

1-1-2004

Local Solutions for Global Problems: The Debate over the Causes and Effects of Climate Change and Emerging Mitigation Strategies for States, Localities and Private Parties

Robert B. McKinstry Jr., Esq.

Follow this and additional works at: <https://elibrary.law.psu.edu/pselr>

Recommended Citation

Robert B. McKinstry Jr., Esq., *Local Solutions for Global Problems: The Debate over the Causes and Effects of Climate Change and Emerging Mitigation Strategies for States, Localities and Private Parties*, 12 *Penn St. Envtl. L. Rev.* 1 (2004).

This Introduction is brought to you for free and open access by the Law Reviews and Journals at Penn State Law eLibrary. It has been accepted for inclusion in Penn State Environmental Law Review by an authorized editor of Penn State Law eLibrary. For more information, please contact ram6023@psu.edu.

Introduction

Local Solutions for Global Problems: The Debate Over the Causes and Effects of Climate Change and Emerging Mitigation Strategies for States, Localities and Private Parties

Robert B. McKinstry, Jr., Esq.*

I. Introduction - Emerging State Leadership in Climate Change Mitigation

The United States' deliberations over how, when and whether to respond to human activities causing climate change are governed by issues that differ significantly from those presented by most environmental issues that have faced the United States but, similar to those presented by other environmental concerns having global dimensions. Although there is a scientific consensus that emissions of carbon dioxide from fossil fuel combustion and other anthropogenic greenhouse gases are causing changes to the global climate and will have a wide range of effects in the future, the magnitude, type and even

* Maurice K. Goddard Professor of Forestry and Environmental Resources Conservation, The Pennsylvania State University.

direction (increased or decreased) of these changes remain uncertain. Prediction of when and whether these changes, including catastrophic changes, will occur is difficult, given the fact that we are dealing with a single, unique system. However, waiting for resolution of these issues may make it impossible to prevent such changes, given the magnitude of global sinks. The impact of these changes and their causation differ dramatically across the globe, with the wealthy, developed nations having, at once, a far greater responsibility for greenhouse emissions, a correspondingly greater ability to reduce those emissions, and a better ability to adapt to changes than poor, developing nations.

Although for these reasons, the United States joined with the rest of the world in signing and ratifying the Framework Convention on Climate Change¹ and in signing the Kyoto Protocol to the Framework Convention,² concerns about possible, adverse, short-term economic effects from control of greenhouse gases has stymied further participation by the federal government of the United States in global efforts. These concerns have generated pressures which have prevented ratification of the Kyoto Protocol, United States participation in the negotiations in Bonn regarding additional clarifications to the Kyoto Protocol to the Framework Convention in 2001, and federal fulfillment of many of its obligations under the Framework Convention. However, as discussed in the following articles, the federal government's withdrawal from active engagement in the global response to climate has not eliminated all response to climate change in the United States. It has simply moved the locus of the response from the federal government to the state and local governments and the private sector.

As discussed in the article presented below by the author,³ state leadership in environmental issues has been the rule rather than the exception. While state and local leadership on environmental issues has been so common as to be the norm, a unique set of problems pertain to state programs addressing issues that transcend state and national boundaries and that are governed by international treaties, where the federal government has exclusive jurisdiction. Despite these problems, many states and localities are responding to the lack of federal leadership

1. United Nations, United Nations Framework Convention on Climate Change, May 29, 1992, UN Doc. A:AC237/18, 31 I.L.M. 849 *entered into force March 21, 1994), available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> (1992), ratified by United States (October 1992) [hereinafter UNFCCC or Framework Convention].

2. Kyoto Protocol to the United Nations Framework Convention on Climate Change, December 11, 1997, U.N. Doc. No. FCCC/CP/1997/L.7/Add. 1, reprinted in 37 I.L.M. 22 (1998), available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

3. Robert. B. McKinstry, Jr., *Laboratories for Local Solutions for Global Problems: State, Local and Private Leadership in Developing Strategies to Mitigate the Causes and Effects of Climate Change*, 12 PENN ST. ENVTL. L. REV. 15 (2004).

on the issue of climate change by establishing their own programs to limit emissions of greenhouse gases (“GHGs”) and to sequester those gases. Many of these states are joining other states and foreign provinces to coordinate these responses. Similarly, many responsible industries have recognized the need for long-term planning, responded to shareholder or customer demand, or responded to the perception that a GHG control program will be inevitable by initiating programs to limit their emissions of greenhouse gases or otherwise to sequester carbon. The results of these experiments are generating lessons for both other states and for a national response which many view as inevitable and even required by international law.

