing market intermediaries to gain access to international and other countries’ domestic GHG instruments. The study also notes that the transaction costs involved in project-based trading will be higher and may not provide the same cost-saving opportunities as allowance-based trading permitted by the Kyoto Protocol.