These emerging trends and results provided the motivation for and focus of the Second Goddard Forum, held on April 17 and 18, 2002, in State College Pennsylvania. Speakers at the Forum addressed both the scientific issues surrounding causes and effects of human-induced climate change – the issues that have been put into contention by those opposing a more active federal role – and the policy initiatives available to both state and local governments and private industry to initiate greenhouse gas mitigation programs⁴ and to develop policies to adapt to the now inevitable changes in climate. This article and those that follow provide an overview of the issues considered at this conference.

II. Causes and Effects of Climate Change

There is an emerging consensus among responsible scientists that we are changing the atmosphere and the climate, but our models do not allow us to predict the type and speed of changes accurately.⁵ However,

4. The “term greenhouse gas mitigation” can be used to refer to both programs to limit or lower levels of greenhouse gases in the atmosphere and programs to adapt to changing climate. This article will use the term “mitigation” to refer to programs to limit or lower greenhouse gas levels in the atmosphere and “adaptation” to refer to programs to adjust to expected changes in climate.

5. In soliciting speakers on the scientific issues for the Forum, the author was repeatedly and unanimously informed that there was no “real” debate that climate change was real and caused by human activities. Several individuals vigorously oppose taking action on climate change or implementing the reductions called for by the Kyoto Protocol because of scientific uncertainty. One of the most outspoken opponents is astrophysicist Sallie Baliunas. Sallie Baliunas argues against taking action on the grounds that: “[n]o catastrophic human-made effects can be found in the best measurement of the climate that we presently have” and “[t]he longevity, health, welfare and productivity of humans have improved with the use of fossil fuels for energy, and the resulting human wealth has helped produce environmental improvements beneficial to health as well.” SALLIE BALIUNAS, *The Kyoto Protocol and Global Warming*, 31 IMPRIMIS 3, 6 (2002). Extending these conclusions, which are not disputed, to the conclusion that taking action to mitigate adverse impacts is inappropriate is based on the both unstated and unsupported assumptions that 1) mitigation action cannot be achieved without long term adverse impact on the economy and (2) failure to take action will *not* have a

this uncertainty may present significant problems, in that it makes development of adaptation strategies problematic.

International concerns about climate change have arisen from the increasing levels of greenhouse gases⁶ in the global atmosphere. The two principal greenhouse gases, carbon dioxide (CO₂) and methane (CH₄), are natural substances which play key roles in natural cycles. Indeed, carbon dioxide serves as the basic building block of life itself, supplying the carbon from which green plants manufacture the hydrocarbons that support all life on earth.

The presence of carbon dioxide and methane in the atmosphere is also necessary to provide the warmth necessary to trap and reflect back the heat (in the form of infrared radiation) which would otherwise be lost to space and leave the earth an iceball.⁷ This “greenhouse” effect, has long been known, having been first described in a paper by Gene-Baptiste-Joseph Fourier in 1824.⁸ Carbon dioxide is added to the atmosphere by respiration by all living creatures, by burning organic matter or former organic matter such as fossil fuels, by dissolving carbonate rock (also former organic matter) or by volcanoes. It is removed from the atmosphere by photosynthesis or by being dissolved in the ocean, where it is also picked up by photosynthesis and reincorporated into living things, which die and can then be reincorporated into sediments and, thence, fossil fuels and carbonate rock.

Over much of the last 13,000 years, since the world emerged from the last ice age, the rates of carbon removal and release into the atmosphere have been in relative balance. However, since the advent of the industrial revolution, man’s burning of fossil fuels and conversion of forested areas to grassland and desert has created an imbalance, raising CO₂ levels from the approximately 280 ppmv that had prevailed over that entire period to approximately 370 ppmv, as of 2000.⁹ Production of

significant or even catastrophic adverse impact on the environment and the economy.

6. The greenhouse gases identified as requiring regulation under the Framework Convention and subsequent international accords include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

7. RICHARD B. ALLEY, *THE TWO-MILE TIME MACHINE; ICE CORES, ABRUPT CLIMATE CHANGE AND OUR FUTURE*, 85-86 (Princeton University Press) (2000).

8. DONALD A. BROWN, *AMERICAN HEAT: ETHICAL PROBLEMS WITH THE UNITED STATES’ RESPONSE TO GLOBAL WARMING* 13-14 (2002) [hereinafter *AMERICAN HEAT*] (citing Gene-Baptiste-Joseph Fourier, *Remarques Generales sur la Temperature du Globe Terrestre at des Espaces Plaetaires*, 27 *ANNALES DE CHIMIE ET DE PHYSIQUE* 136-167 (1824)).

9. NATIONAL ASSESSMENT SYNTHESIS TEAM, *U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS ON THE UNITED STATES, THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE, OVERVIEW 12-13d* (Cambridge University Press, Cambridge UK) (2000) [hereinafter *NATIONAL ASSESSMENT 2000*]; see

other greenhouse gases has increased even more dramatically. For example, the levels of methane, a gas with approximately twenty times the greenhouse effect of carbon dioxide on a per ton basis, has increased in the atmosphere by 150 percent.¹⁰

Multiple sources of information suggest that this rise in greenhouse gas levels has already resulted in increased global temperatures, particularly in the latitudes nearest the poles.¹¹ This evidence has created concern that further warming could have serious adverse impacts on at least some portions of the globe, particularly in coastal and low lying areas. However, concerns have also been raised that dramatic changes in climate “forcing” agents, such as greenhouse gases, have unknown, and even potentially disastrous effects. These concerns ultimately motivated international action culminating in a series of international treaties and accords.

At the Goddard Forum, Dr. Brent Yarnal, whose article appears here, as well as Dr. Richard Alley, Dr. Eric Barron, and Dr. William Easterling, addressed the state of the science relating to the questions of whether mankind is changing the atmosphere and the climate, as well as the types, timing and degree of these changes. These speakers, experts in the fields of geography, paleoclimatology, climatology and meteorology, agreed that there is little doubt among responsible scientists that human activities have increased atmospheric levels of carbon dioxide and other greenhouse gases, that the human “signature” can already be seen in climate changes, and that additional changes are likely to occur. However, the extent and nature of these changes are still unclear. The complexity of earth’s climate system and the fact that there is only one system to study makes modeling extremely difficult, and the models are continually being refined.

In fact, it is impossible to determine whether a change might “flip a switch” and change the parameters upon which we rely in modeling. Dr. Richard Alley’s research on ice cores from Greenland and the Antarctic

also ALLEY, *supra* note 7, at 170-79.

10. NATIONAL ASSESSMENT SYNTHESIS TEAM, U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS ON THE UNITED STATES, THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE, OVERVIEW 14 (Cambridge University Press, Cambridge, UK) (2001) [hereinafter NATIONAL ASSESSMENT 2001]. Of course, anthropogenic sources of carbon dioxide and methane represent only a tiny fraction of the total fluxes of these materials in the biosphere. However, even small contributions can have significant impacts on total atmospheric levels through compounding effects. Methane arises from a variety of anthropogenic and non-anthropogenic sources. Methane can arise from anaerobic decomposition in landfills, the escape of natural gas from coal mines and seams, natural gas pipelines and oil and gas operations, digestion in cattle and other animals, sewage treatment operations, and anaerobic decomposition processes in wetlands and other natural areas.

11. *Id.* at 14-15.

indicates that, with the exception of the last 10,000 years, which have been remarkably stable, earth's past climate has been characterized by sudden, dramatic abrupt change, as "switches" are flipped, causing the earth to "stagger" between periods of warmth and cold.¹² Adding further greenhouse gases to the atmosphere could, at some point, flip such a switch, resulting in significant effects on our civilization.¹³

A second group of speakers, represented in this Symposium edition by Dr. Ann Fisher,¹⁴ Dr. Roger Sedjo,¹⁵ Dr. James Shortle,¹⁶ and Dr. Brent Yarnal,¹⁷ addressed the ongoing attempt to predict short term impacts globally, regionally and locally. Pursuant to the requirement of the Framework Convention that parties pursue continuing scientific research on the impacts of climate change,¹⁸ the international community and the United States EPA¹⁹ have undertaken studies or "assessments" and reports of predicted impacts on various sectors and receptors at the global, national,²⁰ regional²¹ and local levels. The speakers focused particularly on the national assessment and the mid-Atlantic regional assessment, in which many of these speakers participated. These studies focus on short term impacts likely to occur by 2100, assuming some stabilization of emissions rates but continuing increases in atmospheric levels of GHGs. Even these short term studies suffer from uncertainties

12. See *supra* note 7, at 4-9, 83-84.

13. See *supra* note 7, at 4-9, 83-84.

14. Ann Fisher, *Impacts of Global Warming: The Mid-Atlantic Regional Assessment (MARA) Process and Findings*, 12 PENN. ST. ENVTL. L. REV. 83 (2004).

15. Roger A. Sedjo & Brett Sohngen, *What are the Impacts of Global Warming on U.S. Forests, Regions, and the US Timber Industry?*, 12 PENN. ST. ENVTL. L. REV. 95_ (2004).

16. David Ablor, James Shortle, & Ann Fisher, *Climate Change and Pennsylvania Agriculture*, 12 PENN. ST. ENVTL. L. REV. 117 (2004).

17. Brent Yarnal, *Informed Scenarios of Climate Change in the Mid-Atlantic Region*, 12 PENN. ST. ENVTL. L. REV. 127 (2004).

18. Article IV, section (1)(g) of the Framework Convention calls for each party to: "[p]romote and cooperate in scientific, technological, technical, socioeconomic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies." Framework Convention, *supra* note 1.

19. The studies are also required under the National Climate Program Act, 15 U.S.C. §§ 2901-2908; see *id.* § 2904(d)(1) (1982).

20. See *supra* note 9; see *supra* note 10.

21. See, e.g. Mid-Atlantic Regional Assessment Team, *Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change, Mid-Atlantic Overview*, Mid-Atlantic Regional Assessment, U.S. Global Change Research Program, The Pennsylvania State University, University Park, PA (2000) ("*MARA Assessment*"); New England Regional Assessment Group, *Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change, New England Regional Overview*, U.S. Global Change Research Program, University of New Hampshire (2001).

in many areas, since different models still produce different results. However, they generally predict a warmer and wetter climate with more severe storm events. These impacts are already built into the existing system, such that even if GHG emissions are stabilized at their 1990 levels, as called for by the Framework Convention, global GHG levels will increase, and climate changes are expected to occur. Advanced planning is required to address many of the impacts from these changes, including increased flooding, drought, storm effects and migration of disease organisms adapted to warming climates. Advanced planning is critical now, since much of the infrastructure we are developing today will still be in place at the time these impacts are expected to occur.²²

Speakers at the Goddard Forum also addressed policies that are being taken at various levels of government to mitigate the causes and effects. These efforts take place within the framework of international treaties, most notably the Framework Convention, as further clarified by the Kyoto Protocol and modifications negotiated at Bonn Germany.

III. The International Context: The Framework Convention on Climate Change and the Kyoto Protocol

International concerns regarding the impacts of rising climate change appeared as early as the 1970's and escalated throughout the 1980's, as more information confirmed fears that man's activities might be affecting world climate. These concerns coalesced at the Earth Summit held in Rio de Janeiro, Argentina, in 1992, where the nations of the world endorsed the United Nations Framework Convention on Climate Change.²³ The United States joined in that effort. The Framework Convention was signed and ratified by the United States in 1992 and became effective in 1994.²⁴

The Framework Convention was followed by one major international "Protocol" giving further definition to the Framework Convention's terms, as well as a series of annual meetings of the parties, further defining both the Convention and that Protocol. In 1997, the

22. By way of further example, Dr. Eric Barron (in describing his Congressional briefings which delayed his speaking until the second day of the Forum) described planning concerns raised by the Joint Chiefs of Staff. The best current projections suggest that, within approximately twenty years, the ice pack in the Arctic Ocean will have been reduced sufficiently so that that Ocean may be a theater of operations. The lead time for ordering, designing and building warship icebreakers that could operate there along the new northern coast of the United States is also approximately twenty years.

23. Framework Convention, *supra* note 1.

24. Convention Parties & Observers: United States of America, at <http://unfccc.int/resource/country/country.html?226> [hereinafter Convention Parties & Observers].

parties to the Framework Convention negotiated and signed the “Kyoto Protocol”, which defined the specific greenhouse gas emissions reductions required by the Framework Convention.²⁵ The United States signed the Kyoto Protocol in 1998, but, to date, the Senate has failed to ratify the Protocol and it has not yet become effective, either internationally or within the United States.²⁶ Nevertheless, the Framework Convention, which is the framework treaty underlying the Kyoto treaty, is both effective internationally and binding on the United States.

The legal framework created by the Framework Convention was addressed by John Knox, Esq., whose article appears in this volume.²⁷ The course of the negotiations and, in particular, the tension between the position of the developed world, which is responsible for the vast majority of current GHG emissions and the developing nations, who wish to increase emissions to promote development, was described at the conference by Eugene Trisko, Esq., who participated in those negotiations on behalf of the United Mine Workers Union. The questionable ethics of the position espoused by the United States was addressed at the conference by Donald Brown, Esq., who served as USEPA’s representative to the U.N. during the Kyoto negotiations and whose article also appears in this symposium edition.²⁸ In those negotiations, the United States argued for greater scientific certainty. However, the consequences of such a delay will disproportionately impact the developing world. The consequences of the United States’ failure to take action will not significantly impact the United States, who can adapt, but will fall disproportionately upon the developing world, where economies are less resilient and less able to adapt to the impacts of climate change. The United States has also favored uniform percentage reductions in existing GHG emissions, rather than a population based allocation. If greenhouse gas emissions were reduced to the point that global levels were stabilized, the United States’ position would give the United States the right to emit 21% of the total GHG emissions, despite the fact that the United States has only five percent of the world’s population and the United States’ past development is already responsible for much of the global rise in carbon dioxide concentrations.

25. Kyoto Protocol, *supra* note 2, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

26. Convention Parties & Observers, *supra* note 24.

27. See John Knox, *The International Legal Framework for Addressing Climate Change, or The Kyoto Protocol and Its Discontents*, 12 PENN. ST. ENVTL. L. REV. 135 (2004).

28. Donald A. Brown, *The Importance of Expressly Examining Global Warming Policy Issues Through an Ethical Prism*, 12 PENN. ST. ENVTL. L. REV. 147 (2004); see also AMERICAN HEAT, *supra* note 8.

In the article appearing below, Mr. Brown argues that such positions are inconsistent with commonly held concepts of justice and ethical behavior.²⁹

IV. Response to Climate Change in the United States: Leadership by States, Localities and the Private Sector

An article by the author addresses the measures that the United States' has taken to implement the requirements and goals of these international accords. Although the United States initially led the world in addressing the threats posed by climate change, its response has stalled, as the United States has been unwilling to establish the mandatory goals and methods that will be required to meet this challenge. The federal failure to implement the Framework Convention through ratification of the Kyoto Protocol and the lack of meaningful federal regulatory or fiscal policy has led to an international perception of inactivity in the United States. This perception is not, in fact, correct.

Many states, localities and private industry groups have taken action to fill the void left by the federal government.³⁰ They have taken the lead in the United States in developing and implementing programs to mitigate greenhouse gas emissions and deal with the effects of climate change. Many have established independent programs to achieve goals based upon or consistent with the requirements of the Kyoto Protocol. A number of non-profit organizations have emerged to assist and to coordinate this process. The efforts of many of these organizations have been critical to the success that has been achieved by United States' reliance on voluntary efforts.

Several speakers at the Forum, represented here by Dr. Adam Rose, Dr. Brent Yarnal, and John Dernbach, Esq., addressed the types of tools that are either being used or might be used by the states in climate change mitigation programs. Dr. Adam Rose describes here the elements that can be included in a mitigation strategy adopted by a state or local government.³¹ Dr. Brent Yarnal describes the inventory of greenhouse gas sources, which is a basic tool and first step in any mitigation

29. Donald A. Brown, *The Importance of Expressly Examining Global Warming Policy Issues Through an Ethical Prism*, 12 PENN. ST. ENVTL. L. REV. 147 (2004).

30. See John Dernbach and the Widener University Law School Seminar on Global Warming, *Moving the Climate Change Debate From Models to Proposed Legislation: Lessons From State Experience*, 30 ENVTL. L. REP. (Envtl. L. Inst.) 10933-80 (2000). John Dernbach identifies the opportunities for meaningful responses to climate change at the state level. *Id.* Many of the tools identified by Dernbach have since been incorporated in the state programs addressing climate change described in this article. *Id.* Adam Rose, *Greenhouse Gas Mitigation Action Planning: An Overview*, 12 PENN. ST. ENVTL. L. REV. 153 (2004).

process.³² John Dernbach, Esq., discusses the suite of legal tools available in Pennsylvania, a state which has not yet developed a climate change program, for developing and implementing future strategies for mitigating the causes of climate change.³³ The Pennsylvania tools run the gamut of legal mechanisms, including regulatory strategies, tax incentives and disincentives, and information based tools to foster consumer choice and conservation, as well as other market based and trading mechanisms. These tools are typical of those available in most states.³⁴

A number of states, assisted by non-governmental organizations, have already initiated or implemented aggressive programs to address climate change. Several of these state programs and the programs of organizations assisting the states were addressed by speakers at the Forum. Representatives of one of the leading non-governmental organizations involved in these state programs, the Center for Clean Air Policy, ("CCAP"), presented both the methodology that group is using with states to initiate such strategies and the application of that methodology in its work with the State of New York to develop an early action strategy.

CCAP representatives and Sonia Hamel, the Director of Air Policy and Planning in the Massachusetts Executive Office of Environmental Affairs, described some of the leading state programs in the Northeastern United States. Most notably, these speakers addressed the Climate Change Action Plan adopted by the six New England state governors and the premiers of five eastern Canadian provinces. The Climate Action Plan establishes common final and sectoral GHG emissions goals for the region and commits the states and provinces to a common plan of action, a common approach to a regional GHG emissions inventory and development of a regional GHG trading program.³⁵ Massachusetts has adopted aggressive regulatory and non-regulatory programs to implement that plan, as described by Ms. Hamel in the presentation made at the conference.³⁶ The CCAP program, the Climate Action Plan, the

32. Brent Yarnal and Rob Neff, *Primary Sources of Greenhouse Gases: A Cross-Scale Comparison*, 12 PENN. ST. ENVTL. L. REV. 173 (2003).

33. John Dernbach, *Toward a Climate Change Strategy for Pennsylvania*, 12 PENN. ST. ENVTL. L. REV. 181 (2004).

34. See also John Dernbach, *Moving the Climate Change Debate From Models to Proposed Legislation: Lessons From State Experience*, 30 ENVTL. L. REP. 10933 (2000).

35. Sonia Hamel, Director of Air Policy and Planning, Massachusetts Executive Office of Environmental Affairs, *Recent Climate Change Initiatives in Massachusetts and the Northeastern U.S.*, Presentation at the Second Goddard Forum at University Park, PA (Apr. 17-18, 2002)

36. Ms. Hamel was unable to attend the conference but the presentation she had prepared was presented by another speaker.

Massachusetts program, as well as the efforts by New Hampshire and Maine to implement the Climate Action are described in the author's article appearing later in this edition.

Several other states that are implementing programs outside of the framework of the Climate Change Action Plan are also addressed in the author's article appearing here. For example, New Jersey has developed a multi-faceted climate change mitigation strategy incorporated into the New Jersey Sustainability Greenhouse Gas Action Plan described at the Forum by Michael Winka, the Administrator of New Jersey's Office of Innovative Technology and Market Development in the New Jersey Department of Environmental Protection, Division of Science, Research and Technology.³⁷ That Plan was established as part of a larger, overall state sustainability program, instituted pursuant to an Executive Order, issued by Governor Christine Whitman.³⁸ Although New Jersey has utilized some regulatory tools, New Jersey has not sought regulatory emissions controls, instead, relying upon voluntary efforts by the private sector in partnership with state leadership in energy efficiency and conservation programs. These voluntary actions are encouraged with support from state regulatory programs, such as the establishment of standards and procedures for a GHG registry and trading.

The author also describes the programs developed by California, another state with a history of environmental activism that has adopted an aggressive climate change program. California's program has been largely driven by legislation and includes a significant regulatory content. The California program is nationally significant in three respects. First, California's GHG registry is being examined by many as a model for other state registry programs and an improved federal program. Second, California has reached an agreement with Oregon and Washington to develop a coordinated approach to greenhouse gas reductions, with corresponding purchasing policies, inventory mechanisms and other policies.³⁹ Third, California, unlike many other

37. New Jersey Climate Change Workgroup, *New Jersey Department of Environmental Protection Sustainability Greenhouse Gas Action Plan* (Dec, 1999, rev. Mar. 2002), available at <http://www.state.nj.us/dep/dsr/gcc/gcc.htm>; see also Michael Winka, *What is Being Done by Others: New Jersey's Climate Change and GHG Reduction Program*, in *GLOBAL WARMING: CAUSES, EFFECTS AND MITIGATION STRATEGIES FOR STATES AND LOCALITIES*, Powerpoint Presentation at the Second Goddard Forum, included in written materials from 2nd Goddard Forum, University Park, PA (Apr. 17 – 18, 2002).

38. New Jersey GHG Action Plan, Executive Order No. 96 (May 20, 1999), *supra* Appendix A.

39. *Press Release, Governors Davis, Locke & Kulongoski Announce Tri-Strategy to Reduce Global Warming*, California Governor's Press Release PR03-437 (Sept. 22, 2003). The Press Release stated, "Due to federal inaction, the governors concluded that states must act individually and interactively to protect their residents and economies."

programs, has targeted the sector responsible for the largest share of GHG emissions for regulatory controls – the transportation sector – by establishing mandatory mobile source emissions standards for carbon dioxide.⁴⁰

States are not the only governmental entities implementing climate change mitigation programs. Many local governments are also taking action. At the Forum, a number of these programs were described by representatives of the International Council for Local Environmental Initiatives (“ICLEI”). ICLEI has developed the Cities for Climate Protection (“CCP”) Campaign described in the author’s article appearing below. CCP is a program designed specifically to assist local governments take steps that reduce greenhouse gas emissions.⁴¹ The implementation of that program by one of CCAP’s client governments is further described by Judith Samans-Dunn.⁴² Ms. Samans-Dunn describes the efforts of the City of Philadelphia, with ICLEI’s assistance, to implement its own municipal climate change program.

A significant number of the largest private companies operating within the United States have also undertaken voluntary GHG emissions mitigation programs, while participating in voluntary state programs and registries. Sally Ericsson, from the Pew Center on Global Climate

40. Although some California initiatives were mentioned at the Forum, no separate presentation addressing California was provided. Many of the most significant initiatives, including the Tri-State Strategy (Sept. 22, 2003), the California legislation requiring GHG emissions controls on automobiles, 2002 Cal. Stat. Ch. 200 (July 22, 2002), and a law requiring the California Climate Action Registry to include provision for carbon sequestration, 2002 Cal. Stat. Ch. 423 (September 9, 2002) were not enacted or finalized until after the Forum. In light of the significance of some of California’s programs, they are discussed here, based, in part, on a speech and powerpoint presentation presented by Winston H. Hickox, Secretary of the California Environmental Protection Agency, at the 20th MIT Global Change Forum (2003) (“*Hickox Speech*”), the text and slides from which are reproduced on the California Environmental Protection Agency website available at www.calepa.ca.gov/About/Speech/Hickox.htm.

41. Tom Peterson, *State, National and International Climate Change Policy Development*, in GLOBAL WARMING: CAUSES, EFFECTS AND MITIGATION STRATEGIES FOR STATES AND LOCALITIES 1, Second Goddard Forum, University Park, PA (Apr. 17 – 18, 2002) [hereinafter Peterson Powerpoint], *paraphrasing* Justice Brandeis’ observation in *New State Ice Co. v. Liebmann*, 285 U.S. 262, 280, 311 (1932) (dissenting opinion); Helme Ned, *State and National Climate Change Policy Innovations*, in GLOBAL WARMING: CAUSES, EFFECTS AND MITIGATION STRATEGIES FOR STATES AND LOCALITIES 1, Second Goddard Forum, University Park, PA (Apr. 17 – 18, 2002) [hereinafter *Helme Powerpoint*]; International Council for Local Environmental Initiatives, *Cities for Climate Protection Campaign - US (“ICLEI Brochure”)*, in GLOBAL WARMING: CAUSES, EFFECTS AND MITIGATION STRATEGIES FOR STATES AND LOCALITIES 1, Second Goddard Forum, University Park, PA (Apr. 17-18, 2002); CCAP website available at <http://www.ccap.org/>.

42. Samans-Dunn, Judith, *The City of Philadelphia – Government and the Community Work Together to Reduce Greenhouse Gas Emissions*, 12 PENN. ST. ENVTL. L. REV. 207 (2004).

Change, a non-governmental organization that has focused its efforts on proactive industry programs addressing climate change,⁴³ described those corporate programs and the efforts by Pew and others to assist those efforts. Pew has organized a group of thirty-eight major companies into the Business Environmental Leadership Council (“BELC”) to assert corporate leadership to respond to the challenges to climate change.⁴⁴ Many of these companies have also participated in the voluntary reduction programs developed by the states discussed above. These corporations have adopted and implemented a variety of emissions reduction programs and goals, and have participated in the state and federal registries. These experiences, also described in the authors’ article, provide information and examples for states and the federal government seeking to determine achievable sectoral reduction goals and methods.

V. Need for a Federal Framework: State Leadership in Compelling a Federal Response

These state, local and private “laboratories” have produced valuable results, both in terms of greenhouse gas emissions reductions and examples of regulatory and non-regulatory programs and methods for achieving those reductions effectively and efficiently. However, many of these efforts, particularly those relying on voluntary action, have been premised upon the assumption that there will eventually be a uniform federal program mandating emissions reductions. Thus, the success of these voluntary efforts will be limited if the federal government fails to implement a mandatory program.

Lack of a mandatory federal program also constrains both state and private actions in a variety of ways. Federal law presents barriers to innovative state programs. These barriers arise through the possible preemptive effect of federal laws which the federal government has asserted precludes some of the innovative state programs, such as the California mobile source emissions controls. Potential constraints arise from exclusive grants of power to the federal government, such as the commerce clause or the compacts clause. The lack of a federal floor encourages flight of less responsible industry to less responsible states. It also raises the threat that responsible corporate citizens will suffer

43. Sally Ericsson, Director of Outreach, Business Environmental Leadership Council (BELC), Pew Center on Global Climate Change, Powerpoint Presentation, *Reducing GHG Emissions: Business Leadership*, in GLOBAL WARMING: CAUSES, EFFECTS AND MITIGATION STRATEGIES FOR STATES AND LOCALITIES SECOND, Goddard Forum, University Park, PA (Apr. 17 – 18, 2002) [hereinafter *Ericsson Presentation*]; see also, www.pewclimate.org/about/index.cfm.

44. See www.pewclimate.org/about/index.cfm.

some competitive disadvantage vis-a-vis their less responsible competitors unless the federal government takes some action. Finally, the lack of certainty creates disincentives to private and state action, alike. Without certainty, states and private entities cannot be sure if they will get credit for reductions in a federal program or that their programs will be consistent with the federal program.

In light of these barriers, as described in the conclusion to the author's article addressing state programs, states have also taken the lead in litigation aimed at compelling a more active federal response necessary to support their efforts. A number of the more active states have filed lawsuits challenging the federal government's recent change of position in which it disavowed its existing powers under the Clean Air Act. Success in such litigation could change the nation's focus, from denial of the problem to constructive engagement with the responsible states, localities, and industries, as well as the rest of the developed world.